

ASTAR - Arctic Strategic Transportation and Resources



ASRC Consulting & Environmental
a subsidiary of ASRC Energy Services

Point Lay Research Advisory Group Meeting Presentation: December 7, 2023

DGGS, Surficial Geology, ASTAR: Marlee Haralson

DGGS, Coastal Hazards: Nora Nieminski



DGGS, Surficial Geology Section Chief, ASTAR,
Supervisor: Trent.hubbard@alaska.gov

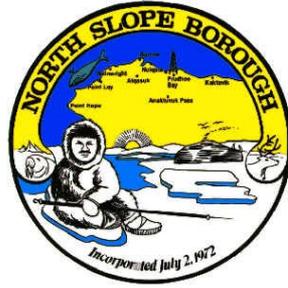


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ARCTIC STRATEGIC TRANSPORTATION AND RESOURCES



- ASTAR is a partnership between the State of Alaska Department of Natural Resources, Alaska Department of Transportation and Public Facilities, and the North Slope Borough (NSB)

- Identify, evaluate, and advance opportunities to enhance the quality of life and economic opportunities in NSB communities through infrastructure development

- Prioritize community needs and identify infrastructure opportunities that offer the most cumulative benefit and best enhance the quality of life for the region



ASTAR MISSIONS AND GOALS: COMMUNITY

ASTAR Program Priorities:

- **Community Engagement**
 - Establish working relationships through meetings and regular communication.
 - Meet regularly with community officials and members to establish working relationships and communication.
- **Respect subsistence activities**
 - Plan fieldwork with input and guidance from Native Leaders to minimize impacts on subsistence activities.
- **Minimize impacts**
 - Plan scientific work to ease the burden on communities (lodging, resources, and land use)

Division of Geological & Geophysical Surveys
Arctic Slope Transportation and Resources Project
 Point Lay Sand & Gravel Project

WHAT IS ASTAR?
 The Arctic Slope Transportation and Resources (ASTAR) project is a partnership between the State of Alaska Department of Natural Resources (DNR), Department of Transportation & Public Facilities, and the North Slope Borough (NSB) with the goal of benefiting North Slope communities through infrastructure development.

WHERE WILL WE BE WORKING?

WHAT KIND OF WORK WILL WE BE DOING?
 Our fieldwork will consist primarily of two types of helicopter-supported work. Geologists will be dropped off and picked up from fieldwork sites by helicopter—in order to reduce our impact on the community, we will attempt to minimize the number of flights.

HOW LONG WILL WE BE WORKING?
 We plan to spend up to 14 days near Point Lay between July 22 and August 8, 2023. We chose these days to best minimize our overall impact to wildlife and subsistence activities.

WHAT DO WE DO WITH THIS DATA?
 After our fieldwork we will make our field data available through the DGGS website, and refine our in-progress surface materials maps. After data analysis is complete we will publish our materials maps and a final resource assessment, which will be available on our website: dggs.alaska.gov.

CONTACT US
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 907-493-5009
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Surface Exposure Fieldwork
 Geologists will make observations, take notes, photograph, and collect small bags of sediment at locations where sand and gravel resources are accessible with minimal landscape disturbance.

Power Auger Reconnaissance
 At sites where material is not exposed on the surface geologists will drill one to two holes (~10-20 ft) and make observations.

Division of Geological & Geophysical Surveys
Arctic Slope Transportation and Resources Project
 Point Lay Sand & Gravel Project

WHY ARE SAND AND GRAVEL RESOURCES IMPORTANT?

Did you know?
 The sand and gravel industry is a major contributor to, and an indicator of, the economic well-being of the US.

Sand and gravel are used for a wide range of purposes, including road construction, water filtration, and erosion mitigation. As Alaska develops and maintains its infrastructure, it is essential to have adequate quantities of sand and gravel resources to support project-related work. In many areas of the state these materials are in short supply, are being rapidly depleted, or are not economically accessible, making it necessary to identify and characterize new resource locations.

FIELD TEAM

Additional Contacts

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Pre-Field Season Preparation:

- Stakeholder Engagement
- Permitting
- Flyers
- Handouts
- Contact Information

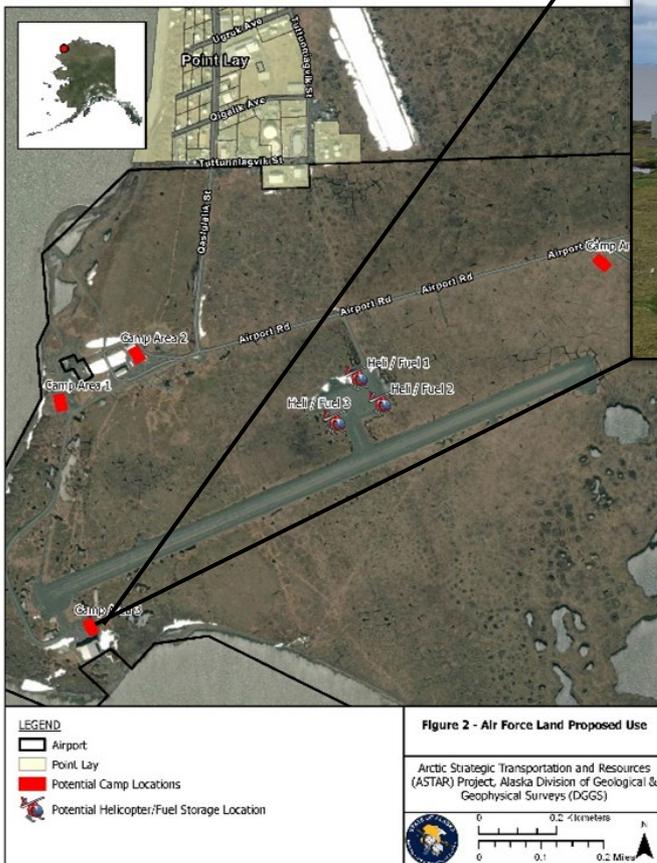




ASTAR PRIORITIES: MINIMIZE IMPACT

- Minimize impacts
 - Plan scientific sites and goals before fieldwork to ease the burden of lodging, resources, and land use.

Point Lay Field Crew: Lodging Camp



Point Lay Field: Areas of Interest





ASTAR COMMUNITY ENGAGEMENT

- **Community Engagement**
 - Meet regularly with community officials and members to establish working relationships and communication.
 - Lead community outreach to meet locals, answer questions, and learn from the community while engaging in fun learning activities for children and adults.

Point Lay Community BBQ and Science Open House

The whole community is invited.

Hamburgers - Hot Dogs - Door Prizes - Family Friendly Science Activities for All Ages

- Science Bingo
- Science Demonstrations
- Permafrost Cores
- Kid Friendly Activities
- 3D Visualization
- Mapping Games
- And More!

AGENDA
5:30-7:30 PM

Where: Point Lay Kali School
When: Tuesday, July 24

Who: The University of Alaska-Fairbanks NNA-IRPS group, affiliates, and the Alaska Division of Geological & Geophysical Surveys (DGGs) Surficial Geology mapping crew

Please come join us in the event and win some prizes while learning about scientific studies in Point Lay. Connect with the researchers:

geobotany.uaf.edu/nna
[permafrostpeople](https://permafrostpeople.com)

dgg.s.alaska.gov
[Alaska DGGs](https://alaska.dgg.s.gov)

M **CAD**

Division of Geological & Geophysical Surveys
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Point Lay Sand & Gravel Project

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As part of this work, the Division of Geological & Geophysical Surveys (DGGs) will be identifying and evaluating potential sand and gravel resource distribution across NSB, including near the community of Point Lay.

WHAT KIND OF WORK WILL WE BE DOING?

Our fieldwork will consist primarily of two types of helicopter-supported work. Geologists will be dropped off and picked up from fieldwork sites by helicopter—in order to reduce our impact on the community, we will attempt to minimize the number of flights.

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Point Lay 2023 Field Season Preparation:

- Flyers
- Handouts
- Contact Information

ARCTIC STRATEGIC TRANSPORTATION AND RESOURCES



ASTAR & UAF Community Outreach: Point Lay, Kali School

Collaborators: UAF permafrost group, DGGS Coastal Hazards Program, UAF Geophysical Institute, Horst Expediting, Alpine Air

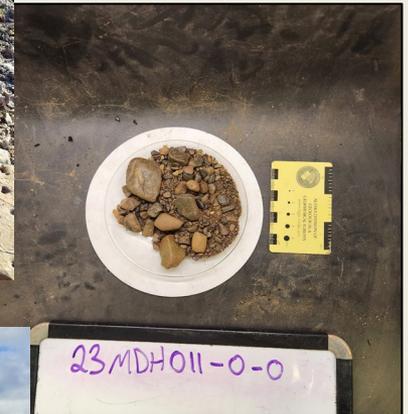


FIELD DATA COLLECTION: SURFICIAL-GEOLOGIC MAPPING

ASTAR Point Lay Sand & Gravel Fieldwork

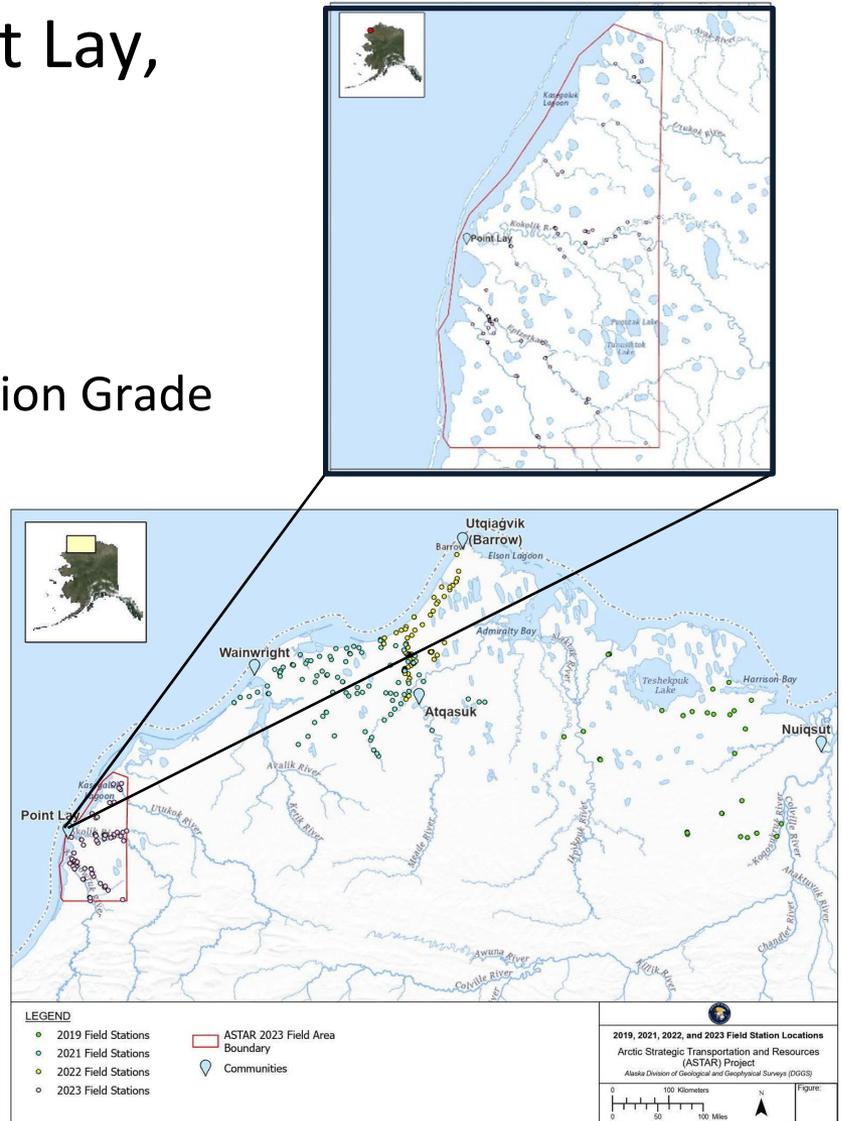
Project:

1. Portray the distribution of unconsolidated surficial-geologic materials
2. Provide information on engineering properties and potential sources of construction materials



FIELDWORK UPDATES: POINT LAY 2023

- Sand & Gravel Survey: Point Lay, AK
 - Field Data Collection
 - Geotechnical Data Analysis
 - Potential for further construction Grade materials Testing



GRAVEL SURVEY

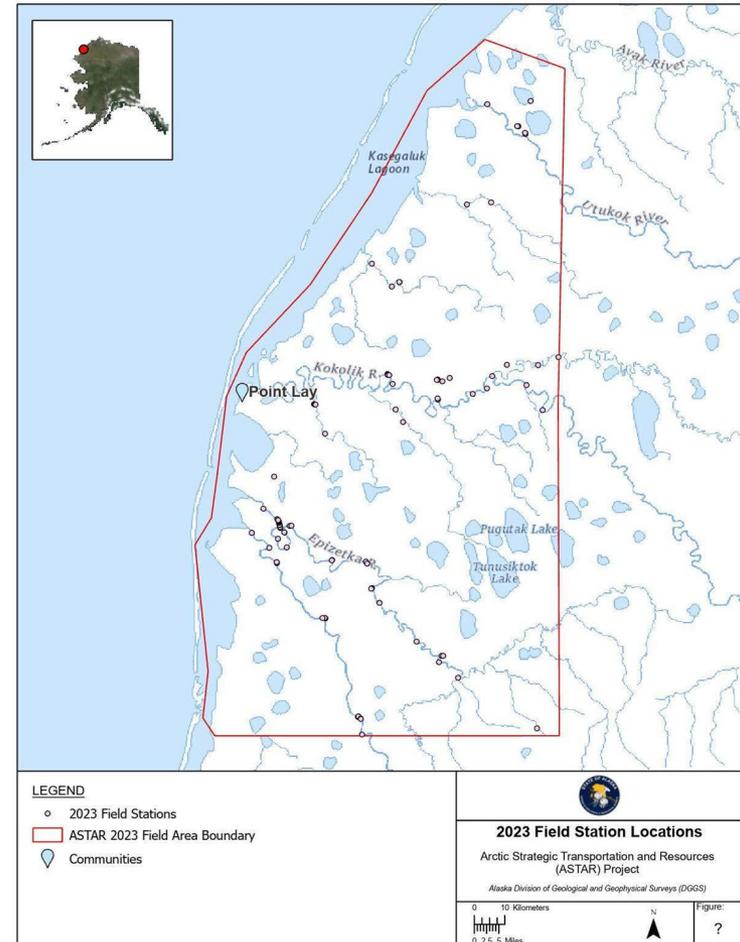
In July-August 2023, geologists conducted a sand & gravel resource assessment in the Point Lay at 101 field station sites.

The data studied at these sites were collected by:

- Surface observations
- Auger
- Outcrops
- Small test pits



Map of project area



Pink dots indicate field stations locations where data was collected.

GRAVEL SURVEY

- In July-August 2022, DGGS geologists collected samples during the sand & gravel fieldwork for additional analyses.
 - These samples will be studied in the lab for geotechnical properties.



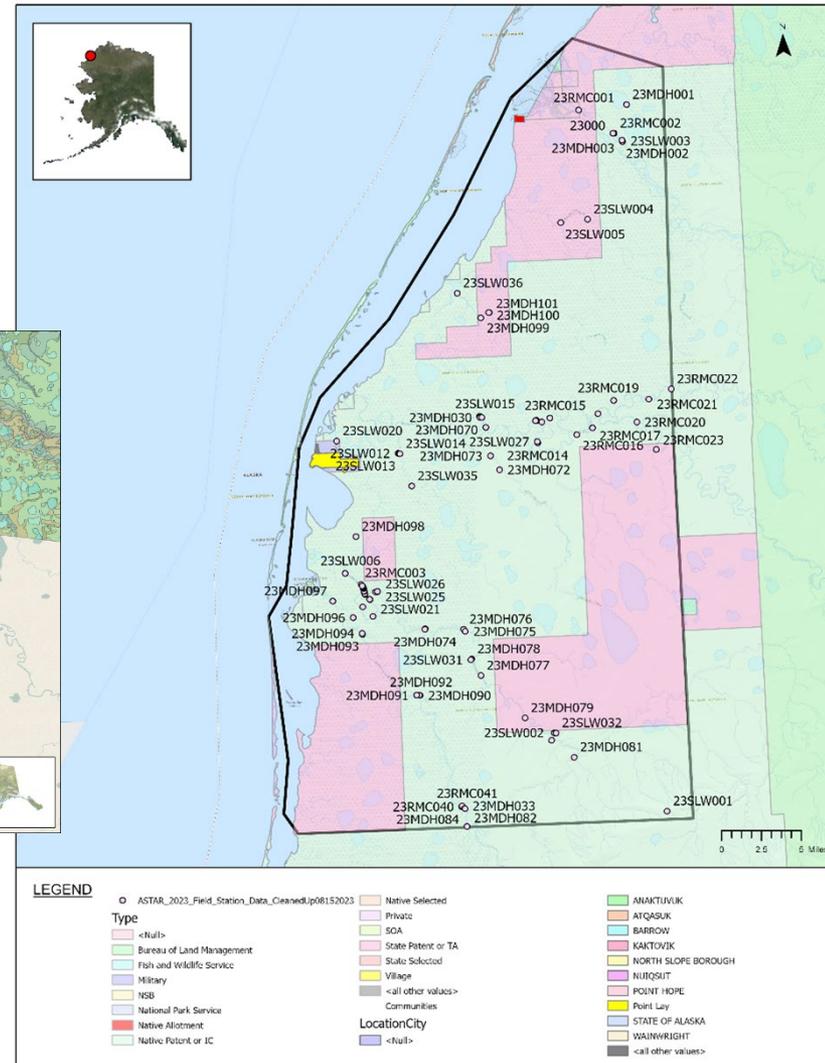
*From the field
to the lab:*



PRELIMINARY RESULTS

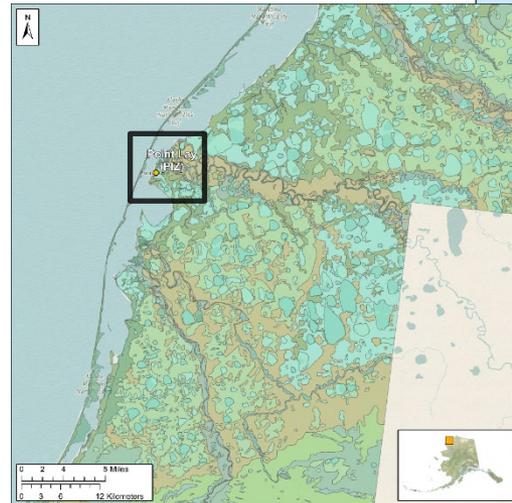


Map (A): Land Status of sites

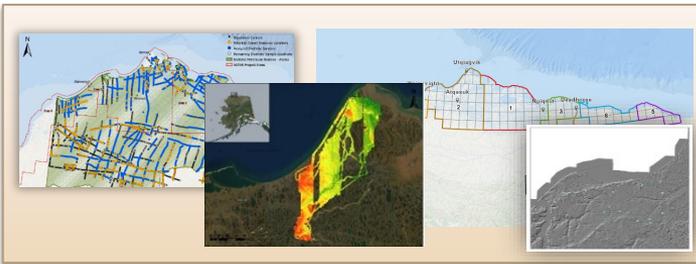


Terrain Unit Coverage:

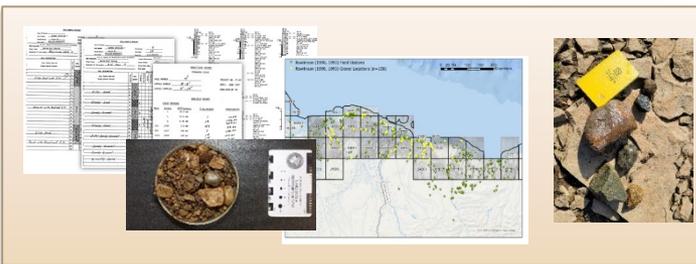
- Total Area Covered (miles): **990 miles**
- Number of quadrangles: 1
- Total data points in Point Lay 2023: **3,780**
 - Field Stations: **101**
 - Geotechnical samples collected: **201**
 - Field Active Layer (Ice) depths: **387**
 - Imagery Field observations: **3091**
- Land Status of sites: Map (A)



FINAL RESOURCE ASSESSMENTS



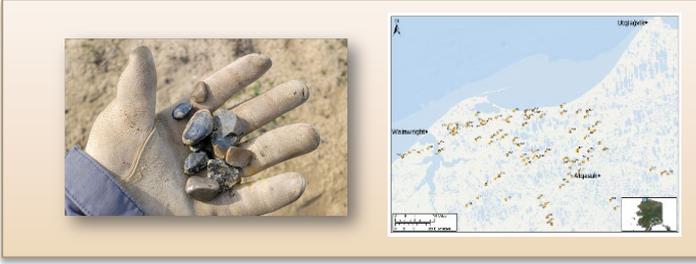
Maps and Geospatial Data



Aggregate New & Existing Field Data



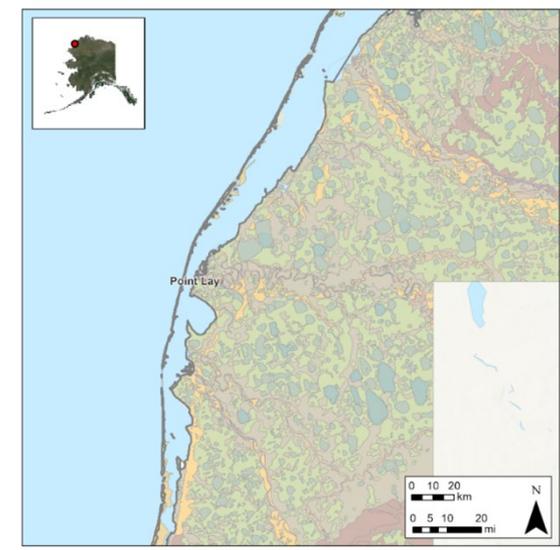
Material Resource Delineation



Publication

Public Resource Assessment & Maps:

Material Classes



LEGEND	
	BO
	GS
	NA
	OR/SG
	OR/SM
	SA
	SG
	SG/SM
	SM
	SM/BO
	SM/SG

Slate of Alaska
Department of Natural Resources
Division of Geological & Geophysical Surveys
Arctic Strategic Transportation and Resources
(ASTAR)
dggs.alaska.gov



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ASTAR – PUBLICATION STATUS

Sand & Gravel Resource assessment Publications Progress:

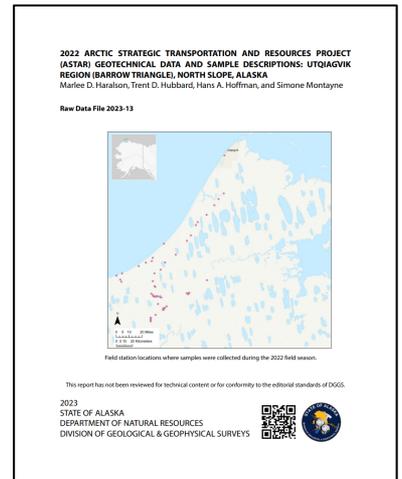
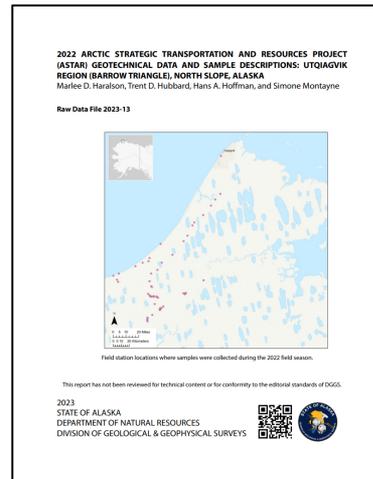
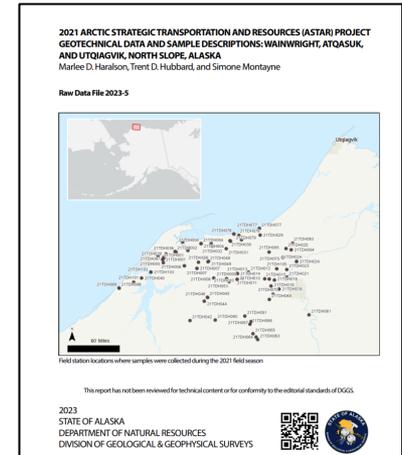
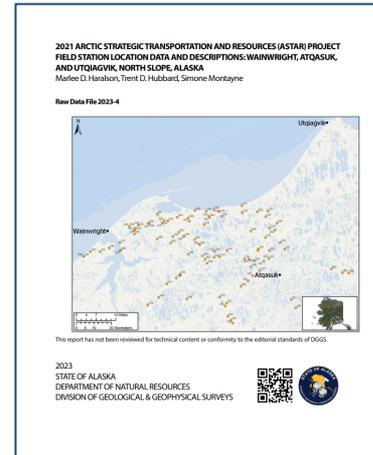
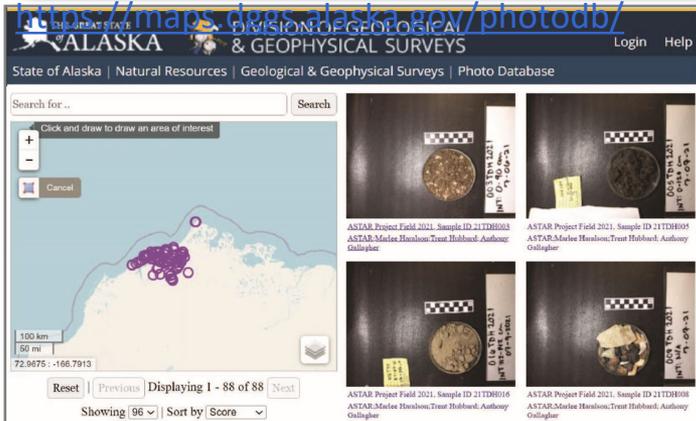
2021: 2 completed, Wainwright

2022: 2 completed, Utqiagvik, Atqasuk

2023: 4 reports are currently in preparation for Point Lay, Alaska

The field photos and lab sample photos with sediment descriptions are accessible on DGGs using our photo database tool:

<https://maps.dggs.alaska.gov/photodb/>



Link to published reports from Utqiagvik, Wainwright, and Atqasuk Regions:
<https://dggs.alaska.gov/pubs>

PUBLICATION STATUS, POINT LAY

Sand & Gravel Resource Assessment Publications Progress for Point Lay:

Publications, Point Lay: 4 currently in preparation, Anticipated Spring 2024

- 1) Field Data Collection
- 2) Geotechnical Data
- 3) Imagery Data
- 4) Community Material Resource Map

2023: Publish photos of data collected from Point Lay

- Field photos are published and available now
- Geotechnical sample photos will be available in early Spring 2024

Field photos, samples, and sediment descriptions from Point Lay will be made accessible on the DGGS website using our photo database tool: use the link below!

<https://maps.dggs.alaska.gov/photodb>

The screenshot displays the DGGS Photo Database interface. At the top, the navigation bar includes the Alaska state logo, the text 'DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS', and a search bar. Below the navigation bar, a grid of 12 field photos is shown, each with a caption: 'ASTAR Project 2023, field station 23SYW143' or 'ASTAR Project 2023, field station 23SYW144', and the name 'Susan Wilson'. To the right of the photo grid is a map of Point Lay, Alaska, with several purple location markers. The map includes a search bar, zoom controls, a scale bar (50 km, 50 mi), and navigation buttons like 'Reset', 'Previous', 'Next', and 'Showing 96 | Sort by Score'. The browser address bar at the top shows the URL: 'https://maps.dggs.alaska.gov/photodb/search#show=96&search=Point%20Lay%20ASTAR&page=9'.

ASTAR – COASTAL HAZARDS

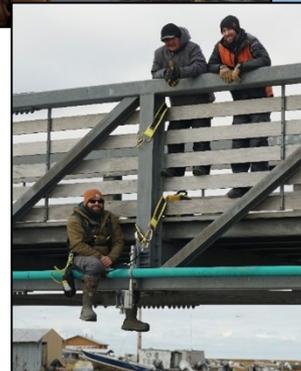
Building Capacity & Conducting Geologic Hazard Risk Assessments in Remote Alaska Native Communities



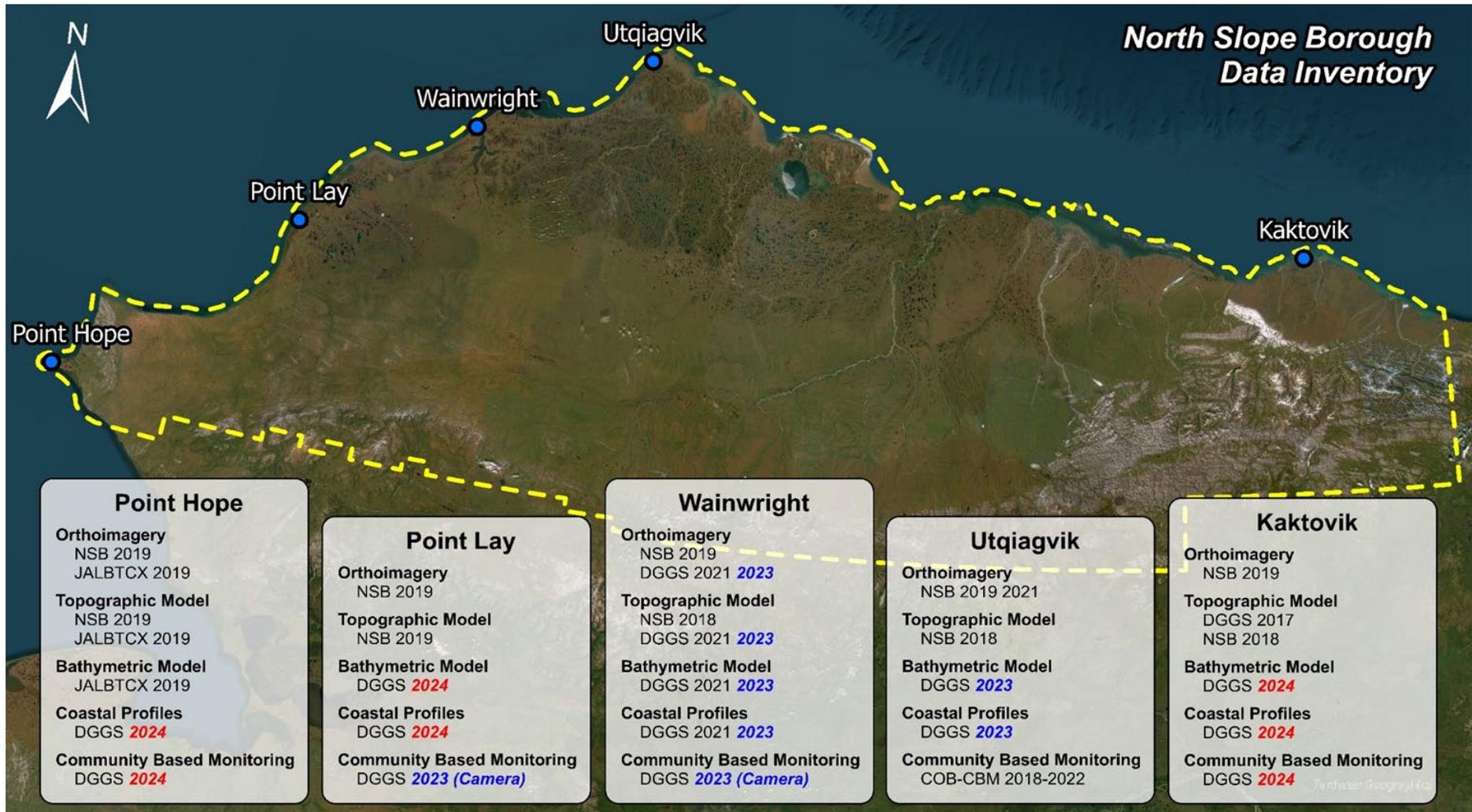
DGGS Coastal Hazards Program
Arctic Strategic Transportation And Resources (ASTAR)
Project activities aim to collect, conduct, and create oceanographic
and coastal baseline data, risk assessments, geologic research,
and monitoring networks in North Slope communities.

COASTAL DATA COLLECTION

- Aerial imagery
(tied to ground control points)
- Elevation data (DSM)
- High water mark elevations
- Historical flood points
- Coastal erosion profiles
- Single-beam bathymetry
- Time-lapse monitoring data
- Water level monitoring
(sensors, flood staffs, etc.)
- Community-based monitoring



ASTAR COASTAL DATA INVENTORY



POINT LAY

In collaboration with our **Alaska Ocean Observing System (AOOS)** project partners and with community engagement, we hope to support the growth of the **Backyard Buoys** project.

Summer 2023:

- 3 buoys deployed near Point Hope
- 3 buoys deployed near Wainwright
- 7 buoys deployed in Utqiagvik



ADDRESSING COASTAL HAZARDS

Check out our
StoryMap!



Coastal Hazards Program

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Autumn Poisson
Jessie Christian
Keith (KC) Horen



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QUYANAQ/TAIKUU

Questions/Comments?



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