



## **NIRB Application for Screening #125697**

### **Water Resource Assessment for Coral Harbour**

**Application Type:** New

**Project Type:** Scientific Research

**Application Date:** 5/19/2022 10:45:31 AM

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

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

**Project Proponent:** Andrew Medeiros  
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## DETAILS

### Non-technical project proposal description

English: Water supply for Coral Harbour, Nunavut is sourced from a river-fed reservoir. There have been instances of high electrical conductivity, which raises concerns regarding saltwater intrusion from Hudson Bay. A team (Dr. Barret Kurylyk and Dr. Julia Guimond) from the Dalhousie Coastal Hydrology Lab plans to conduct a reconnaissance field campaign to characterise the river hydrodynamics and to investigate potential sources and pathways for saltwater, including via the river, the shallow subsurface, and sea spray. The team will use non-invasive instruments to investigate the interactions between the bay and the river and to assess potential subsurface salinity dynamics. Loggers will be placed along the river to measure water level, salinity, and temperature, which will provide new understanding on coastal zone mixing in the river. Geophysical instruments will be used to measure the ground electrical resistivity to map where there are saltwater (low resistivity) and freshwater (high resistivity) zones. Surveys will be taken along the coastline and the riverbanks. Water samples will be collected to transport back to Halifax to assess the water chemistry and to fingerprint salt sources. Sensors may be used to measure total dissolved solids, dissolved oxygen, and other water quality parameters in the river. Collectively, these data will reveal the tidal dynamics in the river and help identify potential mechanisms for drinking water salinization. The first trip will be in early July (e.g. 5 days in Coral Harbour), and a potential follow-up trip will likely be undertaken later in the summer (late July to early August). Results will be shared with and interpreted for the community and Territory as desired.

French: L'approvisionnement en eau de Coral Harbour, au Nunavut, provient d'un réservoir alimenté par une rivière. Il y a eu des cas de conductivité électrique élevée, ce qui soulève des inquiétudes concernant l'intrusion d'eau salée de la baie d'Hudson. Une équipe (Dr Barret Kurylyk et Dr Julia Guimond) du Laboratoire d'hydrologie côtière de Dalhousie prévoit mener une campagne de reconnaissance sur le terrain pour caractériser l'hydrodynamique de la rivière et étudier les sources et voies potentielles d'eau salée, y compris via la rivière, le sous-sol peu profond, et embruns marins. L'équipe utilisera des instruments non invasifs pour étudier les interactions entre la baie et la rivière et pour évaluer la dynamique potentielle de la salinité souterraine. Des enregistreurs seront placés le long de la rivière pour mesurer le niveau d'eau, la salinité et la température, ce qui fournira une nouvelle compréhension du mélange de la zone côtière dans la rivière. Des instruments géophysiques seront utilisés pour mesurer la résistivité électrique du sol afin de cartographier les zones d'eau salée (faible résistivité) et d'eau douce (haute résistivité). Des levés seront effectués le long du littoral et des berges. Des échantillons d'eau seront prélevés pour être ramenés à Halifax afin d'évaluer la chimie de l'eau et d'identifier les sources de sel. Des capteurs peuvent être utilisés pour mesurer les solides dissous totaux, l'oxygène dissous et d'autres paramètres de qualité de l'eau dans la rivière. Ensemble, ces données révéleront la dynamique des marées dans le fleuve et aideront à identifier les mécanismes potentiels de salinisation de l'eau potable. Le premier voyage aura lieu au début de juillet (par exemple, 5 jours à Coral Harbour), et un voyage de suivi potentiel sera probablement entrepris plus tard au cours de l'été (de la fin juillet au début août). Les résultats seront partagés avec et interprétés pour la communauté et le territoire comme souhaité.

[illegible]

Operations Phase: from 2022-07-05 to 2022-07-25

## Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Water systems	Sampling sites	Municipal	Municipal water sources	None	Within municipal boundary
Coral Harbour	Researching	Municipal	Coral Carbour	N/A	Water system of Coral Harbour

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Coral Harbour	Leonie Pameolik	SAO	2021-05-19

# Authorizations

Indicate the areas in which the project is located:

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## Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Research Institute	Land and Water research permit	Applied, Decision Pending		
Nunavut Water Board	Use of water without a license	Applied, Decision Pending		

## Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Flying to coral harbour	
Land	walking	

## Project accomodation types

Community

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Soil resistivity meter	1	1ft x 0.2 ft	measure the ground electrical resistivity
water sampler	1	0.5 ft x 0.2 ft	basically a bucket on a stick

## Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Information is not available						

## Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	plastic sampling jar on a telescopic stick	River and lakes associated with primary and alternative water supply sources for Coral Harbour

# Waste

## Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Information is not available				

## Environmental Impacts:

None

# **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**

**Description of Existing Environment: Biological Environment**

**Description of Existing Environment: Socio-economic Environment**

**Miscellaneous Project Information**

**Identification of Impacts and Proposed Mitigation Measures**

**Cumulative Effects**

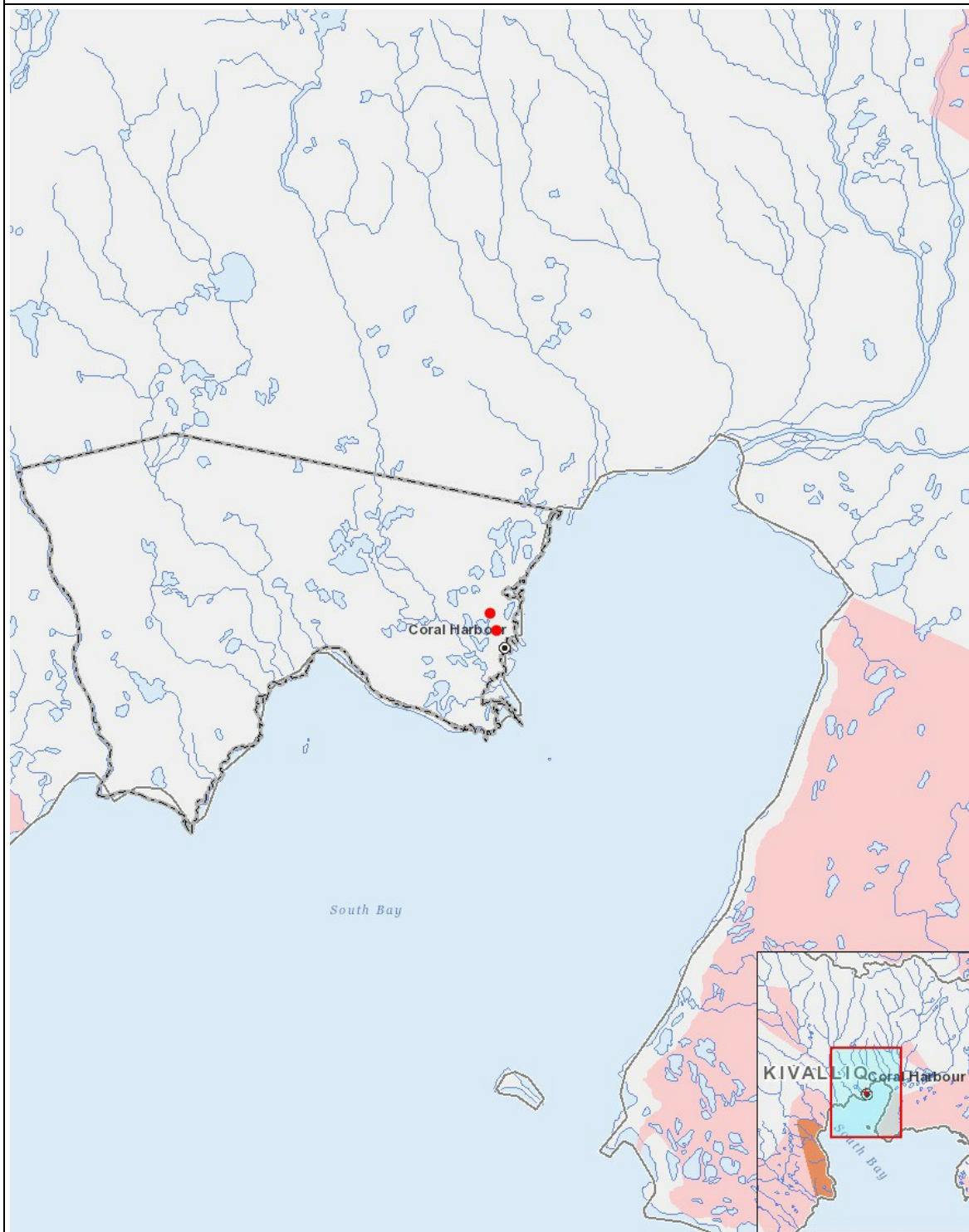
# Impacts

## 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
<b>Construction</b>																										
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<b>Operation</b>																										
Researching		-	-	-	-	P	-	-	-	-	-	-	-	-		-	-	-	-	-		-	P	-	P	-
<b>Decommissioning</b>																										
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(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

## Project Location



## List of Project Geometries

1	point	Coral Harbour
2	point	Water systems