NIRB Uuktuutinga Ihivriuqhikhamut #126449

Leaf photosynthesis of shrub species - Response to air temperature and climatic feedback

Uuktuutinga Qanurittuq:	New
Havaap Qanurittunia:	Scientific Research
Uuktuutinga Ublua:	Friday, May 8, 2026
Period of operation:	from 2026-07-13 to 2026-07-24
Havauhikhaq Ikayuqtinga:	Maire Vincent Université du Québec à Trois-Rivières 3351 Bd des Forges Trois-Rivières Quebec G8Z 4M3 Canada Hivayautit Nampanga:: 8196994514, Kayumiktukkut Nampanga::

QANURITTUT

Tukihiannaqtunik havaariyauyumayumik uqauhiuyun

Qablunaatitut: How Arctic shrubs respond to warming temperaturesThis project is led by the Université du Québec à Trois-Rivières (UQTR), Canada. The research team includes Professor Vincent Maire and a graduate student, Florence Gagné, along with supporting students. The project is part of an academic research program on Arctic ecosystems.This project studies how Arctic shrub plants respond to temperature changes by measuring how their leaves capture carbon dioxide through photosynthesis. Fieldwork will focus on four common shrub species found in the Arctic (Salix arctica, S. reticulata, S. richardsonii, Betula glandulosa). Small branches will be collected from selected plants, and measurements of photosynthesis will be conducted using a portable scientific instrument. Soil samples and environmental conditions (such as temperature and humidity) will also be recorded to better understand how local conditions influence plant functioning. The work is low-impact: only small amounts of plant material will be collected, soil samples are limited in size and restored immediately, and temporary sensors will be installed and removed after use. No permanent structures will be built.The Arctic is warming much faster than the rest of the world, and shrubs are becoming more abundant across the landscape. These changes can affect how much carbon is stored or released by ecosystems, which has important consequences for climate change. However, scientists still do not fully understand how Arctic plants respond to temperature. This project aims to improve this understanding by identifying the temperatures at which shrubs function best and how they adjust to environmental conditions. The results will help improve scientific models used to predict climate change and ecosystem responses in the Arctic.The project will take place in the Qikiqtani Region, Nunavut, primarily within Sylvia Grinnell Territorial Park (Iqaluit Kuunga), near the city of Iqaluit. Study sites will be selected within the park to represent different soil and environmental conditions. All activities will be conducted on foot within the sites, with access to the park by existing routes.Fieldwork will occur during the summer growing season of 2026. The main data collection will take place between mid-July and late July, with a short follow-up visit in early August to remove equipment. The project is seasonal and does not involve long-term installations.

Uiviititut: Comment les arbustes arctiques réagissent au réchauffement des températuresCe projet est mené par l'Université du Québec à Trois-Rivières (UQTR). L'équipe comprend le professeur Vincent Maire, une étudiante à la maîtrise (Florence Gagné) et des étudiantes collaboratrices. Il s'inscrit dans un programme de recherche universitaire sur les écosystèmes arctiques.Le projet vise à étudier comment les arbustes arctiques réagissent aux variations de température en mesurant leur capacité à capter le dioxyde de carbone par photosynthèse. Des mesures seront réalisées sur quatre espèces d'arbustes (Salix arctica, S. reticulata, S. richardsonii, Betula glandulosa). De petites branches seront prélevées, et des mesures de photosynthèse seront effectuées à l'aide d'un appareil scientifique portable. Des échantillons de sol et des données environnementales (température, humidité) seront également collectés. Les impacts sur l'environnement sont très limités : les prélèvements végétaux sont mineurs, les sols sont remis en place après échantillonnage et les capteurs installés sont temporaires et retirés à la fin du projet.L'Arctique se réchauffe rapidement, ce qui entraîne une expansion des arbustes. Ces changements influencent le cycle du carbone et donc le climat. Toutefois, la réponse des plantes arctiques à la température est encore mal comprise.Ce projet vise à mieux comprendre ces mécanismes afin d'améliorer les modèles scientifiques utilisés pour prédire les impacts des changements climatiques sur les écosystèmes arctiques.Le projet se déroulera dans la région de Qikiqtani (Nunavut), principalement dans le parc territorial Sylvia Grinnell, à proximité de la ville d'Iqaluit. Les sites d'étude seront choisis pour représenter différentes conditions environnementales.Les travaux de terrain auront lieu durant l'été 2026, principalement entre la mi-juillet et la fin juillet, avec un retour début août pour retirer les équipements. Le projet est de courte durée et ne comporte aucune installation permanente.

Inuktitut: ᖃᓄᖅ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐅᑉᐱᑦ ᑕᐃᒪᐃᓕᖓᓕᕈᓯᖏᑦ ᐅᖁᓯᕚᓪᓕᐊᓂᖓᓄᑦ ᓯᓚᐅᓇ ᐱᓕᕆᐊᕆᔭᖓᑦ ᐊᐅᓚᑕᐅᔪᖅ ᐱᓕᕆᐊᖑᔪᖅ ᐃᓕᓐᓂᐊᕐᕕᒃᔪᐊᖅ ᑐᕈᐊ-ᐅᓕᕖᐄ, ᑲᓇᑕ. ᐅᑯᐊ ᖃᐅᔨᓴᖅᑎᑦ ᐱᓕᕆᖃᑎᒌᑦ ᑖᒃᑯᐊᖑᔪᑦ ᕕᓐᓯᓐᑦ ᒪᐃᐊ ᐊᒻᒪᓗ ᐃᓯᓕᑦᑎᓯᒪᔪᖅ ᐃᓕᓐᓂᐊᖅᑎ, ᕗᓗᐊᓚᓐᔅ ᒐᓐᓃ, ᐱᖃᑎᖃᖅᑐᑦ ᐃᑲᔪᖅᑎᓂᒃ ᐃᓕᓐᓂᐊᖅᑎᓂᒃ. ᐅᓇ ᐱᓕᕆᐊᖑᔪᖅ ᐃᓚᖃᖅᑐᖅ ᐃᓕᓐᓂᐊᕐᕕᖕᒥ ᖃᐅᔨᓴᕈᑕᐅᔪᓂᒃ ᐃᓕᓐᓂᐊᕈᑎᓂᒃ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐆᒪᔪᓕᒫᑦ ᐊᕙᑎᓕᒫᖏᓐᓄ.ᐅᓇ ᐱᓕᕆᐊᖑᔪᖅ ᐃᓕᑦᑎᓇᓱᒃᑐᖅ ᖃᓄᖅ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐅᑉᐱᑦ ᑭᐅᓯᖕᒪᖔᑕ ᓯᓚᐅᑉ ᐅᖁᓂᖓᑕ ᐊᓯᑦᔨᕐᓂᖓ ᐊᑐᖅᓯᓪᓗᑎᒃ ᖃᓄᖅ ᕿᒪᒃᑯᓂᒃ ᐸᐅᕐᓂᒃ ᑕᒪᐅᓐᓇ ᓯᕿᓂᕐᒧᑦ ᐅᖁᓯᑎᑕᐅᓯᒪᔪᓂᒃ. ᓄᓇᒥ ᐱᓕᕆᐊᕆᓂᐊᖅᑕᕗᑦ ᐊᐅᓪᓗᑎᓂᐊᖅᑐᑦ ᑎᓴᒪᓂᒃ (4) ᐱᑕᖃᓚᔪᓵᓂᒃ ᐅᑉᐱᑲᓂᒃ

ᓇᓂᐅᐅᖃᖅᑕᖅᑐᓂᒃ ᐅᑭᐅᖅᑕᖅᑐᒥ (Salix arctica, S. reticulata, S. richardsonii, Betula glandulosa). ᒥᑭᔨᑦ ᓇᓯᖅᑐᐃᓴᑦ ᓄᐊᑕᐅᓂᐊᖅᑐᑦ ᓇᓪᓕᐊᖏᓂᑦ ᓂᕈᐊᖅᑕᐅᔨᓂᑦ ᐱᕈᖅᑐᓂᓪ, ᐊᓴᒪᓗ ᐅᒃᑐᕐᔪᓕᑦᑎ ᖃᓄᖅ ᓱᖅᓂᖏᑦ ᐱᕈᖅᑎᑕᐅᑦᑎᐊᖅᓯᒪᔭᖅᑎᑕ ᐊᑐᖅᓱᓂᐊᖅᑐᒍᑦ ᖃᐅᔨᓴᖅᑎᓴᒪᔭᖅᑕ ᖃᐅᔨᓴᖅᓱᔨᐸᑎᖅᑎᑐᑎᒍᑦ. Δᑦᔨᕐᓂᒃ ᖃᐅᔨᓴᕈᑎᑦᓂᖅᖃᖅ ᐊᖏᑎᑦᑎᓂᑦ ᑕᐃᒪᐃᓕᓪᓚᖅᑎᑕᐅᖅᓚᖅᑕ (ᓱᓴᓗ ᓱᓕᐅᑦ ᐅᖏᓱᓂᖅᑕ ᐊᓴᒪᓗ ᒪᓴᐅᓂᖅᑎᖃᖅᓯᒪᖅᑕ ᐅᓱᐊᑦᑕᐅᖅ ᑎᑎᕋᖅᑕᐅᓂᐊᖅᑐᑦ ᑐᕈᓱᐅᑦᑕᐅᖅᑐᑦ ᖃᐅᔨᓴᖅ ᓄᓇᓕᖅᓂᑦ ᑕᐃᒪᐃᓕᓪᓚᖅᑎᑕᐅᖃᖅᓯᒪᖅᑕ ᐱᑭᖅᑐᑦ ᐊᐅᓪᓕᓂᑦ. ᐅᓇ ᓴᓇᓀᖅᑕ ᒥᑭᔨᑦ ᐊᐅᑐᓂᖅᑐᑦ: ᑭᓱᐊᓂᑐᐊᖅ ᒥᑭᔨᓂᑲ ᐱᖃᑕᒥᑦᑐᐊᖅᑎᑦᑕ ᐱᑭᖅᑐᓂᓴ, Δᑦᔨᓂᓴ ᖃᐅᔨᓴᖅᑎᑕᐅᑦᑎᓗᑕ ᒥᑭᔨᑦ ᐳᐅᑎᑎᐊᑦᑕᑦᓗᓂᑦ, ᐊᓴᒪᓗ ᐊᓱᑭᖅᑕᖃᖅᑕᑦᓂᓕᓂᑦ ᖃᐅᔨᓴᖅᑎᑕ ᓇᐸᑦᓗᒍ ᐊᓴᒪᓗ ᐋᑦᓗᒍ ᐊᑐᖅᑕᐅᐅᖅᐸᑦ. ᑭᓱᑐᐃᓐᓇᑦᓂᓴ ᐊᑕᐃᓐᓇᑦᓂᐊᖅᑐᓂᑐᒍᑦ.ᐅᑭᐅᖅᑕᖅᑐᖅ ᐅᑦᓄᓱᓕᓂᐊᖅᓯᒪᑦ ᓂᓗᐅᑎᓴᐅᓕᐅᖅᑐᑦ ᐅᓪᓗᓂᐊᖅᑐᑦ ᐊᐅᓚᐅᖅᑐᑦ ᑕᒪᐃᓐᓇᑦ ᐊᑎᓕᓪᓚᖅᑎᑕᐅᖅᑐᑦ. ᑕᐃᒪᓐᓇᐅᑎᓗᐊᖅᑎᓪᓗᒍ, ᖃᐅᔨᓴᖅᑎᑦ ᓱᓕ ᑐᑭᓱᐊᓂᓐᓇᖅᑐᑦ ᐅᑦᓄᓱᓕᓂᐊᖅᑐᑦ ᐊᓴᒪᓗ ᐅᑦᓄᓱᓕᓂᐊᖅᑐᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ

Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtailiyainnit nuna
Area where three plant sampling sites will be chosen	Sampling sites	Inuit Owned Surface Lands	Sylvia Grinnell National Park	The park also has archaeological sites but we will not visit them. Our plan is to sample 48 shrub individuals (four species) and to measure leaf photosynthesis back to the laboratory in Iqaluit. See attached document for details.	The nearest communities are the ones in Iqaluit.

Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Iqaluit	Jamal Shirley	Arctic College	2026-01-10

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

South Baffin

Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavut Kavamanga, Avatiliriyikkut	Department of Environment – Wildlife Management Division, Nunavut Territory. NUNAVUT WILDLIFE RESEARCH PERMIT - Expected decision date : June 5th	Applied, Decision Pending		
Nunavut Kavamanga, Avatiliriyikkut	NUNAVUT TERRITORIAL PARKS USE PERMIT - Application date : March 25th	Applied, Decision Pending		

Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Land	Car or ATV + walk	

Project accomodation types

Nunauyuq

Ihuaqutivaluin Atuqtauyukhan

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

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
VTT	1	86*48 in	The vehicule may be use to go on-site
GPS	1	5 * 10 cm	Record site location
Gas analyser	1	15 * 30 * 20 cm	leaf photosynthesis measurement
Temperature logger	10	1 * 1 * 0.5 cm	Recording temperature
Core sampler	1	20 * 6 * 6 cm	soil sampling
bucket	4	35 * 40 * 20 cm	plant transport
Pruning shear	1	20 * 10 cm	branch and leaf sampling
paper bag	100	20 * 10 cm	plant tissue storing
dry shipper	1	30 * 20 * 10 cm	preserving plant tissue

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Information is not available						

Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqtittagaani qanuq	Atulirumayain imavaluin utiqtittagani humi
0		

Iqqakuq

Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Sampling sites	Other, plants	100 grams	Compost if available, otherwise regular trash	Not required

Avatiliriniqmut Ayurhautingit:

The project is designed to have minimal environmental impact. Vegetation sampling is non-destructive and limited in scope. Soil sampling is small in scale and all sites are restored immediately after sampling. Temporary sensors will be removed after use, and no permanent infrastructure will be installed.

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

Three study sites will be selected within Sylvia Grinnell Territorial Park to represent environmental variability across the landscape. At three sites, two contrasting soil fertility conditions will be identified:•Mineral soils associated with silty deposits, generally well-drained and relatively low in organic matter;•Organic soils characterized by high water saturation and accumulation of organic matter.Soil sampling will be conducted to characterize edaphic conditions. Three soil cores per fertility condition will be collected (10 cm depth, 6 cm diameter). This represents a small and localized disturbance. All sampling locations will be restored immediately after collection by refilling holes with surrounding substrate, thereby maintaining surface integrity.

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

Four shrub species will be targeted: Salix arctica (prostrated shrub), Salix reticulata (prostrated shrub), Salix richardsonii (erect shrub), Betula glandulosa (erect shrub). These species does not belong to endangered species list.

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

We will propose to arctic college to hire one person of the community to show us the sampling sites and explain the environment.

Miscellaneous Project Information

Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit

The project is designed to have minimal environmental impact. Vegetation sampling is non-destructive and limited in scope. Soil sampling is small in scale and all sites are restored immediately after sampling. Temporary sensors will be removed after use, and no permanent infrastructure will be installed.Access to the park will be conducted by ATV, while all activities within study sites will be performed on foot to minimize disturbance. No hazardous substances will be introduced into the environment.

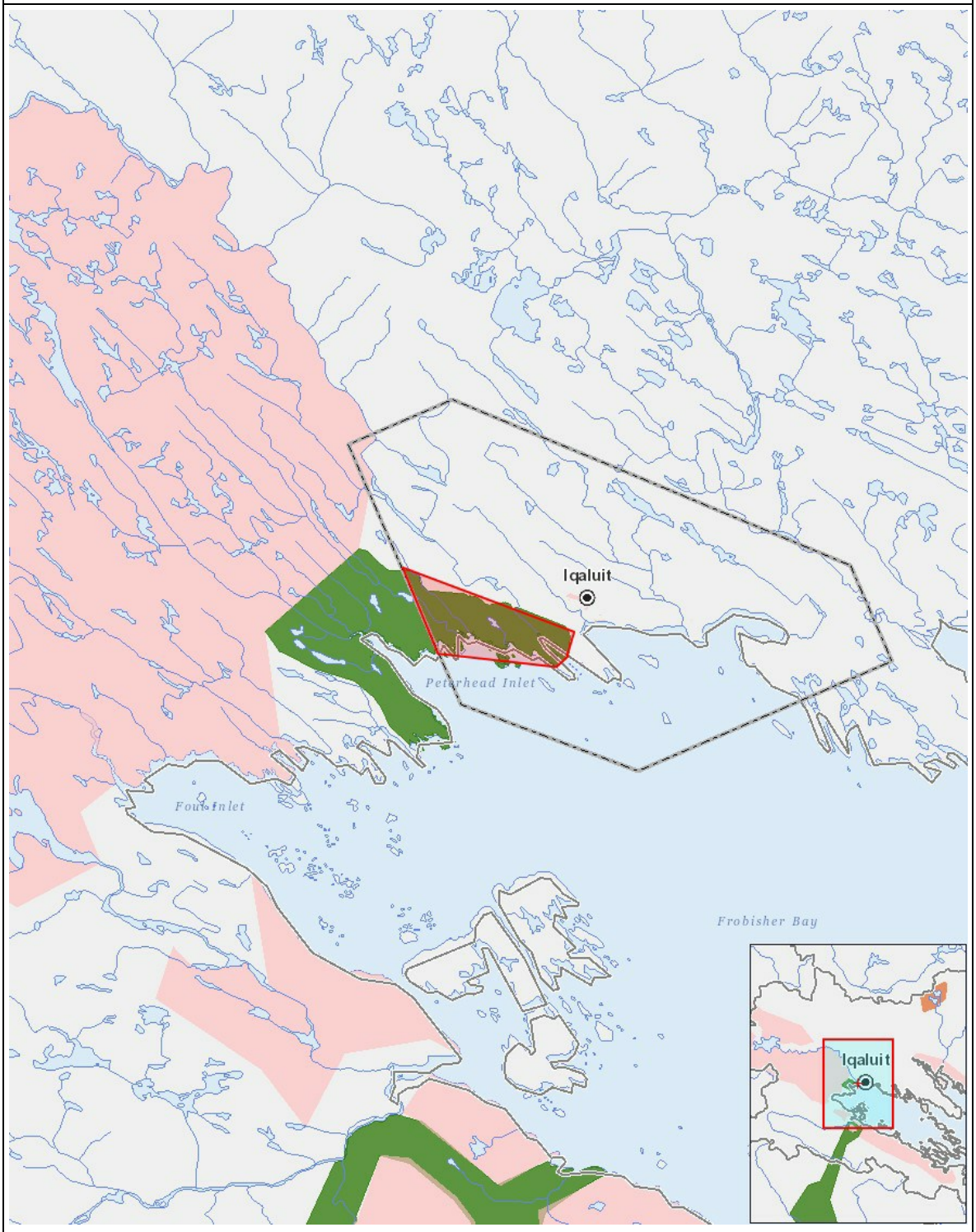
Tamatkiumayunik Ihuikgutivaktunik

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																									
Sampling sites		-	-	-	-	-	-	-	-	M	-	-	-		M	-	-	-	-		-	-	-	-	-
Piiqtauniq																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

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

Havaariyauyukhamut Nayugaa

List of Project Geometries
1 polygon Area where three plant sampling sites will be chosen