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### Mapping nearshore coastal habitats and associated macroflora and fauna in the Qikiqtarjuaq area

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Scientific Research

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**Period of operation:**

from 2024-08-07 to 2027-10-23

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Justine Sutherland  
Fisheries and Oceans Canada  
501 University Crescent  
Winnipeg Manitoba R3T2N6  
Canada  
ᐃᓴᓂᓕᓂᓪᐃᓪᓄᓪ: 431-334-2759, ᓴᓴᓂᓕᓂᓪᐃᓪᓄᓪ:

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ᖃᓕᓗᓴᓂᓂᓐ: The nearshore (<50 m) area of Qikiqtarjuaq will be mapped using time lapse photography in areas previously identified of interest to community members. High resolution images of the seafloor using a drop camera frame with lighting will be used to characterize and map benthic habitats and associated organisms. The main objectives of the project are to 1) classify benthic habitats, characterize associated flora and fauna and create distribution maps of benthic habitat types and organisms. 2) define habitat specific biological communities and functional attributes of those communities based on relationships between benthic habitat types and organism characteristics. Establishing this baseline will provide a benchmark to track future change to the habitats and organisms found in this area. The resulting distribution maps will help inform future Integrated Coastal Zone Management activities (e.g. port construction and areas that are important for local harvesting interests) in the region of Qikiqtarjuaq. Methods used to conduct this research include creating a georeferenced grid (200 x 200 m/cell) to indicate where sampling will take place. A drop camera frame with lighting will be lowered to the seafloor to capture time lapse images at each site. Complementary water quality profiles will be collected at each site by deploying a CTD attached to the camera frame. Images will then be downloaded and analysed for bottom type, the occurrence, type and percent cover of algae and identity and abundance (counts) of organisms. Results will be communicated through creation of annual plain-language reports/newsletter on results from habitat mapping surveys, summaries of biodiversity patterns based on sample identifications, oral presentations and discussion of results with the local HTA and community members (open house), and through other avenues such as local radio.

▷Δ&NDS: Le présent projet a pour objectif global de cartographier la région côtière de Qikiqtarjuaq en utilisant une caméra en mode prise en vue à réglage intermédiaire à des sites d'intérêt particulier aux membres de la communauté. Des images à haute résolution du fond de l'océan en utilisant une caméra tenue en place sur une charpente, seront utilisées pour caractériser et cartographier les habitats benthiques et les organismes dument présent. Les deux buts principale sont 1) de classier les habitats benthiques, caractériser la flore et la faune et créer une carte de distribution des habitats benthiques et d'organismes pertinents. 2) définir les communautés biologiques spécifiques aux habitats identifier ainsi que les attributs pratique de ces communautés baser sur la relation entre l'habitat benthiques et les caractéristiques des organismes. L'établissement de cet ensemble de données servira de point de référence pour la détection de changements futures des habitats et organismes dans la région de Qikiqtarjuaq. Les cartes de distribution vont fournir des informations indispensables pour des activités de gestion de zone côtières intégrer (par exemple la construction de port et la gestions d'endroits d'importance pour des chasseurs locaux) dans la région de Qikiqtarjuaq. Les méthodes de recherches pour ce projet comprennent entre autre, la création d'une grille géoréférencé (200m x 200m par carrée de grille) utiliser pour déterminer l'emplacement des échantillonnages. Une charpente à camera munie de lumière sera déployer au fond de la mer à partir d'un bateau afin de prendre des photos en mode prise en vue de réglage intermédiaire à chaque site d'échantillonnage. De façon complémentaire, des profile de qualité d'eau seront prise à chaque site à l'aide d'un instrument CTD accrocher à la charpente à caméra. Les images seront télécharger afin d'analyser le type de fond, la présence, le type et la quantité d'algues, le nombre de différents organismes, leurs identités et leur abondance pour les différents habitats. Les résultats du projet seront communiquer à la communauté de Qikiqtarjuaq en fournissant un rapport annuel en langage commun des retrouvailles du projet. Celui-ci comprendra les résultats de l'enquête cartographique, et un résumer des patrons de biodiversité selon les organismes et habitats identifier pendant l'enquête. Des présentations orales, des portes ouvertes et des entrevus à la radios seront également explorer afin de communiquer les résultats du projet et fournir un espace de discussions ouverte avec les organisations clés de la communauté.

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Personnel on site: 3  
Days on site: 15  
Total Person days: 45  
Operations Phase: from 2024-08-07 to 2027-10-23

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Qikiqtarjuaq OPP 2024 sampling area	Baseline data	Marine	2023 was the first year of field research related to the overarching OPP project in Qikiqtarjuaq in which several researchers took part in baseline data collection. No other historical information known	not known	within 15 km of Qikiqtarjuaq, NU

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boat	1	28 foot	The boat will be rented from a local community member and will be used to get from town to each of the selected sites to perform field work (capture photos)

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Gasoline	fuel	10	25	250	Liters	As much fuel as needed for the boat over a period of 10-12 sampling days. This will depend on the distance travelled and weather conditions.

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Despite mitigating risks, there is still a chance that equipment be lost during sampling and that there be potential damage to sea floor habitats due to inclement weather or equipment failure. These will be minimized as much as possible at all times throughout the project. Mitigation measures were used in previous work and showed to be very efficient.

# **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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This work will provide maps describing where potentially sensitive marine environments are located for use in future research and by the community for relevant activities and archival of knowledge.

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There is limited information on what the underwater biological environment is like around Qikiqtarjuaq and this project aims to generate a better knowledge of this.

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We already have a good relationship with the Qikiqtarjuaq Hamlet and MHTO, and have been encouraged by these organizations in doing this work to be able to provide the community with habitat maps as well as continue to generate employment over the duration of the project.

### Miscellaneous Project Information

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Potential impacts for this project are minimal since no waste is generated however there is always a chance that equipment is lost during sampling due to unforeseen circumstances such as snags underwater, etc. that could damage aquatic life, human error such as not tying equipment on tight enough or even equipment failure such as hardware breaking, housings holding cameras falling off the frame, etc. this will be minimized by always working slowly and checking attachment points for gear, avoiding dragging the camera frame on the sea floor to avoid snags and damaging aquatic life, and only working in good/safe weather conditions to minimize potential for dragging (allowing boat captain to keep boat steady).

## Cumulative Effects

## Impacts

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$$(P = \langle b \rangle \Delta \cap \Gamma \cap \Gamma^a \Delta^b \Gamma^c, N = \langle b \rangle \Delta^a \Gamma^b \Gamma^c \Delta \Gamma^a \Delta^b \Gamma^c \langle c \rangle \Delta \Gamma^b \Gamma^c \Delta \Gamma^a \Delta^b \Gamma^c \Delta, M = \langle b \rangle \Delta^a \Gamma^b \Gamma^c \Delta \Gamma^a \Delta^b \Gamma^c \langle c \rangle \Delta \Gamma^b \Gamma^c \Delta \Gamma^a \Delta^b \Gamma^c \Delta, U = \langle b \rangle \Delta \Gamma^a \Delta^b \Gamma^c \Delta^b \Gamma^c)$$

## List of Project Geometries

1	polygon	Qikiqtarjuaq OPP 2024 sampling area
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