

$\epsilon_b \Delta^c \dot{\gamma} \Pi \sigma^b \quad \Lambda c_n \nabla^{\epsilon_b} \sigma \nabla n \nabla^a L^a \sigma^b$

ᐅᓂᕈᕋᑦ: This activity proposes to study the evolution of different geological zones between Baker Lake and Whale Cove. Learning how these rocks formed and moved can change our understanding of how the early Earth formed and affect interpretations of the potential presence of minerals and metals such as gold. Dr. Sally Pehrsson and her team would combine the re-examination of previously collected rock samples with analysis of new samples and GPS data gathered on the land. The proposed 2023 fieldwork would be conducted by a group of 6 researchers and a wildlife monitor over two weeks this summer. The team would collect fist-sized samples of rocks along Chesterfield Inlet. Results from this work could provide geological information within the proposed Hydro-fibre Link Corridor and propose models for gold and critical mineral movement in the area.

▷ΔΛΠ◁: Cette activité propose d'étudier l'évolution de différentes zones géologiques entre le lac Baker et Whale Cove. Apprendre comment ces roches se sont formées et déplacées peut changer notre compréhension de la façon dont la Terre primitive s'est formée et affecter les interprétations de la présence potentielle de minéraux et de métaux tels que l'or. La Dre Sally Pehrsson et son équipe combinent le réexamen d'échantillons de roche prélevés antérieurement avec l'analyse de nouveaux échantillons et de données GPS recueillies sur le terrain. Le travail de terrain proposé pour 2023 serait mené par un groupe de 6 chercheurs et un moniteur de la faune pendant deux semaines cet été. L'équipe recueillerait des échantillons de roches de la taille d'un poing le long de Chesterfield Inlet. Les résultats de ces travaux pourraient fournir des renseignements géologiques dans le corridor de liaison hydro-fibre proposé et proposer des modèles pour le transport de l'or et des minéraux critiques dans la région.

[illegible]

Personnel

Personnel on site: 6

Days on site: 10

Total Person days: 60

Operations Phase: from 2023-08-01 to 2023-08-10

A	B	C	D	E	F
Areas covered by proposed field work and legacy sample research in 2023	Scientific/International Polar Year Research	Inuit Owned Surface Lands	Bedrock geology of the study area was compiled from mapping in 1996, 1998 & 1999. An aeromagnetic survey (2014) imaged new regional structures in a poorly exposed area. Between 2008 and 2020 targeted studies informed regional metallogenic and stratigraphic models; geophysical surveys provided crustal scale models. The Hudson Bay Lithospheric Experiment (2007) provided deep crust and lithosphere models. A recent Ph.D. thesis identified high-pressure rocks above the Greyhound gold trend.	A crew member who discovers an archaeological artifact/fossil will be instructed not touch or remove itfrom the location where it was found. Should any archaeological remains be encountered, activity in the area of the find will cease immediately and contact will be made to the Territorial Archaeologist (867) 934-2040 as soon as possible. A Wildlife Monitor from Baker Lake or Chesterfield Inlet will be present.	The Hamlets of Chesterfield Inlet and Baker Lake are located proximal to the survey area. Iqalugaarjuup Nunanga Territorial Park falls within the boundaries of the survey area; however, no sampling will take place within the boundaries of the park. The Hamlet of Rankin Inlet is located approximately 90 km south of the survey area.

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ᐃᓐᓴᓐᓴᓐᓴᓐᓴᓐ	Mr. Jorgan Aitaok	Nunavut Tunngavik Incorporated	2023-02-10
ᓴᓐᓴᓐᓴᓐᓴᓐᓴᓐ	Mr. Luis Manzo	Kivalliq Inuit Association	2023-02-10
ᓴᓐᓴᓐᓴᓐᓴᓐᓴᓐ	Mr. Andre Aokaut	Kangiqliniq Hunters & Trappers Organization	2023-02-10
ᓴᓐᓴᓐᓴᓐᓴᓐᓴᓐ	Mayor Harry Towtongie	Hamlet of Rankin Inlet	2023-02-10
ᐃᓐᓴᓐᓴᓐ	Ms. Nicole Issakiark	Arviat Hunters and Trappers Organization	2023-02-10
ᐃᓐᓴᓐᓴᓐ	Mr. Joe Savikataaq	Hamlet of Arviat	2023-02-10
ᐃᓐᓴᓐᓴᓐ	Mr. Steve England	Hamlet of Arviat	2023-02-10

Δ ^{ᐅᐅᐅᐅᐅᐅ}	Mr. Tony Amauyak	Hamlet of Chesterfield Inlet	2023-02-10
Δ ^{ᐅᐅᐅᐅᐅᐅ}	Mr. John Ivey	Hamlet of Chesterfield Inlet	2023-02-10
Δ ^{ᐅᐅᐅᐅᐅᐅ}	Mr. Harry Aggark	Aqigiq Hunters and Trappers Organization	2023-02-10
Δ ^{ᐅᐅᐅᐅᐅᐅ}	Ms. Janice Aggark	Aqigiq Hunters and Trappers Organization	2023-03-01
ᐅᐅᐅᐅᐅᐅᐅᐅ	Mr. Richard Awksawnee	Hamlet of Baker Lake	2023-02-10
ᐅᐅᐅᐅᐅᐅᐅᐅ	Mr. Sheldon Dory	Hamlet of Baker Lake	2023-02-10
ᐅᐅᐅᐅᐅᐅᐅᐅ	Mr. Brian Pudnak	Baker Lake Hunters and Trappers Organization	2023-02-10

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$a^b r^c \wedge c d e f g h i j k l m n o p q r s t u v w x y z$

Kivalliq

[illegible][illegible]

Project transportation types

Transportation Type	How Long It's Been Used	Length of Use
Air	Helicopter (Bell 260B L4)	

Project accomodation types

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[illegible]

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ΔL^{5b} ΔD^{5b} CD^{5b} ΔL^{5b} ΔD^{5b}

$\Delta^c \rightarrow C \dot{L}^{fb} \rightarrow \Delta^{fb} C \rightarrow \sigma \Delta^{fb} \rightarrow^{fb}$	$^{fb} \rightarrow^{fb} \Delta \Gamma^{fb} C^{fb} C^i \sigma \Delta^{fb} <^c$	$\rightarrow P^c \Delta \Gamma^{fb} C^{fb} C^i \sigma \Delta^{fb} <^c$
300	Hotel tap	Rankin Inlet and Baker Lake hotels

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

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The proposed area of the research activity is approximately 14,000 km², between 63.5°N and 64.5°N and 90°W and 97°W. This area falls within the Maguse River Uplands ecoregion covering the uplands south of Chesterfield Inlet and extending as far south as Churchill and includes much of the northwest coast of Hudson Bay. The Maguse River upland ecoregion is classified as having a low arctic ecoclimate. Coastal climate is moderated by the open waters of Hudson Bay during the late summer and early fall prior to freeze-up when damp foggy weather is common. The mean annual precipitation ranges 250-400 mm with more than 400 mm occurring south of Arviat. Temperature and precipitation increase to the south of the ecoregion. The region is associated with areas of continuous permafrost with medium ice content and with Turbic Cryosolic soils. Unfrozen Organic (Mesisol) and Regosolic soils also occur in this ecoregion. Crystalline Archean massive rocks form broad, sloping uplands and lowlands. Hummocky bedrock outcrops covered with discontinuous acidic, sandy, granitic tills are dominant. Prominent fluvioglacial ridges (eskers) also occur. Wetlands make up 25-50% of the land area and are characteristically lowland low- and high-centred polygon fens.

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It is characterized by a cover of shrub tundra vegetation. Dwarf birch, willow, and alder occur on warm, dry sites; poorly drained sites are dominated by willow, sphagnum moss, and sedge. Wildlife includes barren-ground caribou, arctic fox, weasel, arctic ground squirrel, and lemming. Bird species include willow ptarmigan, snowy owl, and rough-legged hawk. Waterfowl, particularly sea ducks, snow geese, swans, Canada geese and shorebirds are common in the coastal areas. White (beluga) whale and seals inhabit coastal waters. The Barren Ground population of caribou is considered a Species at Risk.

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The Hamlets of Baker Lake and Chesterfield Inlet are situated within the boundaries of the proposed survey area. The Hamlet of Rankin Inlet is located approximately 90 km south of the survey area. The helicopter used for collecting lake sediment and water samples will be based in Rankin Inlet for five working days and Baker Lake for five working days. Sample collection will be carried out by a crew of five consisting of a pilot, GSC employee, university professor, Ph.D. student and wildlife monitor. Food and lodging for the university researchers, helicopter pilot and Geological Survey of Canada (GSC) employee will be purchased from one or both communities of Baker Lake and Rankin Inlet.

Miscellaneous Project Information

Emergency Response PlanSpills Contingency PlanWildlife Monitoring and Management Plan

[illegible]

Local knowledge will be employed to avoid archaeological and culturally significant sites throughout the survey. Palaeontological components of surface and bedrock geology will not be impacted by operations as the helicopter will only be landing on water, airports and one or two fuel cache locations. Effects on subsistence harvesting, tourism, trapping and guiding operations will be minimized by consulting with local authorities in advance of the commencement of survey operations. Daily flight plans will be adjusted as needed. As the survey operations are entirely airborne, local and regional traffic patterns will not be affected. Ongoing consultation with the communities before and during survey operations is designed to avoid negative effects on Human Health, including physical, social, psychological, and spiritual effects.

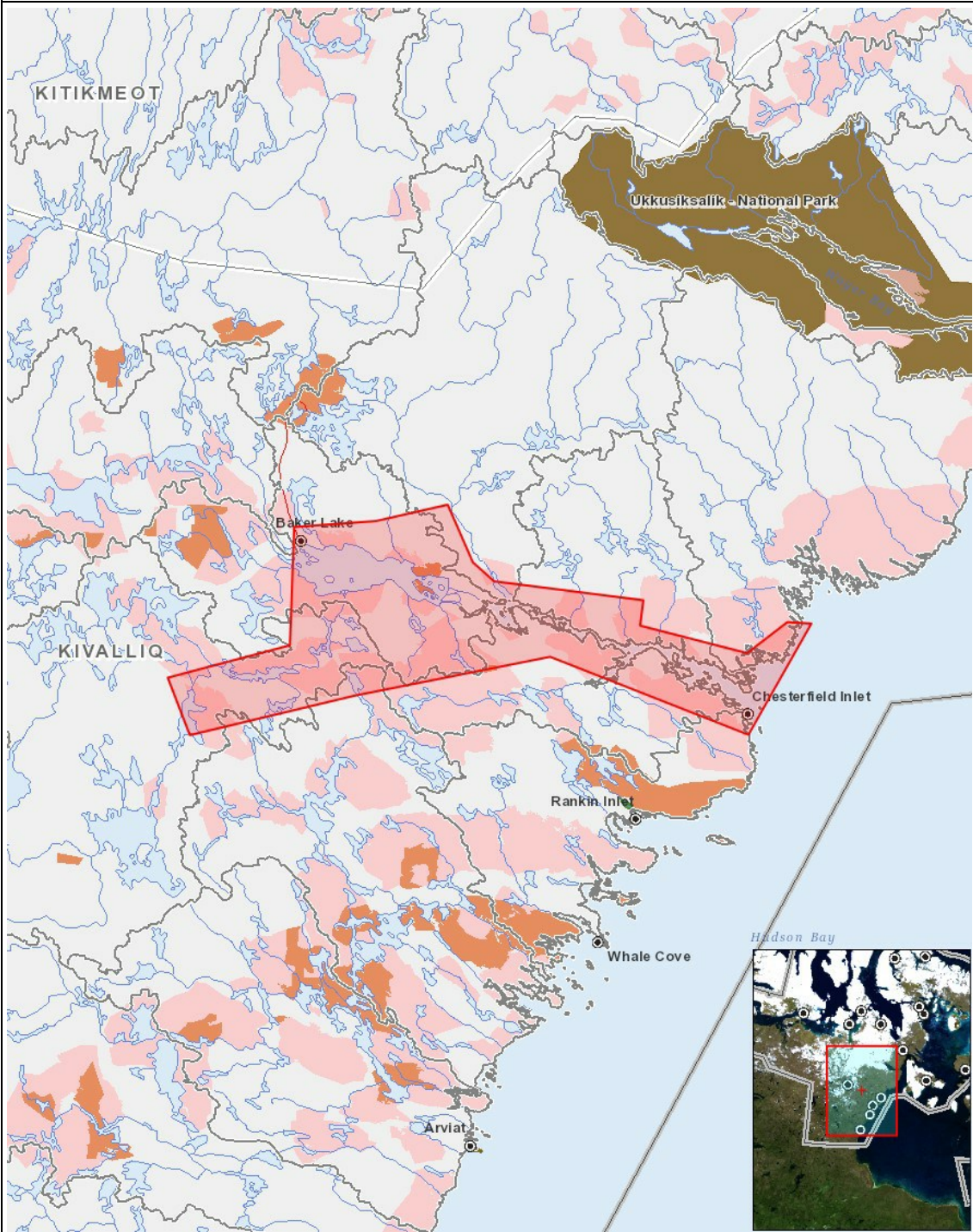
Cumulative Effects

Impacts on the physical and biological environments will be localized, of low-magnitude, reversible and fall within the approximately ten-day period of the proposed geological field work; the cumulative impacts on the physical and biological environments will therefore be minimal. Based on helicopter fuel consumption of 113.6 litres per hour for the approximately 40 hours that the helicopter will fly to collect bedrock samples and make observations, greenhouse gas emissions will be about 10.7 metric tons, equivalent to 2.4 to 3.3 gasoline-powered vehicles driven for one year (Natural Resources Canada Greenhouse Gas Equivalencies Calculator; United States Environmental Protection Agency Greenhouse Gas Equivalencies Calculator).

Impacts

$\omega_{\Delta} \Delta^{\epsilon_b} C D \sigma^{-\epsilon_r} C \quad d \rho \cap \Gamma D C \dot{\sigma}^C D^C \quad d^b D^{\epsilon_b} C D \rho L \downarrow^C$

[illegible]
$$(P = \langle b \rangle \Delta \langle P \cap \langle a \rangle \langle b \rangle \rangle^C, N = \langle b \rangle \langle P \rangle \langle \langle D \rangle \langle a \rangle \langle b \rangle \rangle^C \langle \langle D \rangle \langle P \rangle \rangle \langle b \rangle \langle \langle D \rangle \langle a \rangle \langle P \rangle \rangle^C \rightarrow, M = \langle b \rangle \langle P \rangle \langle \langle D \rangle \langle a \rangle \langle b \rangle \rangle^C \langle \langle D \rangle \langle P \rangle \rangle \langle b \rangle \langle \langle D \rangle \langle a \rangle \langle b \rangle \rangle^C \rightarrow, U = \langle b \rangle \langle P \rangle \langle \langle a \rangle \langle P \rangle \rangle \langle b \rangle)$$



List of Project Geometries

1 polygon Areas covered by proposed field work and legacy sample research in 2023