



NIRB Uuktuutinga Ihivriughikhamut #126462

Research Project: Collection and growth monitoring of sclerochronological organisms to understand hydro-ecological changes in Baffin Bay

Uuktuutinga Qanurittuq: New

Havaap Qanurittunia: Scientific Research

Uuktuutinga Ublua: Friday, July 3, 2026

Period of operation: from 2026-08-01 to 2029-10-31

Havauhikhaq Natasha Leclerc

Ikayuqtinga: Université Laval

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Canada

Hivayautit Nampanga:: 6475235994, Kayumiktukkut Nampanga::

QANURITTUT

Tukhiannaqtunik havaariyauyumayumik uqauhiuyun

Qablunaatitut: Collection and growth monitoring of sclerochronological organisms to understand hydro-ecological changes in Baffin Bay

Primary Applicant: Natasha Leclerc, Université Laval

Background and Justification

Phytoplankton (microalgae) provide essential ecosystem services, including carbon sequestration and supporting marine food webs. Their abundance and composition vary across seasons and years in response to nutrient availability, sea-ice cover, light, and temperature. Understanding how phytoplankton dynamics have changed over the past centuries can improve our knowledge of carbon cycling and food availability in Arctic ecosystems. Establishing baseline information for Qikiqtarjuaq is particularly important given ongoing environmental change, the planned industrial port development, and the importance of phytoplankton to traditional foods such as clams and fish. Phytoplankton influence ocean chemistry, making long-lived organisms that record chemical conditions during growth valuable archives of past environmental change. Clams and the coralline alga *Clathromorphum compactum* are examples of such organisms. They can live for decades to centuries and produce annual growth layers similar to tree rings. Analysis of these layers can provide insights into long-term changes in ocean chemistry and phytoplankton dynamics since industrialization.

Objectives

The project aims to collect clams and coralline algae for geochemical analyses to quantify temporal changes in phytoplankton dynamics in coastal regions of Baffin Bay near Qikiqtarjuaq. This will be achieved through:

- Collection of clams and thick coralline algal crusts around Qikiqtarjuaq.
- Deployment of a one-year coralline algae growth-monitoring platform.

In collaboration with other research teams operating near Qikiqtarjuaq, we will minimize environmental impacts and reduce demands on community members participating in research activities.

Methods and Timeline

Fieldwork will begin in August 2026 and continue through October 2029, laying the foundation for future historical reconstructions of phytoplankton dynamics. Activities will be supported by Université Laval's Research Station and involve a team of 4–6 visiting scientists and, ideally, 4–6 community members. Work will involve near-monthly SCUBA dives and boat-based sampling.

1. Coralline algae survey and specimen collection (August–September 2026)

In conjunction with a kelp forest survey led by Camille Lavoie (NRI approved), we will conduct a coralline algae survey using drop-down cameras and SCUBA. Thick coralline algal crusts will be sampled opportunistically using a hammer and chisel, with a maximum of 100 samples collected per site. Clams will also be collected opportunistically throughout the project, and shells will be retained for geochemical analyses at Université Laval.

2. Coralline algae growth-monitoring platform

Following site selection, 100–120 small coralline algal crusts will be collected and marked with a non-toxic dye (e.g., alizarin) to establish the start of the growth experiment. Specimens will be attached using underwater cement to PVC plates secured to the seafloor with steel rods or rock bolts, depending on substrate type. Sensors measuring temperature, salinity, light, pH, and photosynthetically active radiation (PAR) will be attached to the platform and exchanged during near-monthly dives to reduce fouling-related measurement errors. During these visits, 8–10 coralline algal crusts will also be collected by SCUBA. At the end of the experiment, the platform will be removed. Collected specimens will be returned to Université Laval for analysis. Water samples (1 L) will be collected for carbonate and nutrient chemistry analyses, and sediment samples will be collected for biogeochemical characterization.

Community Involvement

A key component of this project is the incorporation of Inuit Knowledge and the involvement of Qikiqtarjuaq community members, many of whom have expressed interest in understanding historical ecosystem change. We will provide opportunities for training in diving and laboratory techniques and employ local boat operators and field technicians throughout the project. Local divers have already played an important role in identifying potential collection sites through their observations and experience underwater. The project will contribute to community-based environmental monitoring and support discussions regarding ongoing changes affecting coastal ecosystems in the region.

Knowledge Sharing Plan

We will provide annual reports to the Hamlet and HTA, present project updates during each community visit, and deliver outreach activities at the local school. Final results will be shared with the HTA through a formal presentation, published in open-access journals, and presented at scientific conferences with Inuit partners whenever possible (e.g., ArcticNet and the European Geosciences Union).

Uiviititut: N/A Inuktitut or English are the common languages used in Qikiqtarjuaq.

[illegible]

Inuinnaqtun: N/A Inuktitut or English are the common languages used in Qikiqtarjuaq.

Personnel

Personnel on site: 6

Days on site: 0

Total Person days: 0

Operations Phase: from 2026-08-01 to 2029-10-31

Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaliyainnit nuna
Only marine areas near the coast will be used to collect clams and coralline red algae specimens.	Scientific/International Polar Year Research	Marine	Region has a long history of oceanographic and biological research much of which has been led by Université Laval and Memorial University of Newfoundland including the Green Edge project (2015-2016). The area has also long been used for sea mammal hunting by Inuit. Coralline algae is known to be thick and of the desired species in the southern extent of the polygon from prior research in 2014.	n/a	At most, 115 km away from Qikiqtarjuaq
The platform will be installed under seawater near the coast in this zone near the Island of Qikiqtarjuaq	Scientific/International Polar Year Research	Marine	Area surrounds the community of Qikiqtarjuaq, and has a long history of hunting and use for travel for Inuit since time immemorial. The region also has a long history of oceanographic and biological research much of which has been led by Université Laval and Memorial	n/a	At most 25 km away from Qikiqtarjuaq.

			University of Newfoundland including the Green Edge project (2015- 2016).		
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Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Qikiqtarjuaq	Laila Alookie	Qikiqtarjuaq Research Centre	2025-12-20
Qikiqtarjuaq	Sammy Qappik	N/A	2025-10-26
Qikiqtarjuaq	Jaypootie Aliqatuqtuq	Hunters and Trappers Association	2026-01-21

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

South Baffin

Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavut Planning Commission	NPC (File #151191) determined that project falls outside an area of applicable regional land use plan	Active	2026-06-03	
Hunters and Trappers Associations/Organizations	Approval letter provided by Nattivak HTO Chairperson, Jaypootie Aliqatuqtuq.	Active	2026-02-18	
Alaanut	Authorization from Department of Fisheries and Oceans will be sought in the next week for collection.	Not Yet Applied		
Nunavunmi Ihivriunqniqmut Timiqutigiyanga	Application for research permit to conduct research starting in August 2026. Application submitted June 4, 2026.	Applied, Decision Pending		

Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Water	Small boat craft (summer) or skidoo (winter) to collection or growth monitoring platform sites.	

Project accomodation types

Nunauyuq

Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutininik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
Hand-held pneumatic drill	1	40 x 40 cm	Used to screw plates into rocks (if required depending on the site) at coralline red algae monitoring site during installation day.
Personal SCUBA Equipment	4	50 x 100 cm	Used to aid divers in collecting specimens and installing monitoring site
Environmental Loggers	4	10 x 30 cm	Photosynthetic active radiation, light, temperature, salinity and pH loggers to be installed at 20m depth at monitoring site
Smal vessel	1	10-15 m	Local rental through outfitter and guide to bring researchers to and from field sites

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Gasoline	fuel	96	20	1920	Liters	Use for boat and skidoos. These will be community rentals and fuel will be provided by community members or the research centre through rentals and per day guide rates).

Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqittagaani qanuq	Atulirumayain imavaluin utiqittagani humi
0		

Iqqakuq

Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Researching	Ikulalimanngittun iqqakuuvaluin	5 lbs	Some packaging waste from equipment shipment will be sent to the QIkiqtarjuaq landfill. No other waste is expected.	N/A

Avatiliriniqmut Ayurhautingit:

The proposed project is expected to have minimal environmental impacts. Potential negative but mitigable impacts are limited to temporary increases in noise and human presence associated with vessel and snowmobile travel, which may cause short-term disturbance to wildlife, including marine mammals, seabirds, and aquatic species. These effects are expected to be localized, infrequent, and of short duration. Mitigation measures will include minimizing time spent at sampling locations, avoiding close approaches to wildlife, maintaining appropriate setback distances from marine mammals and birds, conducting activities in accordance with local wildlife guidelines, and suspending or relocating activities if sensitive species are observed nearby. No habitat alteration, resource depletion, pollution, waste disposal, or long-term infrastructure development is proposed. The project is expected to have positive socioeconomic impacts through local employment, collaboration with community members and organizations, support for environmental monitoring, and contributions to knowledge of marine ecosystems that are important for food security and community well-being. Communication with the community will be maintained throughout the research period through local radio, Facebook, and regular contact with the Qikiqtarjuaq Research Centre to ensure concerns can be identified and addressed promptly. Species listed under the Species at Risk Act (SARA), including polar bear, bowhead whale, narwhal, and certain seabird species, may occur within the broader region. The project is not expected to adversely affect listed species, their critical habitat, or residences due to its non-destructive nature and implementation of wildlife avoidance measures. No significant cumulative, transboundary, or non-mitigable effects are anticipated.

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

Qanurittuq Ittunik Avatinga: Avatingalluanga

The proposed study area is located in the marine environment surrounding Qikiqtarjuaq, Nunavut, and does not overlap with Auyuittuq National Park, protected wildlife areas, or other formally designated protected areas. The area is culturally important to the community and is regularly used for travel, harvesting, fishing, and hunting activities. Marine and sea-ice covered habitats within the region support a variety of species, including marine mammals, Arctic char, clams, seaweed, marine fish, seabirds, polar bears, and Arctic foxes. The surrounding landscape and seascape are also valued for their scenic beauty and cultural significance. Water quality in the region is generally considered high; however, localized influences may occur near the community due to wastewater discharge, fuel storage and handling, vessel traffic, shoreline disturbance, runoff, and historical waste sites. No significant impacts on these environmental or cultural values are anticipated, as project activities are limited to non-destructive marine scientific research and environmental monitoring. The project will not restrict access to these areas or involve activities expected to adversely affect wildlife habitat, water quality, or harvesting activities.

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

The marine environment surrounding Qikiqtarjuaq is of significant socioeconomic and cultural importance to the local Inuit community. Marine resources support subsistence harvesting, food security, cultural practices, recreation, tourism, and local economic activities. The area is regularly used for travel by boat and snowmobile and is valued for its scenic beauty and connection to Inuit culture and traditional knowledge. Marine vegetation is dominated by macroalgae, including kelp and other benthic algal communities that provide habitat and food for a variety of marine organisms. The region supports diverse wildlife populations, including ringed, harp, and bearded seals, narwhal, bowhead whales, polar bears, and Arctic foxes. Wildlife movements and habitat use are strongly influenced by seasonal sea-ice conditions. The area also provides important habitat for numerous seabird species, with migratory birds using coastal and marine habitats for feeding, nesting, and staging during the summer months. The project area does not overlap with any designated seabird protection areas. Aquatic species include Arctic char, Greenland halibut, Arctic cod, capelin, sculpins, clams, and other marine invertebrates. Nearshore benthic habitats support shellfish, seaweed communities, and other organisms important to local food webs. Several species occurring in the region may be listed under the federal Species at Risk Act (SARA) or territorial conservation frameworks, including polar bear, bowhead whale, narwhal, and certain seabird species. The proposed research activities are limited to non-destructive marine scientific research and environmental monitoring and are not expected to adversely affect wildlife, habitats, migration routes, or harvesting activities.

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

The project area is located in the marine environment adjacent to the hamlet of Qikiqtarjuaq, approximately 1-110 km from the community depending on sampling or surveying location. The area is regularly used by Inuit for travel, harvesting, fishing, hunting, and other land- and sea-based cultural activities. Marine resources contribute significantly to local food security, cultural continuity, recreation, tourism, and the local

economy. While no archaeological, palaeontological, or culturally significant sites are known to occur within the marine project footprint, the surrounding region contains numerous Inuit cultural landscapes, traditional travel routes, harvesting areas, and archaeological sites of cultural and historical importance. Any previously unidentified cultural resources encountered during project activities would be reported to the appropriate authorities. The area experiences seasonal vessel, snowmobile, and small-aircraft traffic associated with community activities, harvesting, tourism, research, and resupply operations. Local resource use includes subsistence harvesting of marine mammals, fish, seabirds, shellfish, and other country foods, as well as tourism, guiding, and wildlife viewing activities. Human health and well-being in the region are closely linked to access to country foods, environmental quality, cultural practices, and opportunities for safe travel on the land and sea ice. The proposed research activities are limited in scale, non-destructive, and are not expected to adversely affect community well-being, resource use, cultural values, navigation, or harvesting activities. Other valued socioeconomic components identified through community engagement and regional studies include food security, cultural continuity, knowledge sharing, environmental stewardship, and access to marine resources.

Miscellaneous Project Information

Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit

The proposed project is expected to have minimal environmental and socioeconomic impacts. Project activities are limited to small-scale, non-destructive marine scientific research and environmental monitoring. No construction, blasting, fuel caching, waste disposal, or long-term infrastructure installation is proposed. Potential negative impacts are expected to be minor, temporary, and mitigable. These may include short-term disturbance from vessel or snowmobile activity, noise, or the presence of researchers in marine areas used by wildlife and community members. Mitigation measures will include minimizing time on site, avoiding close approaches to wildlife, maintaining clean field practices, preventing the release of waste or contaminants, and coordinating activities with local partners to avoid interference with harvesting, travel, or culturally important activities. Communication with the community will be maintained throughout the research period through local radio, Facebook, and regular contact with the Qikiqtarjuaq Research Centre. These communication channels will provide opportunities for community members to raise concerns or identify potential impacts, allowing project activities to be clarified, modified, or relocated where appropriate. Potential socioeconomic impacts are expected to be neutral to positive. The project may contribute to local knowledge, environmental monitoring, research capacity, and understanding of marine ecosystems important to food security and community well-being. No adverse effects on human health are anticipated. The project will not restrict access to travel routes, hunting areas, fishing areas, or other marine resource-use areas. No transboundary effects are anticipated, as project activities are localized near Qikiqtarjuaq and do not involve emissions, discharges, habitat alteration, or activities likely to affect areas outside the local study area. Species listed under the federal Species at Risk Act (SARA), including polar bear, bowhead whale, narwhal, and certain seabird species, may occur regionally. The project is not expected to adversely affect listed species, their critical habitat, or residences. Researchers will avoid disturbance to wildlife, maintain appropriate distances from marine mammals, birds, and polar bears, and suspend or relocate activities if sensitive species are observed nearby. Overall, identified impacts are expected to be either positive or negative but mitigable. No negative non-mitigable impacts are anticipated. Monitoring will occur through field observations, documentation of any wildlife interactions or unusual environmental conditions, and ongoing communication with local partners and community members.

Tamatkiumayunik Ihuikgutivaktunik

The proposed project is not expected to contribute meaningfully to cumulative environmental effects. Activities are limited to small-scale, non-destructive marine scientific research and environmental monitoring and will not result in significant habitat alteration, resource depletion, pollution, or long-term infrastructure development. While the project will occur within a region that experiences ongoing community activities, harvesting, tourism, marine transportation, and research, its contribution to cumulative effects is expected to be negligible due to its limited spatial extent, short duration, and low-intensity nature. The project is not expected to interact with past, present, or reasonably foreseeable future activities in a manner that would result in significant cumulative environmental or socioeconomic effects.

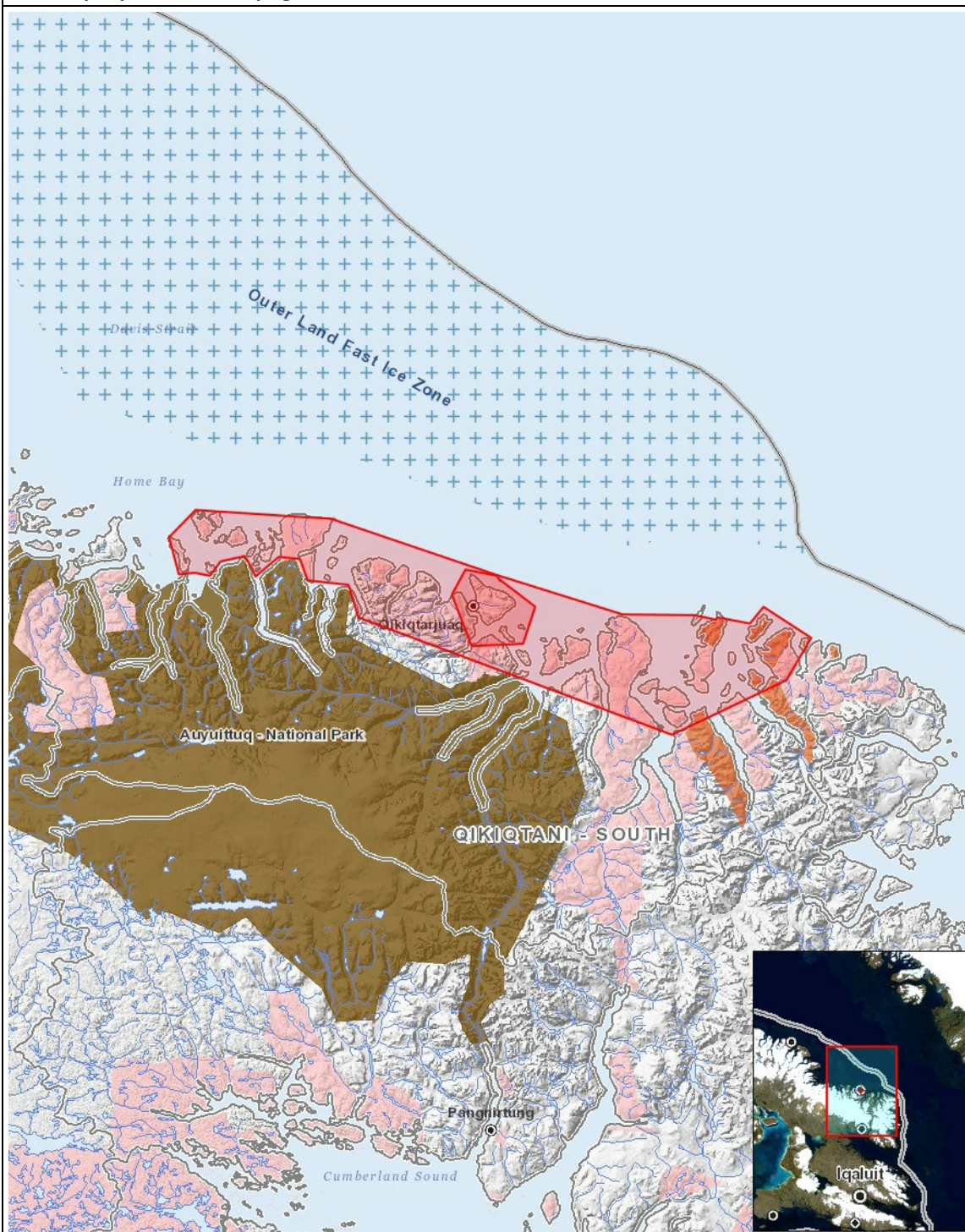
Impacts

Ilitariyauniq Avatiliriniqmut Ayurhautingit

	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
Havakvinga	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulapkaininnga																									
Scientific/International Polar Year Research		-	-	-	-	-	-	-	-	-	-	-	-	M		-	M	M	M	-	-	P	P	-	-
Piiqtauniq																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyauyuq)

Havaariyauyukhamut Nayugaa



List of Project Geometries

- 1 polygon The platform will be installed under seawater near the coast in this zone near the Island of Qikiqtarjuaq
- 2 polygon Only marine areas near the coast will be used to collect clams and coralline red algae specimens.