



## **NIRB Application for Screening #126170**

### **Physiological response of soft-shell clam *Mya truncata* to spring microalgal blooms**

**Application Type:** New

**Project Type:** Scientific Research

**Application Date:** Tuesday, April 15, 2025

**Period of operation:** from 2025-05-15 to 2025-10-25

**Project Proponent:** Michelle Kamula  
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### Non-technical project proposal description

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Operations Phase: from 2025-05-15 to 2025-10-25

# Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Three coastal sampling sites will be selected to collect clams, water, and ice. No work will take place on Inuit owned lands	Sampling sites	Marine	Three sampling sites will be selected to collect clams, water, and ice. Exact sites will be selected based on scuba divers experience and accessibility to clams.	N/A	Near the community of Qikiqtarjuaq

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Qikiqtarjuaq	Billy Arnaquq	Nunavut Experience Outfitting	2025-01-15
Qikiqtarjuaq	Sammy Qappik	SCUBA Diver	2024-12-20
Qikiqtarjuaq	Pasa Aulaqiaq	Nattivak HTO	2025-01-28

# Authorizations

Indicate the areas in which the project is located:

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Fisheries and Oceans Canada	Licence to Fish for Scientific Purposes	Active	2025-04-03	2026-03-31
Nunavut Research Institute	Research licence under NRI. Waiting for NPC and NIRB review.	Applied, Decision Pending	2025-02-07	

## Project transportation types

Transportation Type	Proposed Use	Length of Use
Water	Local Inuit owned and operated snowmobiles will be used in winter and a local boat in July to reach sampling sites	

## Project accomodation types

Community

Other,

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Ski-doo	2	115 x 50 x50 inches	We plan to hire two ski-doods and komatiks, and local Inuit guides to operate the machines to reach our sampling sites. The Inuit guides will also our bear monitors while sampling on the ice.
Boat	1	25 feet	We will hire a local Inuit owned and operated Cuddy Cabin Aluminum Boat 25 footer boat to collect samples in open water
Ion Auger	2	47.69 x15.37 in	We will use a standard 10inch blade Ion battery operated auger to drill through sea ice to sample water underneath.
RBR Maestro CTD	1	60 inches long x 15 inches wide	A RBR Maestro CTD will be attached to a rope and lowered through the water column to just above the seafloor to collect measurements of the temperature, depth, conductivity, turbidity and fluorescence of the water.
Mark II Kovacs Ice Corer	2	100x9 cm	An ice corer will be used to collect ice core samples. The samples will be used measure ice algae biomass, taxonomy, nutrients, salinity, fatty acids, and highly branched isoprenoid (HBI's)
Niskin water sampler	2	5L	We will use a 5L Niskin water sampling bottle, attached to a rope and weight, to collect water throughout the water column. The water will be analyzed for nutrients, salinity, phytoplankton, chlorophyll a, particulate organic carbon, and highly branched isoprenoids.
Light Meter	1	5.5 × 3 x1.5	Used to measure the light at the sampling sight. Will be placed on a

			cooler while sampling takes place.
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#### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Acetone (90%)	hazardous	4	2	8	Liters	Acetone is used in the lab when conducting chlorophyll a concentration measurements, which is a common method to measure primary production in water.
Hydrochloric acid (5%)	hazardous	1	1	1	Liters	Used in the lab to clean glassware and forceps
Ethanol (70%)	hazardous	1	1	1	Liters	Used in the lab for cleaning and as part of the chlorophyll a analyses test.
Gasoline	fuel	25	20	500	Liters	Gasoline will be used to operate local Inuit owned and operated snowmobiles and boats.
10 % Formaldehyde	hazardous	6	5	30	Liters	Use to preserve clam tissue samples

#### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
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# Waste

## Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Scientific/International Polar Year Research	Hazardous	8 L	11 acetone and related glassware will be packaged and shipped according to the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.	Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used within the lab.
Scientific/International Polar Year Research	Hazardous	30 L	Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used in the lab and will be shipped back to DFO-Winnipeg.	The 10% formalin solution will be used to preserve samples. All samples and left over chemicals will be packaged and shipped to the Freshwater Institute for storage and if necessary, disposal.
Scientific/International Polar Year Research	Hazardous	1 L	Ethanol will be packaged and shipped according to the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.	Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used within the lab.
Scientific/International Polar Year Research	Hazardous	1 L	The diluted acid will be packaged and shipped according to the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.	Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. Chemicals will only be used in the lab at the research centre.

## Environmental Impacts:

We do not anticipate environmental impacts from our sampling work. Clams will be handpicking by a local Inuit diver and possibly digging during low tide. This means there will be no bycatch and that total number of clams sampled will not exceed our sample design of 25 per site per season. No scientific equipment will



be left in the water. The use of local snowmobiles and a local boat will require gasoline to operate. Snowmobiles will be fueled at the local COOP gas station, mitigating any potential spills from jerry cans. The local boat will require fueling which will take place in the harbor only when seas are calm. We will also provide spill absorbent clothes to the local boat operator to wipe up any potential fuel drops onto the boat.

# **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**

This project is funded by DFO's coastal environmental baseline program which aims to collect marine baseline data in anticipation of the proposed deep seaport in Qikiqtarjuaq. The marine environment where we will be working consists of coastal marine waters influenced by Baffin Bay. We will be sampling primarily from the land fast ice sea ice that forms between Baffin Island and Broughton Island. This landfast first year ice is considered stable with ice breakup usually occurring in early July.

### **Description of Existing Environment: Biological Environment**

Soft shell clams (*Mya truncata*) are abundant within the channel between Broughton Island, where the community of Qikiqtarjuaq is, and Baffin Island. This is owing to the sandy and mixed substrate seafloor and currents that flow through the north-south oriented channel which provides food to these filter feeding clams. This region is also known as a productive area for both sea ice algae in spring and phytoplankton in open water season, which likely also contributes to the abundant softshell clam population in the area.

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

Soft-shell clams are an important subsistence food for many people in Qikiqtarjuaq with the potential for a future local fishery. This project could provide future support by describing the reproductive cycle of the clams. Additionally, this project will employ a local Inuit SCUBA diver, and two Inuit field supports to collect clams in the spring and summer from four locations which may cost as much as \$10, 000 for their services. Sampling will take place with local Inuit guides. We will employ two Inuit guides per trip (\$180/guide/day) out on the ice for a maximum of eight sampling days. We will rent snowmobiles and komatiks directly from a local outfitter for a rate of \$250/day/snowmobile. During the spring field program, our project will provide \$2,880 in salaries and \$4000 for snowmobile rental. In July, we will rent a local Inuit owned and operated boat for sampling at a rate of \$2,350.00 for four sampling trips (\$9400). In total, anticipate that this project will contribute \$22, 280 in local revenue and employment within the community of Qikiqtarjuaq in 2025.

### **Miscellaneous Project Information**

### **Identification of Impacts and Proposed Mitigation Measures**

Impacts from this project will be minimal. Clams will be handpicked by a local Inuit scuba diver and possibly hand dug at low tide. This greatly reduces any disturbance to the seafloor and the potential of collecting unwanted bycatch. No scientific instrument (e.g., temperature and salinity profiler) or sampling equipment (e.g., water sampler, ice sampler) will be left unattended in the water. All equipment will return with researchers.

## **Cumulative Effects**

This project will contribute to baseline data collection as part of the Coastal Environmental Baseline program led by DFO. Baseline data will be used to assess any potential future environmental changes as a result of the proposed deep seaport and/or climate change. Additionally, this project will provide employment to local Inuit diver and outfitter. In total, we anticipate that this project will contribute \$22, 280 in local revenue and employment within the community of Qikiqtarjuaq in 2025.

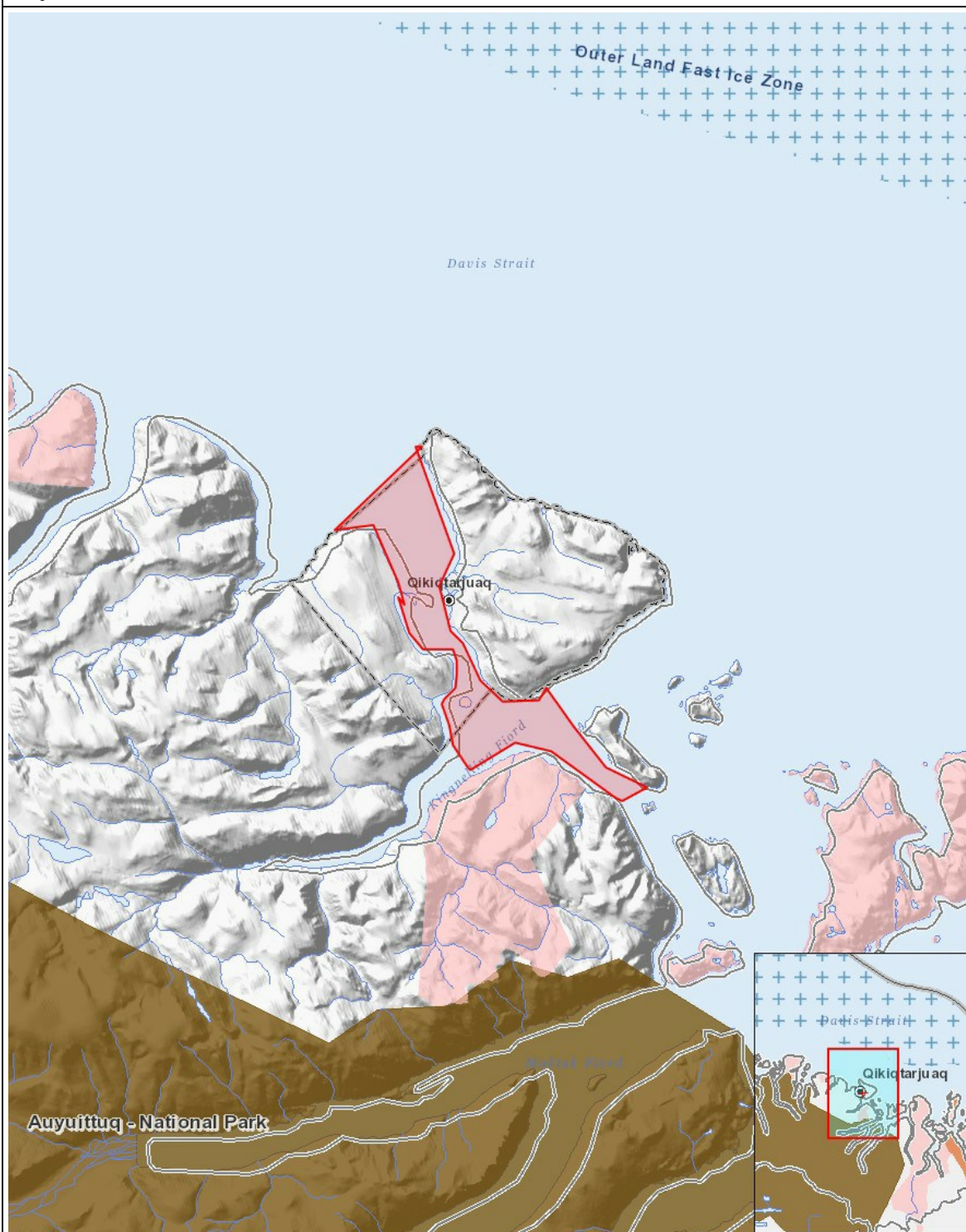
Impacts

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation																									
Sampling sites		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	U	-		-	P	-	-	-
Decommissioning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

## Project Location



## List of Project Geometries

- 1 polygon Three coastal sampling sites will be selected to collect clams, water, and ice. No work will take place on Inuit owned lands