



## Demande de la CNER faisant l'objet d'un examen préalable #126154

### Western Hudson Bay geoscience for infrastructure project

**Type de demande :** New

**Type de projet:** Scientific Research

**Date de la demande :** 3/10/2025 1:24:43 PM

**Period of operation:** from 2025-06-01 to 2027-12-31

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## DÉTAILS

## **Description non technique de la proposition de projet**

Anglais: This is a request for the continuation of the Western Hudson Bay geoscience for infrastructure project (NIRB #16YN040). While keeping Rankin Inlet as one of our main study sites, we would now like to expand our work more south, in the vicinity of Arviat. All proposed methods in this new field area are the same as the methods documented in the existing project (16YN040) and described herein. This will allow us to have a South-North transect of representative and various conditions. Methods would include:1) Shallow drillings (0-3 m) with light portable drilling tools and potentially taking advantage (if any on site) of an Air Track drill (10-20 m) typically used in arctic communities for construction work (pile installation);2) Permafrost coring (0-3 m);3) Instrumentation (ground temperature sensors) in those boreholes;4) Ground-based geophysical surveys (electrical and electromagnetics surveys);5) Drone imagery;6) Site visits to validate remote sensing products. Environmental impact is estimated to be very low, and no long-term environmental impacts are expected. The proposed work will not have any important impact on wildlife or on the major habitats that support the wildlife. No temporary camp will be installed. All work will be conducted based out of Arviat with surveys, samplings and instrumented site locations accessed daily by truck or ATVs and at a walking distance from the ATV/road network. Specific sites would be revised based on field conditions and interest by the community. There will be no operations within Inuit Owned Lands. No helicopter would be used.

Français: Il s'agit d'une demande de poursuite du projet de géosciences pour l'infrastructure de l'ouest de la baie d'Hudson (NIRB #16YN040). Tout en gardant Rankin Inlet comme l'un de nos principaux sites d'étude, nous aimerais maintenant étendre notre travail plus au sud, dans les environs d'Arviat. Toutes les méthodes proposées dans ce nouveau domaine sont les mêmes que celles documentées dans le projet existant (16YN040) et décrites dans le présent document. Cela nous permettra d'avoir un transect Sud-Nord de conditions représentatives et diverses. Les méthodes comprendraient :1) Forages peu profonds (0 à 3 m) avec des outils de forage légers et pouvant tirer parti (le cas échéant sur place) d'une foreuse Air Track (10 à 20 m) généralement utilisée dans les collectivités arctiques pour les travaux de construction (installation de pieux);2) carottage du pergélisol (0-3 m);3) l'instrumentation (capteurs de température du sol) dans ces trous de forage;4) Levés géophysiques au sol (levés électriques et électromagnétiques);5) Imagerie de drone;6) Visites sur place pour valider les produits de télédétectionL'impact environnemental est estimé très faible et aucun impact environnemental à long terme n'est prévu. Les travaux proposés n'auront pas d'impact important sur la faune ou sur les principaux habitats qui abritent la faune. Aucun camp temporaire ne sera installé. Tous les travaux seront effectués à partir d'Arviat avec des relevés, des échantillonnages et des emplacements de sites instrumentés accessibles quotidiennement par camion ou VTT et à distance de marche du réseau de VTT et de route. Des sites particuliers seraient révisés en fonction des conditions du terrain et de l'intérêt de la communauté. Il n'y aura pas d'exploitation sur les terres appartenant aux Inuits. Aucun hélicoptère ne serait utilisé.

**Personnel**

Personnel on site: 7

Days on site: 15

Total Person days: 105

Operations Phase: from 2025-06-01 to 2027-12-31

## Activités

Emplacement	Type d'activité	Statut des terres	Historique du site	Site à valeur archéologique ou paléontologique	Proximité des collectivités les plus proches et de toute zone protégée
Zone Arviat	Researching	Municipal	The hamlet is the second largest community in Nunavut with 2864 residents, and is located on the western shores of Hudson Bay, approximately 200km north of Churchill, Manitoba. Arviat remains closely tied to its traditional Inuit roots, and in addition to having a vibrant arts industry is also becoming a centre of mining training and employment for the Kivalliq Region.	Parks Canada:Arvia'juaq (Sentry Island 61°10'N 093°51'W), an island in Hudson Bay, is located close to Arviat. It is a National Historic Site of Canada and a Caribou Inuit (Paallirmiut) summer camp site. Qikiqtaarjuk, is a small peninsula, just north of Arviat, that faces Arvia'juaq. Like Arvia'juaq, Qikiqtaarjuk contains many Paallirmiut artifacts, and both are considered ritual, spiritual, and sacred sites.	Sites we are interested in would fall within a 30km radius of the Arviat hamlet; mostly in the North and West of Arviat, along the existing road network.

### Engagement de la collectivité et avantages pour la région

Collectivité	Nom	Organisme	Date de la prise de contact
Arviat	Mayor Joe Savikataaq Jr	Hamlet of Arviat	2015-02-24
Arviat	Nicole Issakiark	Arviat Hunters and Trappers Organization	2025-02-14
Rankin Inlet	Luis Manzo	Kivalliq Inuit Association	2025-02-12
Rankin Inlet	Andre Aokaut	Kangiqliniq Hunters and Trappers	2025-02-12

## Autorisations

Indiquez les zones dans lesquelles le projet est situé:

Autorisations

Organisme de régulation	Description des autorisations	État actuel	Date de l'émission/de la demande	Date d'échéance
Institut de recherche du Nunavut	Scientific Research Licence: request for renewal of 03_009_24R-M	Active		

## Project transportation types

Transportation Type	Utilisation proposée	Length of Use
Land	truck and ATV	

## Project accomodation types

Collectivité

## Utilisation de matériel

Équipement à utiliser (y compris les perceuses, les pompes, les aéronefs, les véhicules, etc.)

Type d'équipement	Quantité	Taille – Dimensions	Utilisation proposée
Light drilling machine	1	0.5X0.5m	Drilling permafrost cores at depth up to 3 meters
Drill	1	3X3m	Large permafrost drilling equipment, typically used for installing piles
Geophysical equipment	1	1X1m	System is operated on the ground by team on foot, for electrical resistivity
Drone	1	1x1	Study site overview , digital elevation model, and thermal imagery
car	2	3x2	Travelling around Rankin Inlet and Arviat communities
ATV	4	1.5x1.5	Travelling around Rankin Inlet and Arviat communities
Light drilling machine (battery)	1	2x2m	Drilling permafrost cores at depth up to 3 meters, borehole equipped with ground temperature sensors
Geophysical equipment	1	0.30x3 m	System is operated on the ground by team on foot, for electromagnetic surveys

Décrivez l'utilisation du carburant et des marchandises dangereuses

Décrivez l'utilisation de carburant :	Type de carburant	Nombre de conteneurs	Capacité du conteneur	Quantité totale	Unités	Utilisation proposée
Gasoline	fuel	2	20	40	Liters	engines

Consommation d'eau

Quantité quotidienne (m3)	Méthodes de récupération de l'eau proposées	Emplacement de récupération de l'eau proposé
0		

# Déchets

## Gestion des déchets

Activités du projet	Type des déchets	Quantité prévue	Méthode d'élimination	Procédures de traitement supplémentaires
Researching	Déchets combustibles	50kg	Municipal	NA
Researching	Eaux grises	100L per person per day (=10500L)	Municipal	NA
Researching	Déchets non combustibles	50Kg	Municipal	NA
Researching	Eaux usées (matières de vidange)	100L per person per day (=10500L)	Municipal	NA

## Répercussions environnementales :

Environmental impact is estimated to be very low, and no long-term environmental impacts are expected. The proposed work will not have any important impact on wildlife or on the major habitats that support the wildlife. No temporary camp will be installed. All work will be conducted based out of Arviat with surveys, samplings and instrumented site locations accessed daily by truck or ATVs and at a walking distance from the ATV/road network. Specific sites would be revised based on field conditions and interest by the community. There will be no operations within Inuit Owned Lands. No helicopter would be used.

# **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**

#### **Description de l'environnement existant : Environnement physique**

Arviat lies within the Western Churchill Province of the Canadian Shield and the continuous permafrost zone. Arviat is located on an esker ridge along the southern shore of the harbour. Other surficial geology units include marine deposits, which includes raisedbeach ridges, thin sheets of sand representing emergentcoastal reworking of marine mud and silty sand, and abandonedtidal flats with peat cover. The terrain is slightly rollingwith a general increase in elevation westward awayfrom the coast. Although the townsite on the esker ridge isabout 10 m above mean sea level, the built-up area is fairlyflat. An extensive shallow wetland covers alarge part of the subtle depression between the two eskerridges. Much of the wetland has been capped with gravelpads for construction of housing and infrastructure.

#### **Description de l'environnement existant : Environnement biologique**

#### **Description de l'environnement existant : Environnement socio-économique**

The hamlet is the second largest community in Nunavut with 2864 residents, and is located on the western shores of Hudson Bay, approximately 200km north of Churchill, Manitoba. Arviat remains closely tied to its traditional Inuit roots, and in addition to having a vibrant arts industry is also becoming a centre of mining training and employment for the Kivalliq Region.Arvia'juaq (Sentry Island 61°10'N 093°51'W), an island in Hudson Bay, is located close to Arviat. It is a National Historic Site of Canada and a Caribou Inuit (Paallirmiut) summer camp site. Qikiqtaarjuk, is a small peninsula, just north of Arviat, that faces Arvia'juaq. Like Arvia'juaq, Qikiqtaarjuk contains many Paallirmiut artifacts, and both are considered ritual, spiritual, and sacred sites.

#### **Miscellaneous Project Information**

Community engagement events (meeting and radio show) took place in Arviat in February 2025, followed by a virtual meeting with the Hamlet of Arviat. Good feedback was received with no concerns on the project.

#### **Identification des répercussions et mesures d'atténuation proposées**

In addition to the Environmental impact section, below are specific impact related to the usage of machines: -Light Drilling machine for permafrost coring: Disturbance to the surrounding vegetation would be minimized by laying plywood and/or a tarp on the ground surface. Shallow drilling sometimes requires the use of water, but all water is returned to the ground, and nothing is added to the water. Permafrost drill holes would be fill with sand and the vegetation cover kept and put back in place to avoid tripping and thawing of the ground. Monitoring stations (PVC pipes about 3' height could be installed in the holes and

removed at the end of the project). - Ground geophysics: These surveys are conducted by one to three people (tools are either stationary on the ground or moved by walking along transects). The survey devices use electrical or electromagnetic sensing technology to produce an image of the ground below the surface. Surveys are non-invasive and involve no disturbance of the land. -All drone flights would be conducted outside of aerodrome areas as required by Nav Canada for a pilot with a basic certification. A pilot with a basic certification to fly this type of drones (more than 250 grams and less than 25 kg) will be part of the field team. All flights would also be conducted to avoid any disturbance with caribou and we would make sure to stay away from any wildlife or private cabins.

### **Répercussions cumulatives**

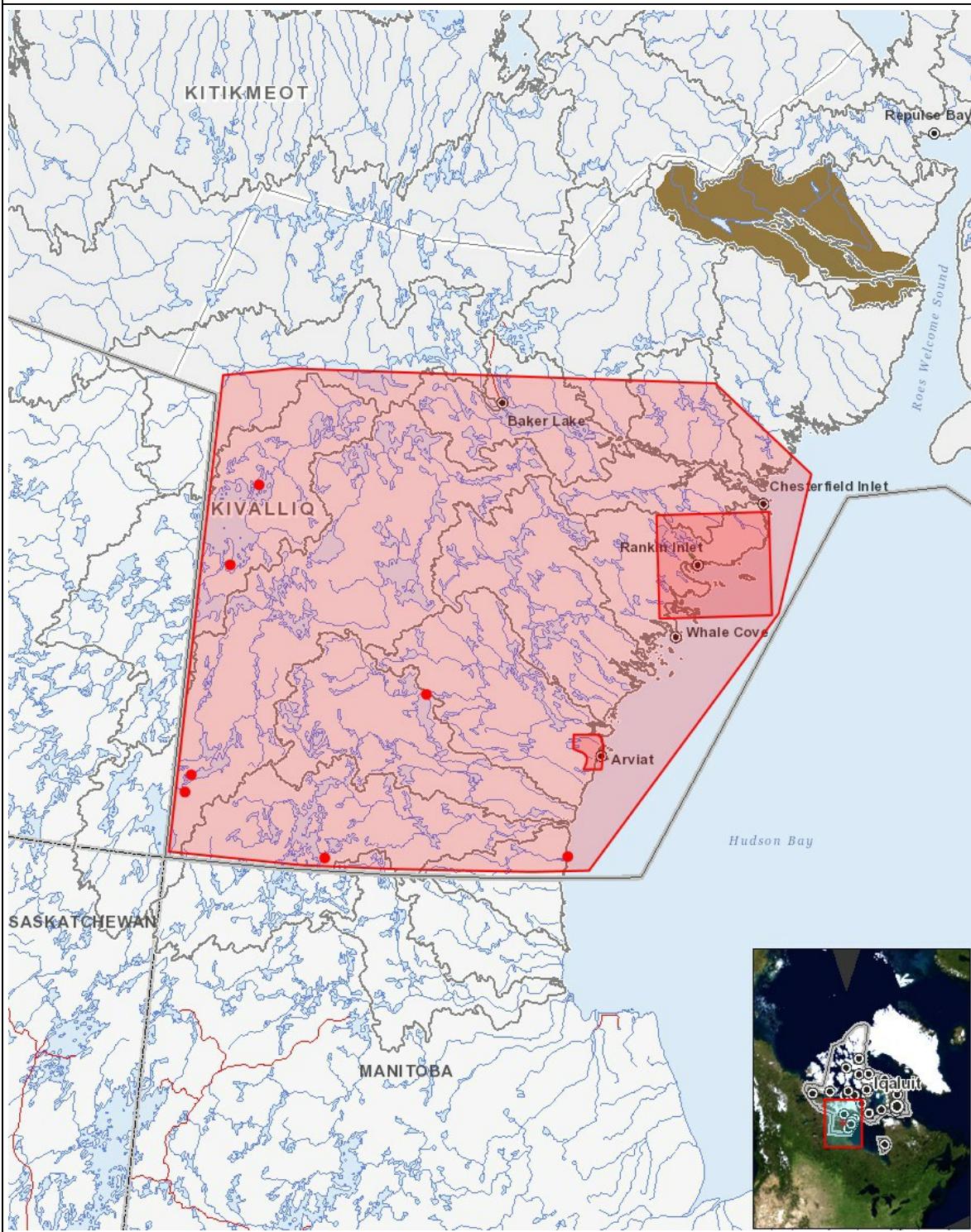
# Impacts

## Identification des répercussions environnementales

PHYSICAL																		
Designated environmental areas																		
Ground stability																		
Permafrost																		
Hydrology / Limnology																		
Water quality																		
Climate conditions																		
Eskers and other unique or fragile landscapes																		
Surface and bedrock geology																		
Sediment and soil quality																		
Tidal processes and bathymetry																		
Air quality																		
BIOL OGIC AL																		
Noise levels																		
Vegetation																		
Wildlife, including habitat and migration patterns																		
Birds, including habitat and migration patterns																		
Aquatic species, incl. habitat and migration/spawning																		
Wildlife protected areas																		
SOCIO - ECONOMIC																		
Archaeological and cultural historic sites																		
Employment																		
Community wellness																		
Community infrastructure																		
Human health																		

(P = Positive, N = Négative et non gérable, M = Négative et gérable, U = Inconnue)

## Site du projet



## Liste des géométries de projet

1	polygon	zone_rankin
2	polygon	Project hull
3	polygon	Zone Arviat
4	point	Arctic Haven wilderness lodge/Ennadai Lake
5	point	Henik Lake Adventure/Nueltin Lake camp
6	point	Kasba Lake Lodge/Tabane Lake outpost
7	point	Henik Lake Adventure/Henik Lake camp
8	point	Henik Lake adventure/Kuuglik Bear camp
9	point	Dubawnt camp/tukto lodge (south Dubawnt)
10	point	Dubawnt camp/tukto lodge (north Dubawnt)

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