



## NIRB Application for Screening #125922

### Carbon measurement in Taloyoak

**Application Type:** New

**Project Type:** Scientific Research

**Application Date:** 3/19/2024 11:19:23 AM

**Period of operation:** from 2024-06-24 to 2024-06-28

**Project Proponent:** Clare Colleen Wark  
WWF-Canada  
410 Adelaide St W  
Toronto Ontario M5V 1S8  
Canada  
Phone Number:: 9059127309, Fax Number::

## DETAILS

### Non-technical project proposal description

- English: Healthy ecosystems provide a variety of valuable ecosystems services such as climate regulation, water purification and nutrient cycling. Their ability to absorb and store atmospheric carbon is of particular interest for further emphasizing their need for protection and thoughtful management under a changing climate. Current models of carbon stocks at national and international scales rely on a small subset of data extrapolated to the entirety of the Arctic to quantify carbon in remote areas. However, there is concern that these models may be underestimating total carbon storage in the Arctic, which could result in unintended consequences for their relative protection and management in nationwide systematic planning exercises. Moreover, assessing carbon storage and sequestration of permafrost ecosystems will provide greater understanding of the impacts on and opportunities for Indigenous communities, and support the development of long-term climate change mitigation and adaptation strategies. WWF-Canada is looking to fill data gaps in the Arctic by conducting soil carbon measurement in Taloyoak, Nunavut. These in-field measurements will then be used to assess whether current carbon models are underestimating the carbon stored in the region. From June 24-28, 2024, we will take a total of nine soil core samples (1-2m depth) within a 25-kilometer radius of town. The Taloyoak Guardians will support the research by providing local knowledge and transportation. WWF-Canada can also provide soil sample training, if interested. A permafrost corer will be used to collect samples, which will be transported to coolers to keep samples fresh for lab analysis. Following field work, the samples will be processed in a lab to determine the total carbon stock and carbon density of the soils. We do not anticipate impacts of the research on the environment, wildlife or people, and commit to taking every precaution to ensure a sustainable and ethical approach. The data generated by the research will be stored and managed by WWF-Canada on secure servers. WWFCanada has a longstanding partnership with TUA. The data and results will be shared directly with the staff and board of directors of TUA in in-person meetings for their independent use of the information for landuse planning and advancing the Aqviqtuuq Inuit Protected and Conserved Area project. The research results will also be shared with community partners in subsequent community visits that are team frequently conducts.
- French: Les écosystèmes en santé supportent un grand nombre de services écosystémiques, incluant la régulation climatique, la purification de l'eau et le cycle des nutriments. Leurs capacités d'absorber et de stocker le carbone atmosphérique est d'intérêt particulier afin de souligner leurs besoins de protection et de gestion appropriée dans un climat changeant. Les modèles actuels de stock de carbone aux échelles nationales et internationales dépendent d'un petit nombre de données extrapolées à toute l'arctique pour quantifier le montant de carbone dans ces régions éloignées. Cependant, on craint que ces modèles sous-estiment le stockage de carbone dans l'arctique, qui pourrait entraîner des conséquences imprévues sur leur protection et gestion lors d'exercices de planifications systématiques à l'échelle nationale. De plus, l'évaluation du stockage et de la séquestration du carbone dans des écosystèmes de pergélisol mènera à une meilleure compréhension des impacts sur et des opportunités pour les communautés autochtones, et pourra supporter le développement de stratégies d'atténuation et d'adaptation aux changements climatiques. WWF-Canada cherche à combler ce manque de données dans l'arctique en mesurant le carbone du sol à Taloyoak, Nunavut. Les échantillons pris sur le terrain serviront à déterminer si les modèles actuels sous-estiment le montant de carbone stocké dans cette région. Du 24 au 28 juin, 2024, nous prélèverons un total de neuf carottes de sol (mesurant 1 à 2m chaque) dans un rayon de 25km du village. Les Gardiens de Taloyoak supporteront la recherche en fournissant leurs connaissances locales et le transport. WWF-Canada peut aussi fournir une formation sur les méthodes d'échantillonnage, s'il y a intérêt. Un dispositif de carottage du pergélisol sera utilisé afin de prélever les échantillons, qui seront transporté dans des glacières afin qu'ils demeurent complets jusqu'à l'analyse en laboratoire. Suivant le travail de terrain, les échantillons seront traités en laboratoire afin de déterminer le stock total de carbone et la densité du carbone dans les sols. Nous anticipons aucun impact sur l'environnement, la faune ou les personnes, et nous sommes engagé à prendre toutes les précautions nécessaires afin d'assurer une approche durable et éthique. Les données générées par la recherche seront stockées et gérées par WWF-Canada sur des serveurs sécurisés. WWF-Canada a un partenariat de longue date avec TUA. Les données et les résultats de l'analyse seront partagés directement avec les employés et le conseil d'administration de TUA lors de rencontres en personne afin que l'information puisse être utilisée pour l'aménagement du territoire et pour soutenir l'aire protégée et de conservation inuite Aqviqtuuq. Les résultats de la recherche seront aussi partagés avec les partenaires communautaires lors de visites dans la communauté que notre équipe

réalise fréquemment.

Inuktitut: b̂ĉêŝĉêŝ ŝb̂d̂ŷŝĉd̂ŝĉ Ĉĵŝr̂q̂r̂q̂b̂ d̂n̂, r̂ĉŝr̂q̂ b̂l̂r̂ŝĉ êd̂ŷĵĉŝĉ-b̂êĉf̂ŝm̂Δ̂ŝr̂q̂ĉ  
q̂ên̂ŝr̂ĉ Âĉŝb̂n̂ĉn̂r̂ĉ q̂r̂ĵŝr̂ĉĵŝĉ Âl̂n̂d̂r̂ŝĉ q̂ên̂m̂ĉ Âr̂ĉn̂ĉd̂r̂ŝĉ r̂ĵŝr̂ĉŝ  
L̂ĉĉd̂n̂q̂ĉ, Δ̂f̂ĉ Δ̂f̂ĉn̂q̂ĵn̂ĉd̂ŝr̂ĉ q̂l̂ b̂l̂êŝĉ q̂ĵŝĉd̂b̂ŝŝĉŝŝr̂ĉ. Âr̂êŝŝr̂ĉm̂ĉ  
Δ̂ĉn̂ŝr̂ĉ q̂l̂ ĵŝd̂Δ̂ĵn̂ r̂ĉf̂ŝĉĵŝĉ b̂ĉŝ Âr̂l̂ŝn̂b̂ĵq̂ĉŝêĵŝĉêΔ̂b̂ŝŝm̂ĵ  
ŷĵf̂n̂b̂n̂q̂ŝŝr̂ĉm̂ĉ q̂l̂ Δ̂r̂l̂n̂ŝĉn̂q̂ĉĵŝĉ q̂l̂ĉn̂ŝĵĉ q̂r̂ĵŝĉĉq̂r̂f̂ĉr̂ĉŝ. Ĭ̂êd̂r̂f̂ĉ  
q̂ĵŝĉd̂r̂êŝĉ b̂ĉĉĉŝĉ b̂êĉf̂ q̂l̂ r̂ĉŝr̂q̂ q̂r̂ŝr̂ĉ ĵŝŝŝŝĉĵf̂r̂q̂ĉ q̂ŝr̂ĵl̂r̂ŝĉ  
ĵr̂ĵr̂q̂n̂ĉ Δ̂r̂l̂n̂b̂r̂l̂r̂ŝĉ q̂ĉr̂ĉĬ̂ŝĵĵ d̂r̂d̂ĉŝĵĉ êĵŝĉĵĵ q̂r̂ŝŝb̂ĉê d̂ŝl̂r̂ĉŝ.  
r̂ĵq̂ŝĉ, Δ̂r̂l̂ĵn̂ĉŝĵŝĉ ĉb̂d̂ q̂ĵŝĉd̂r̂êŝĉ f̂ŷb̂ŷr̂ĵq̂ĉĵn̂ b̂n̂ĉĵr̂ĉb̂ĉŝ ĵŝd̂ŝr̂l̂r̂ĉ  
d̂r̂d̂ĉŝĵĉ, ŷŝr̂l̂ŝĵĉ ĉΔ̂l̂Δ̂ĉn̂ĉr̂q̂ĉŝĉ ŝb̂m̂Δ̂ŝd̂r̂ŝĉ ŷĵf̂n̂b̂ŝr̂ĉm̂ĉq̂l̂  
q̂l̂ĉd̂ŝr̂ĉm̂ĉ b̂êĉĉf̂ q̂ĵŝĉd̂ŝq̂ĉŝĉ ĉŝêΔ̂ŝĵĉ Âĉl̂ŝĵĉ. Δ̂ĉr̂q̂ĵ, Ân̂b̂r̂êŝŝr̂ĉ  
ĵŝd̂ŝr̂l̂r̂ĉ b̂ĉê q̂l̂, L̂ĉŝn̂ĵĉ Ân̂b̂ŝr̂ĉ ŝd̂q̂ĵΔ̂êŝĉ q̂ên̂ŝr̂ĉ q̂r̂ŝŝŷĉĵr̂ĵn̂ĉn̂q̂ĉ  
q̂ĉĵŝĉd̂r̂ŝĉ q̂l̂ ÂΔ̂ŷb̂r̂êŝĉ m̂êŝb̂ŝr̂l̂r̂m̂ĉ m̂êĉm̂ĉ, q̂l̂ Δ̂b̂r̂ŝĵn̂Âêĉq̂n̂ĉd̂ŝŝm̂ĉ  
q̂d̂ŝĵĉ r̂ĉŝm̂ q̂r̂ĵŝŝm̂ Âĵq̂ŝΔ̂ŝr̂l̂n̂ĉn̂ŝĵĉ q̂l̂ q̂ĵĉr̂êŝĵĉĉŝêΔ̂n̂ŝĉ. r̂ĉŝr̂q̂  
b̂l̂r̂ŝĉ êd̂ŷĵĉŝĉ-b̂êĉ f̂r̂ŝĵĉ Δ̂ĵĉĵn̂ Âĉŝb̂r̂ĉĵŝĉ d̂r̂ĵĉŝĵĉ m̂êŝ  
b̂ĉŝŝb̂d̂ŷŝŝĵn̂ Ĉĵŝr̂q̂, m̂êŝĉ. ĉb̂d̂ ŝb̂d̂ŷŝΔ̂r̂f̂ĉ ŝb̂d̂ŷŝĉd̂r̂ĉ q̂ĵŝĉd̂ĉŝq̂ĉ  
ŝb̂d̂ŷŝĵl̂êd̂r̂f̂ĉ b̂ĉm̂ĉ q̂ĵŝĉd̂r̂êŝĉ f̂ŷb̂ŷn̂ĉn̂ŝr̂ĵq̂ĉŝ b̂ĉŝĉ ĵŝd̂ŝĉd̂r̂l̂r̂ŝĉ  
q̂Δ̂ĉĵŝr̂l̂r̂ĉ. d̂êŝ r̂ĵ 24-28, 2024, Âŝq̂ĵĵĉ b̂n̂ĉĵr̂ĉ ŝd̂ĉêŝr̂l̂ŝĵĉ m̂êf̂ ŝb̂d̂ŷŝŷΔ̂ĉ (1-  
2f̂ĉΔ̂ĉ Δ̂n̂ŝŝ) Δ̂ĵq̂ 25 r̂ĉf̂ĉŝ d̂ŝl̂r̂ŝĉm̂ĉ m̂êĉf̂ĉ. Ĉĵŝr̂q̂ Âr̂l̂ĉn̂ĉ Δ̂b̂r̂ŝq̂ĉ  
ŝb̂d̂ŷŝf̂ĉÂĉŝb̂n̂ĉn̂ĵn̂ m̂êĉf̂ ŝb̂d̂l̂b̂r̂ŝĉ q̂l̂ Δ̂ŝr̂ĉn̂ĉĵŝĉ. r̂ĉŝr̂q̂ b̂l̂r̂ŝĉ êd̂ŷĵĉŝĉ  
-b̂êĉm̂êŝ ŝb̂d̂ŷŝŷĉ Δ̂ĉŝq̂n̂ĉn̂r̂êf̂ĵĉ, Ân̂b̂r̂l̂ĵŝ. ŝd̂q̂ĵΔ̂êŝĉĵĉ >ĵn̂r̂ĉ  
q̂ĵŝĉd̂ŝq̂ĉŝm̂q̂n̂ĵn̂ ŝb̂d̂ŷŝŷĉ, q̂l̂ĉŝn̂ĉd̂ŝq̂ĉ ŝd̂q̂ĵΔ̂êŝĉ ŝb̂d̂ŷŝŷΔ̂ĉ r̂ŝq̂d̂êf̂ĉ  
ŝb̂d̂ŷŝΔ̂f̂ŝb̂d̂ŷŝĉd̂ĉĵn̂. ŝb̂d̂ŷŝŝb̂ĉd̂ŝn̂ĉĵr̂ĉ, ŝb̂d̂ŷŝŷΔ̂ĉ Âĉn̂q̂ĵŝq̂ĉ ŝb̂d̂ŷŝΔ̂f̂  
êĵŝĉĵĵb̂n̂ĉĵr̂ĉ b̂ĉêŝŝĉ q̂l̂ b̂ĉŝĉ Âĉŝb̂ŝr̂ĉ m̂ŷŝĉ. ŝn̂d̂ŝŝr̂ĉĵĉ  
q̂ĉĵΔ̂ŝŝŝq̂ĉ ŝb̂d̂ŷŝd̂r̂ŝ q̂ên̂ŝm̂ĉ, b̂l̂r̂m̂ĉ d̂êĵŝĉ Δ̂m̂ĉ, q̂l̂r̂ĵŝq̂ĉ  
ŝb̂d̂l̂êr̂ĉn̂q̂r̂êŝq̂ĉĵĉ L̂r̂l̂n̂ĉŷd̂ŝŝm̂ĉ q̂l̂ Δ̂m̂ĉ êŷl̂ĉĵŝĉ q̂ĵŝĉd̂r̂f̂ĉ. ĵr̂ĵr̂q̂n̂ĉ  
ŷŝr̂ŝn̂ĉd̂r̂ĉ ŝb̂d̂ŷŝĵĉ ĵŝd̂ŝĉd̂r̂l̂ĉq̂ĉ q̂l̂ q̂l̂ĉd̂ĵn̂ r̂ĉŝr̂q̂ b̂l̂r̂ŝĉ êd̂ŷĵĉŝĉ-b̂êĉf̂  
q̂ĉêΔ̂ŝr̂l̂r̂ŝĉ ŝb̂ŷb̂ŝĉ. r̂ĉŝr̂q̂ b̂l̂r̂ŝĉ êd̂ŷĵĉŝĉ-b̂êĉf̂ q̂d̂ŝd̂r̂f̂ĉÂĉn̂ŝn̂r̂ŝb̂ŝr̂l̂ŝr̂ĉ  
TUA. ĵr̂ĵr̂q̂n̂ĉ q̂l̂ ŝb̂m̂Δ̂ŝn̂ŝr̂ĉ ĵŝn̂b̂ŝq̂ĉ Ĉêŝĉd̂n̂r̂Δ̂ŝb̂êΔ̂ŝn̂m̂ĉ q̂l̂ b̂n̂l̂ŝr̂ĉm̂ĉ  
TUA Δ̂m̂ĉn̂ĵĉ b̂n̂l̂ŝd̂r̂ŝĉ Δ̂f̂ĵĉ q̂ĵĉr̂êŝq̂ĉŝr̂ĉŝĵr̂ĵr̂q̂n̂ĉ m̂êΔ̂ĉ q̂ĵŝĉd̂ŝr̂ĉm̂ĉ  
ĉŝêΔ̂ŝĵĉ q̂l̂ r̂ĵĵr̂q̂ĉn̂ĉd̂ŝr̂ĉ q̂ŝΔ̂ĵĉ Δ̂m̂Δ̂ĉŷf̂n̂b̂r̂ĉ q̂l̂ Âd̂ŝr̂q̂ŝb̂ĉd̂r̂ĉ êf̂ŝĉ  
Âĉn̂q̂. ŝb̂d̂ŷŝĵĉ ŝb̂m̂Δ̂ŝn̂ŝr̂ĉ ĵŝn̂b̂ŝq̂ĉq̂ĉm̂êĉf̂ Âĉn̂ŝn̂ŝr̂ĉm̂ĉ m̂êĉm̂ĉ  
>ĉŝĉd̂r̂m̂ĉ ŝb̂d̂ŷŝĉ >ĉŝĉĉĵr̂ĉ

**Personnel**

Personnel on site: 4  
Days on site: 5  
Total Person days: 20  
Operations Phase: from 2024-06-24 to 2024-06-28

# Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
SA1- Site 1	Sampling sites	Municipal	N/A for this project	N/A for this project	9.8km to Taloyoak
SA1-Site2	Sampling sites	Municipal	N/A	N/A	10.6km to Taloyoak
SA1-Site3	Sampling sites	Municipal	N/A	N/A	9.3km to Taloyoak
SA2-Site1	Sampling sites	Municipal	N/A	N/A	5.2km to Taloyoak
SA2-Site 2	Sampling sites	Municipal	N/A	N/A	6.7km to Taloyoak
SA2-Site3	Sampling sites	Municipal	N/A	N/A	5.2km to Taloyoak
SA3-Site1	Sampling sites	Municipal	N/A	N/A	7.7km to Taloyoak
SA3-Site2	Sampling sites	Municipal	N/A	N/A	7.2km to Taloyoak
SA3-Site3	Sampling sites	Municipal	N/A	N/A	5.4km to Taloyoak

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Taloyoak	Jimmy Ullikatalik	Taloyoak Umarulirigut Association (TUA)	2024-03-06
Taloyoak	Abel Aqqaq	Inuit Guardians at TUA	2024-03-04

## Authorizations

**Indicate the areas in which the project is located:**

## Authorizations

<b>Regulatory Authority</b>	<b>Authorization Description</b>	<b>Current Status</b>	<b>Date Issued / Applied</b>	<b>Expiry Date</b>
Nunavut Research Institute	Nunavut Scientific Research license Contact for application:Mosha Cote /ᐃᓂᓱᐅᑦᐅᑦ Manager, Research Liaison / ᐃᓂᓱᐅᑦᐅᑦ, ᓂᓴᐅᔨᓕᐅᑦᐅᑦᐅᑦᐅᑦᐅᑦ ᐅᓵᐅᒪᑎᑦᐅᑦ	Applied, Decision Pending		
Hunters and Trappers Associations/Organizations	Motion being brought forth by Jimmy Ullikatalik for April 2, 2024 meeting.	Not Yet Applied		

### Project transportation types

Transportation Type	Proposed Use	Length of Use
Land	ATV	

### Project accomodation types

## Community

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Permafrost corer	1	100cm x 200cm	Used to manually extract sediment cores from the ground, from a depth of 1-2m below ground.
ATVs	2	N/A	Used for transport to site locations
GoPro cameras	2	N/A	Used to photograph sites and cores
Coolers and packing materials	4	N/A	Used to store cores for transport
PVC pipes and duct tape	30	50cm long	For packaging individual cores
Sledgehammer	1	50cm long	Driving the permafrost corer down into dense sediment, as needed
Tarp	1	3m x 3m	For laying out core after extraction
Measuring tape	1	N/A	Measuring cores

### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Gasoline	fuel	2	23	46	Liters	For ATVs

### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	N/A	N/A

# Waste

## Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Sampling sites	Other, Waste from excess packing materials (bubble wrap, plastic wrap)	Negligable	Dispose of at dump once returning to Taloyoak	N/A

## Environmental Impacts:

We do not anticipate impacts of the research on the environment, wildlife or people, and commit to taking every precaution to ensure a sustainable and ethical approach.

# **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**

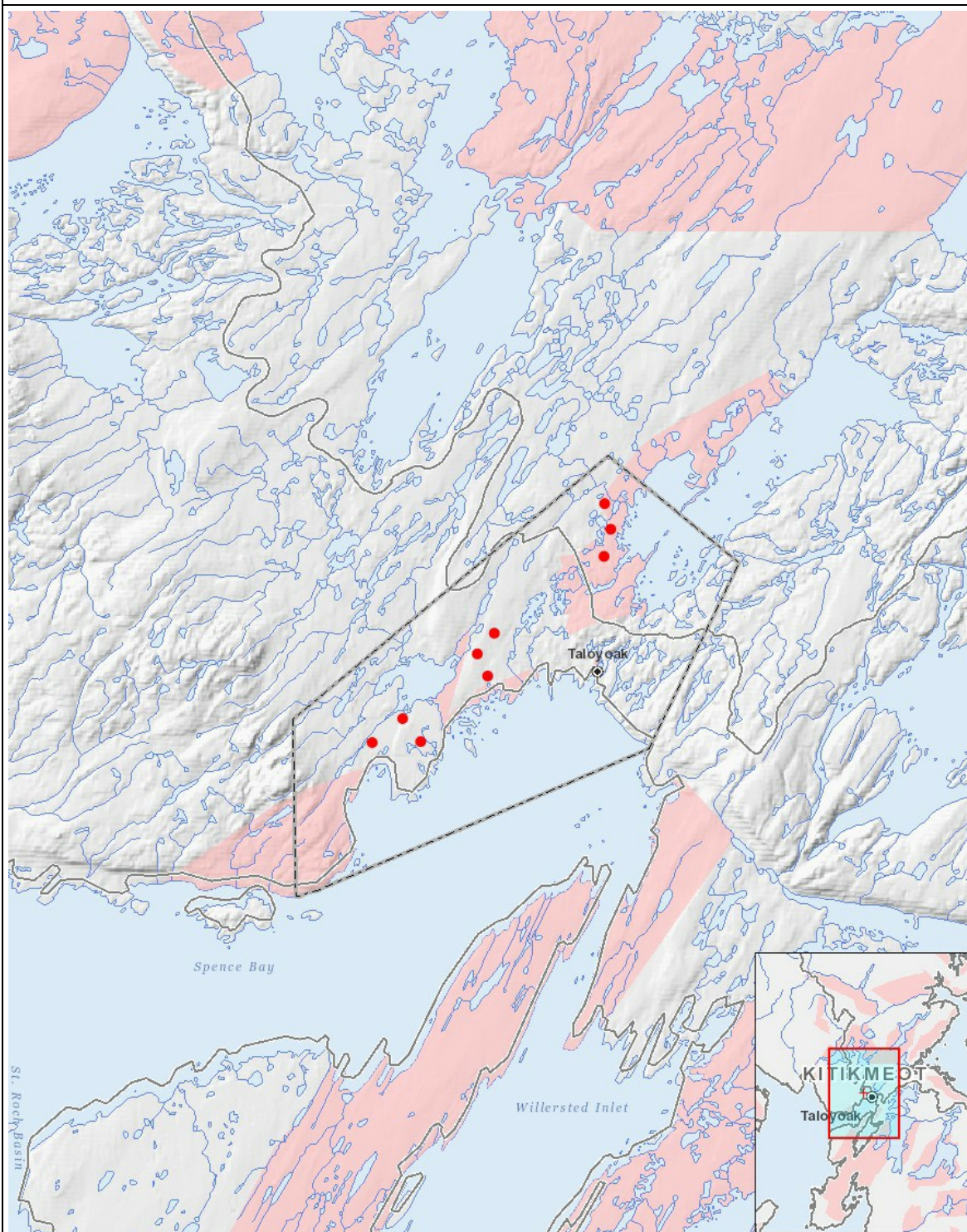
Impacts

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
Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation																									
Sampling sites		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	P	-	-	-
Decommissioning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

## Project Location



## List of Project Geometries

1	point	SA1- Site 1
2	point	SA2-Site 2
3	point	SA3-Site1
4	point	SA1-Site2
5	point	SA1-Site3
6	point	SA2-Site1
7	point	SA2-Site3
8	point	SA3-Site2
9	point	SA3-Site3