



NIRB Application for Screening #125873

Mapping Pearya Terrane

Application Type: New

Project Type: Scientific Research

Application Date: 1/22/2024 4:37:56 PM

Period of operation: from 0001-01-01 to 0001-01-01

Proposed Authorization: from 0001-01-01 to 0001-01-01

Project Proponent: Thomas Hadlari
Geological Survey of Canada
3303 33 St NW
Calgary Alberta T2L 2A7
Canada
Phone Number:: 4032927018, Fax Number::

DETAILS

Non-technical project proposal description

English: The proposed research project "Mapping Pearya Terrane", in collaboration with German Federal Institute for Geosciences (BGR), is a continuation of a long-term study of the geological history of the Canadian Arctic Islands. Through sampling at faults, researchers are looking to model how the ancient continents collided to form the modern Arctic archipelago. Sampling for metal content of black shales would help researchers to learn more about the initial presence and subsequent movement of naturally-occurring metals as a consequence of modern climate change. This project would also produce modernized and updated bedrock maps of northern Ellesmere Island. The research team, led by Dr. Thomas Hadlari, Geological Survey of Canada (NRCan), plans to setup a camp at Yelverton Inlet for approximately 2 weeks (stage 1), in early July, 2024, with no more than 9 personnel on site. We hope to employ the services and expertise of a wildlife monitor from Grise Fiord. There would be a 40 drum fuel cache for a helicopter. We would use the helicopter for daily transportation to rock outcrop sites. Scientists will walk up to 10km per day, taking photos, GPS or other measurements, and samples of fist-sized surface rocks sometimes using a small rock hammer. Samples will be analyzed for chemical and mineral content. We will also collect bread-loaf-sized samples of peat. Researchers would examine peat layers for remains for plants (macrofossils, pollen, spores) that would tell them what vegetation has been growing in the area over time and how it has changed due to climate change. A second stage of 1 week would be based at the Eureka weather station, and similarly visiting sites by helicopter. There is no drilling or blasting. There could be potential impacts associated with storing fuel on the land. In the case of a spill, the contaminated soil will be removed by shovel and a bucket of contaminated soil will be removed from site for proper disposal. If large spill occurs, CIRNAC inspectors will be advised. The crew will take photographs and coordinates of the spill site. Other environmental impacts are largely from the use of a helicopter, mainly noise. To decrease stress on animals, we will follow the recommended altitude for aircraft by the Government of Nunavut of 610 meters during point-to-point travel. In addition, we will provide a wide berth to any animals spotted, including migratory birds. The field camp, 9 persons or less, will also impact the environment with the use of water and the production of waste. We will have safety protocols in place for predatory wildlife. Data collected and generated will be stored in internal databases at the GSC. These are structured to include samples, lab and paleontological data. All results, publications, maps, and data produced by GSC research are made available publicly, for free, and will be shared upon release. It often takes several years for results to be published, we would provide updates as new information becomes available. We hope to return to Grise Fiord to present preliminary results in 2025.

French: Le projet de recherche proposé « Mapping Pearya Terrane », en collaboration avec l'Institut fédéral allemand des géosciences (BGR), s'inscrit dans la continuité d'une étude à long terme de l'histoire géologique des îles de l'Arctique canadien. Grâce à l'échantillonnage au niveau des failles, les chercheurs cherchent à modéliser la façon dont les anciens continents sont entrés en collision pour former l'archipel arctique moderne. L'échantillonnage de la teneur en métaux des schistes noirs aiderait les chercheurs à en apprendre davantage sur la présence initiale et le mouvement ultérieur des métaux naturels en conséquence du changement climatique moderne. Ce projet permettrait également de produire des cartes modernisées et mises à jour du substrat rocheux du nord de l'île d'Ellesmere. L'équipe de recherche, dirigée par le Dr Thomas Hadlari, de la Commission géologique du Canada (RNCAN), prévoit installer un camp à Yelverton Inlet pendant environ 2 semaines (étape 1), au début de juillet 2024, avec un maximum de 9 personnes sur place. Nous espérons avoir recours aux services et à l'expertise d'un moniteur de la faune de Grise Fiord. Il y aurait une cache de carburant de 40 barils pour un hélicoptère. Nous utiliserions l'hélicoptère pour le transport quotidien vers les sites d'affleurements rocheux. Les scientifiques parcourront jusqu'à 10 km par jour, prenant des photos, des mesures GPS ou autres, et des échantillons de roches de surface de la taille d'un poing, parfois à l'aide d'un petit marteau. Les échantillons seront analysés pour leur contenu chimique et minéral. Nous collecterons également des échantillons de tourbe de la taille d'un pain. Les chercheurs examineraient les couches de tourbe à la recherche de restes de plantes (macrofossiles, pollen, spores) qui leur indiqueraient quelle végétation a poussé dans la région au fil du temps et comment elle a changé en raison du changement climatique. Une deuxième étape d'une semaine serait basée à la station météo d'Eureka, et de la même manière visiterait des sites en hélicoptère. Il n'y a ni forage ni dynamitage.

Inuktitut: ᐅᑦᓴᕐᕋᕐ ᖃᐅᔨᕐᕐᕐᕐ ᐱᕋᕆᐸᕐᕐ Mapping Pearya Terrane, ᐱᕋᕆᕐᕐᕐᕐᕐ German ᐅᐱᕋᕐ
ᐱᕋᕆᕐᕐᕐᕐ ᐅᐱᕋᕐ ᖃᐅᔨᕐᕐᕐᕐ (BGR), ᐅᔨᔨᕐᕐ ᐸᐅᐅᔨᕐᕐᕐ ᖃᐅᔨᕐᕐᕐᕐ ᐅᐱᕋᕐ ᐸᐅᐅᔨᕐᕐᕐ ᐅᐱᕋᕐ

Post-Closure Phase: from to

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Yelverton Inlet camp site	Camp	Crown	This is a known landing site for Twin Otter aircraft. The Yelverton Inlet site was used for a camp and fuel cache in 2017 (and other projects in prior years).	There are no known archeological or paleontological sites at the Yelverton Inlet air strip.	Hundreds of kilometres north of Grise Fiord. Outside and west of Quttinirpaaq national park.
RSA for the Yelverton Inlet camp	Researching	Crown	The majority of our study area is Crown land. There are a few sites within Quttinirpaaq National Park. There are Inuit-owned lands near Buchanan Lake.	There is a fossil forest near Buchanan Lake, but it is not part of our proposed study and we intend to visit different sites in the vicinity of Buchanan Lake. Otherwise, our study of rock outcrops does not overlap with archeological or paleontological sites of value.	Hundreds of kilometres north of Grise Fiord. Mostly west of, but there are a few sites in Quttinirpaaq National Park.

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Grise Fiord	Susie Qamaq	Iviq HTO	2023-12-11

Authorizations

Indicate the areas in which the project is located:

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Government of Nunavut, Nunavut Research Institute	NRI science licence, in-prep	Not Yet Applied		
Government of Nunavut, Nunavut Research Institute	NRI Paleo licence, in-prep	Applied, Decision Pending		
Indigenous and Northern Affairs Canada	CIRNAC land use for the fuel depot, 40 drums at Yelverton Inlet	Applied, Decision Pending		
Nunavut Water Board	Water licence, in-prep	Not Yet Applied		
Parks Canada	Parks permit, in-prep	Not Yet Applied		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Twin Otter airplane and Helicopter	
Land	Foot	

Project accomodation types

Temporary Camp

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Helicopter	1	Bell Long Ranger	Transport scientists to field sites on a daily basis. Stationed at Yelverton Camp first, and then Eureka second.
Hand tools	5	20 lb	Rock hammers, measuring sticks, GPS

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Aviation fuel	fuel	40	208	8320	Liters	Aviation Fuel is for the helicopter stationed at the Yelverton camp.
Propane	fuel	2	20	40	Lbs	For the cook stove

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	By hand with a rock Pail/ 5 gallon bucket	Unnamed lake next to the camp site.

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Camp	Greywater	20 L per day	Pit dug by hand and shovel.	Back-filled with soil.
Camp	Sewage (human waste)	2 cubic metres	Pit dug by hand and shovel.	Back-filled with soil.

Environmental Impacts:

There could be potential impacts associated with storing fuel on the land. In the case of a spill, the contaminated soil will be removed by shovel and a bucket of contaminated soil will be removed from site for proper disposal. If large spill occurs, CIRNAC inspectors will be advised. The crew will take photographs and coordinates of the spill site. Other environmental impacts are largely from the use of a helicopter, mainly noise. To decrease stress on animals, we will follow the recommended altitude for aircraft by the Government of Nunavut of 610 meters during point-to-point travel. In addition, we will provide a wide berth to any animals spotted, including migratory birds. The field camp, 9 persons or less, will also impact the environment with the use of water and the production of waste. We will have safety protocols in place for predatory wildlife.

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 of Existing Environment: Physical Environment

Our main study area is northern Ellesmere Island. the RSA is a relatively large area that overlaps with Quttinirpaaq National Park. Our camp site at Yelverton Inlet is quite far outside of the park, and most of our work will be outside of the park. Our second site is the Weather Station at Eureka. Our LSAs are rock outcrops typically high on mountains and away from wildlife habitat, lakes, rivers, and marine areas in general. Our interest in old rocks means that we do not overlap with Archeological sites, nor such sites as the fossil forest near Buchanan Lake.

Description of Existing Environment: Biological Environment

Our work on rock outcrops typically on mountain sides will involve walking over vegetation. We avoid wildlife, wet lands, lakes, and marine areas.

Description of Existing Environment: Socio-economic Environment

Our study area and camp site is 100s of km from any community. We would avoid any culturally significant sites. There are no human health aspects to our study. We recognize that our study area falls within the hunting and travelling areas around Grise Fiord have contacted the HTA at Grise Fiord - we plan on hiring a wildlife monitor from Grise Fiord to accompany the camp at Yelverton Inlet.

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

We have a pretty small operation of less than 10 persons, typically working in groups of 2 or 3. We have hand tools such as small rock hammers and our samples fit in ziploc bags. We will direct the pilot to not disturb wildlife and we will keep our campsite clean.

Cumulative Effects

This is follow-up work to a similar camp at Yelverton Inlet in 2017. This work seems fairly minor, but the use of the twin otter landing strip will likely contribute to it being operational in the future.

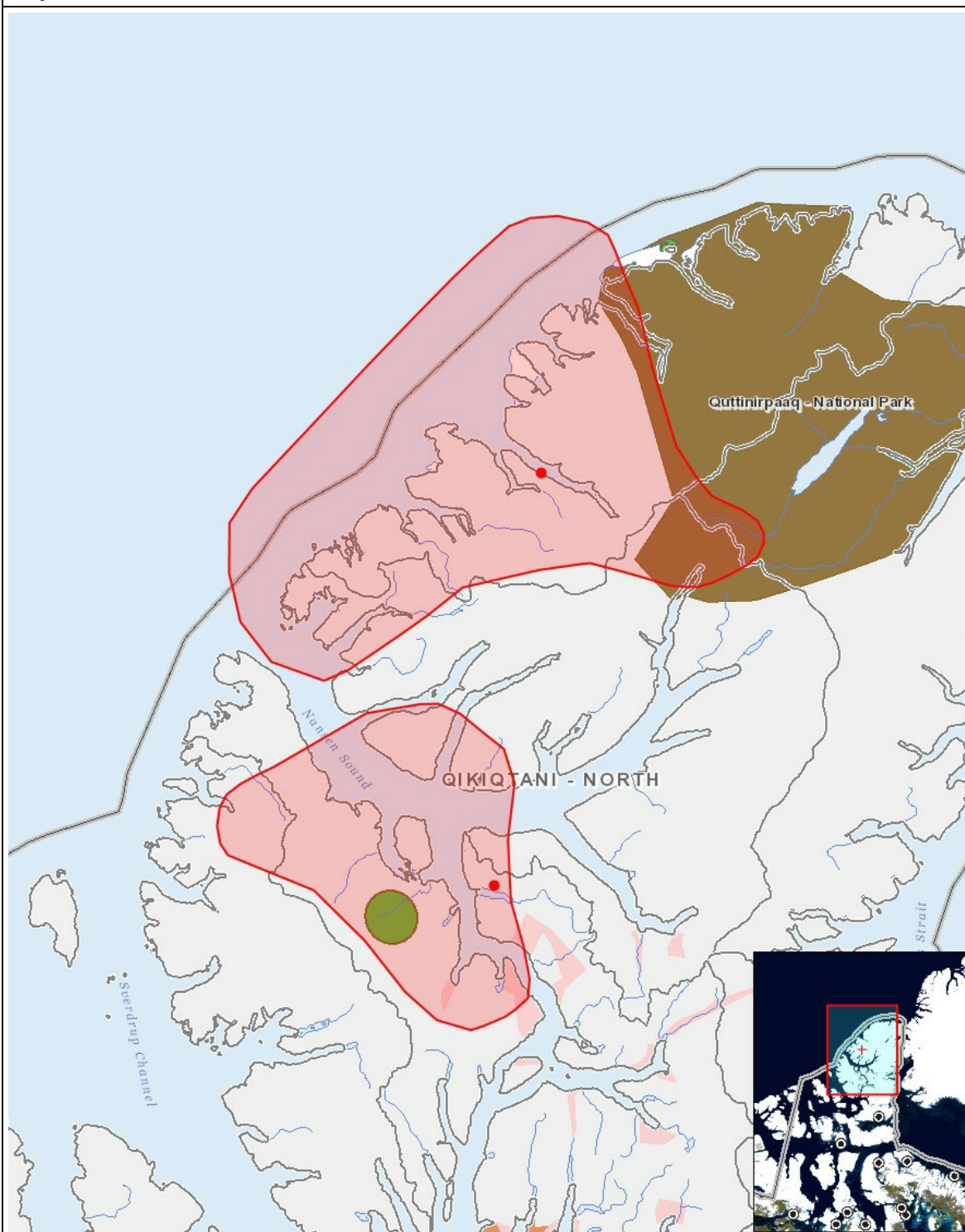
Impacts

Identification of Environmental Impacts

	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	Noise levels	BIOLOGICAL	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
Construction																									
Camp		-	-	-	-	-	-	-	-	M	-	-	-		M	-	-	-	-		-	-	-	-	-
Operation																									
Camp		M	-	-	-	-	-	-	-	M	-	-	M		M	-	-	-	-		-	P	-	-	-
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

- | | | |
|---|---------|----------------------------------|
| 1 | polygon | RSA for the Yelverton Inlet camp |
| 2 | point | Yelverton Inlet camp site |
| 3 | point | Eureka Weather Station site |