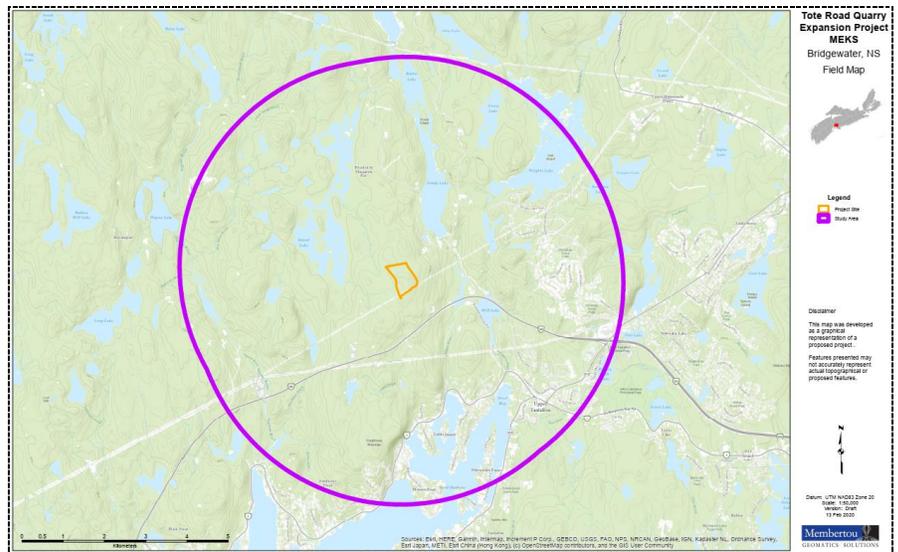


Appendix I

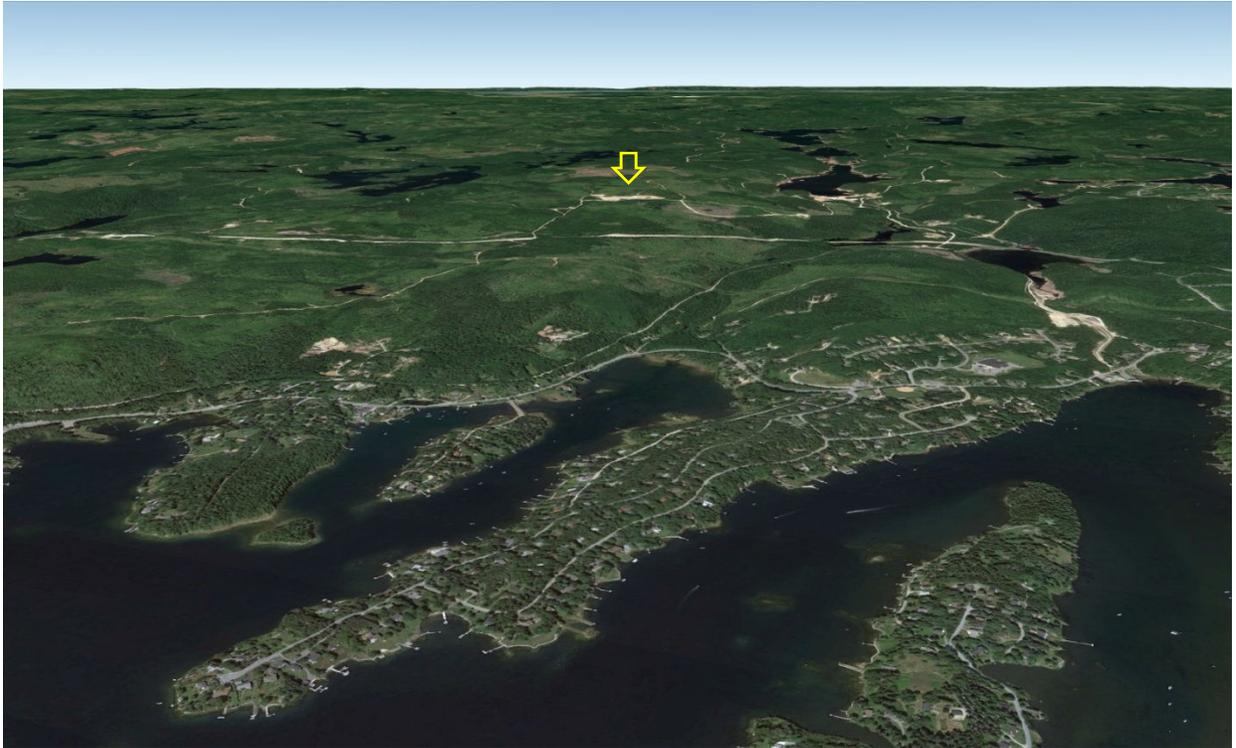
**Draft Summary MEKS Historic Review
Quarry Expansion
Head of St. Margarets Bay**

Mi'kmaq Ecological Knowledge Study Tote Road Quarry Interim Report



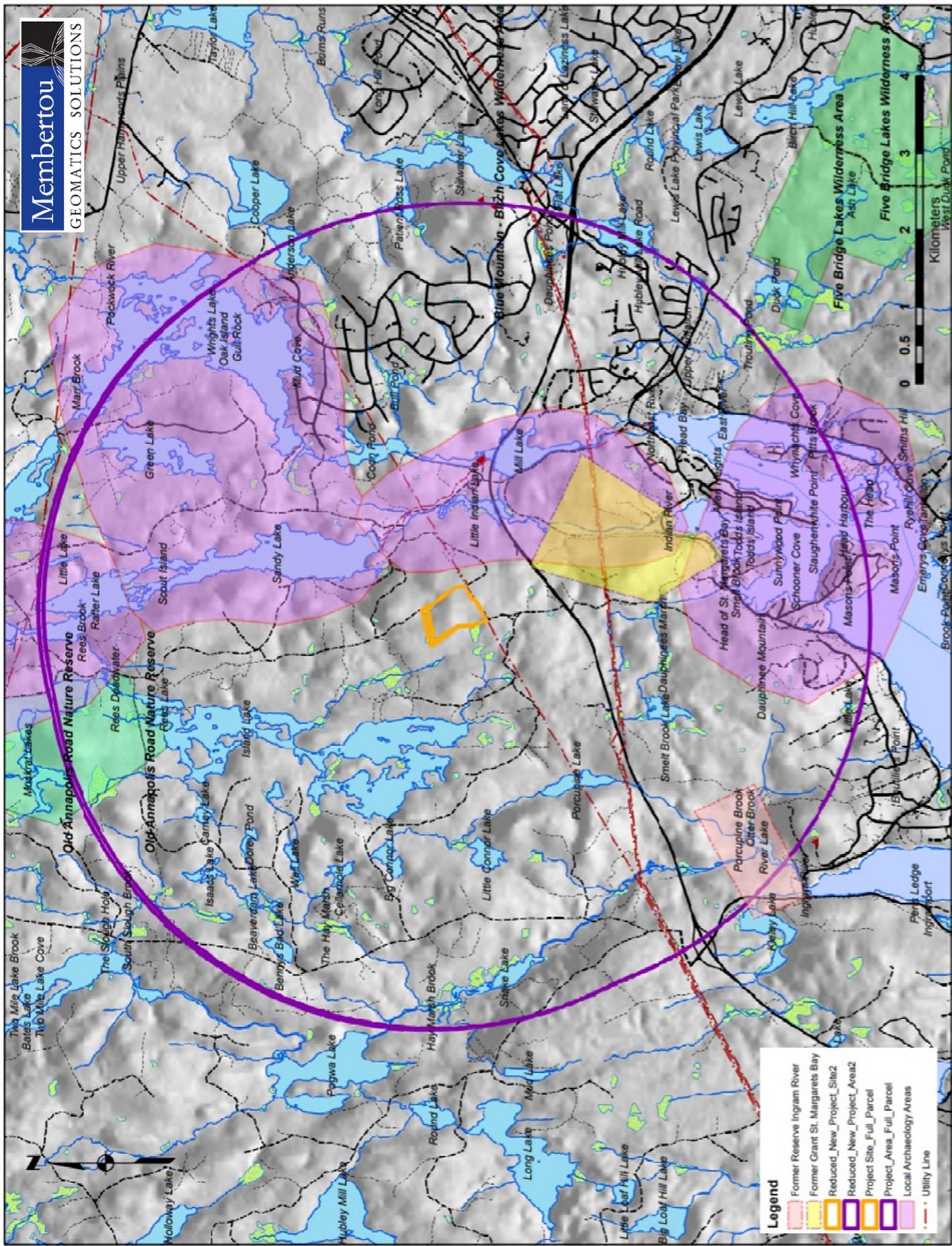
Proposed Tote Road Quarry Project: Project site (Orange), MEKS Study Area (Purple)

Submitted to: GHD
Submitted by: Membertou Geomatics Solutions
Date: Feb. 24, 2022



Draft Summary
MEKS Historic Review
Quarry Expansion, Head of St. Margarets Bay

December 02, 2021



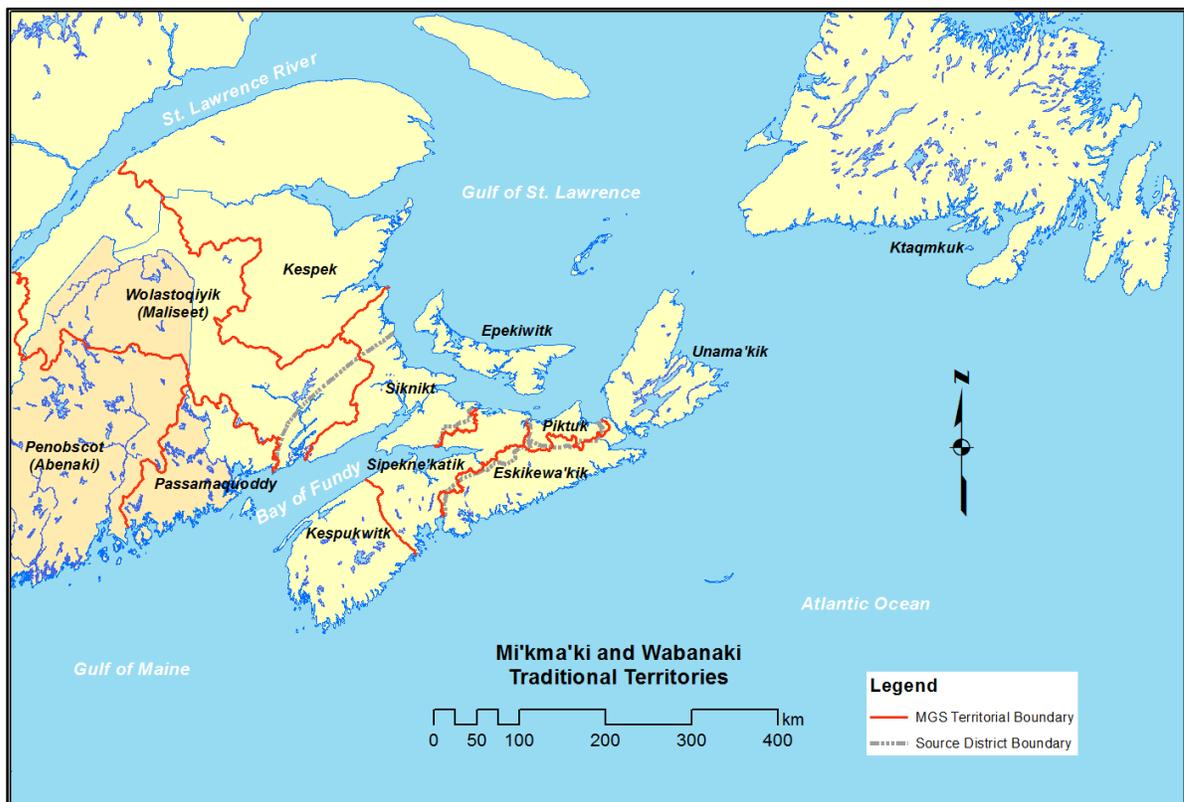
The Landscape

The Wisconsinan ice sheets reached their peak of glaciation approximately 20,000 years ago and began receding 17,000 to 15,000 years before present. Within this melting phase, there was a period between 11,000 and 10,000 years before present where colder temperatures allowed the glaciation process to occur and ice sheets again advanced referred to as the Younger Dryas Period.

Evidence from deep-ocean sediments indicate that there have been at least 16 glacial periods that lasted approximately 100 thousand years each. The last glacial period was the Wisconsin Glaciation which began 75 thousand years ago and ended between 12 and 10 thousand years ago. After extensive sampling in Nova Scotia, evidence indicates that successive glaciation had four distinct phases with different and shifting ice centers. (4)

Phase 1 and 2 were large ice sheets flowing southeast to south. Phase 3 and 4 were ice flows from local ice centers of which the Project Site was under an ice center that ran the length of the present-day provincial land mass during Phase 3. Phase 4 was a southwest flow from an ice center located approximately near Lincolnville, Guysborough Co. The Project Site was ice free some time between 12,000 and 11,000 years before present.

The Project Site landscape left by the melted ice sheets consists of Granite bedrock overlain by thick stony till that developed a excessively stony soil not suitable for agriculture.



Traditional Mi'kmaq Territory

The Project Site is adjacent and the Study Area straddles the Traditional Mi'kmaq Territory boundary between Eskikewa'kik and Sipekni'katik. The traditional territories are important reminders of the political and territorial system that most likely existed in the pre-contact period and continued into the Post-Contact Period and later Historic Period. The Traditional Mi'kmaq Territories are referenced today in response to modern events and issues that potentially impact each territory

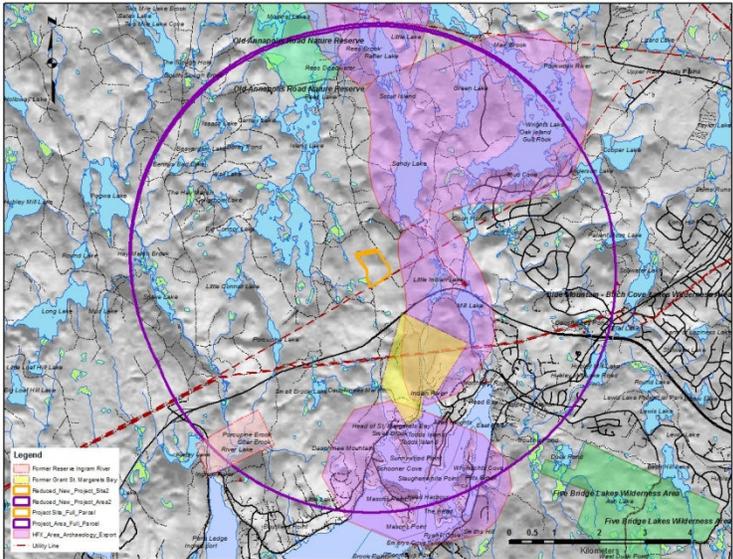
The traditional lands of the Mi'kmaq was comprised of 7 Districts collectively known as Mi'kma'ki. The sources reviewed provided very general District Boundaries that have just enough detail to give an approximation of boundaries along the coast but not much detail for the interior limits. (24)(25)(26)(27)

Using the general boundaries provided by the sources, MGS interpreted the source maps and recreated detailed District boundaries of the 7 districts of Mi'kma'ki using significant watersheds as the defining features on the ground. The district boundaries may be adjusted after review by the Mi'kmaq and Wolastoqiyik (Maliseet) Communities. Until then, the Districts of Sipekni'katik and Eskikewa'kik are proposed as follows:

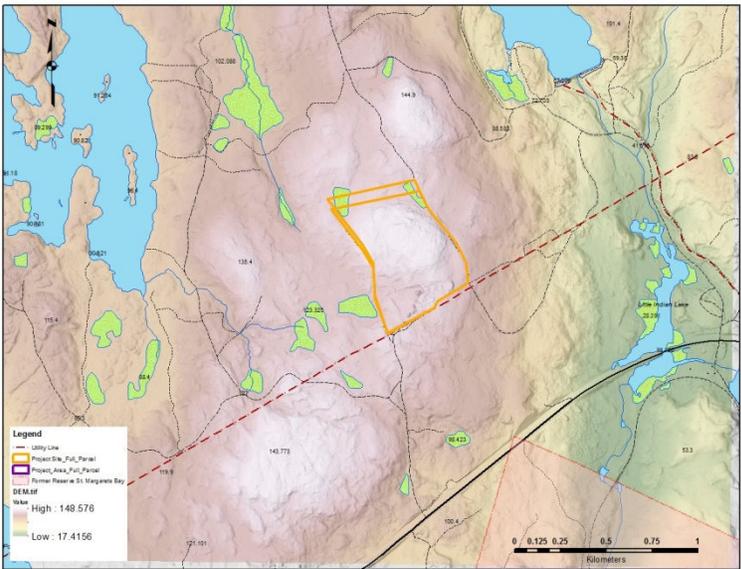
Sipekni'katik (Wild Potato Area) This District includes all lands and waters draining into the Northumberland Strait from Macfarlane Point, Wallace Harbour to and including the Middle River of Pictou watershed. Sipekni'katik also includes all the lands and waters draining into Cobequid Bay, Minas Basin and Bay of Fundy from Five Islands Carrs Brook and Economy River watersheds to and including North River and Salmon River, Avon River, Cornwallis River watersheds to MacNeily Brook near Margaretsville. In addition, Sipekni'katik includes all lands draining into St. Margarets Bay and Mahone Bay including the Ingram River watershed to and including eastern shore of the LaHave River.

Eskikewa'kik (Skin Dressers) Eskikewa'kik includes all lands and waters draining into the Atlantic from St. Margarets Bay including Big Indian Lake, Chebucto (Halifax), Eastern Shore, Strait of Canso to Cape Blue on St. Georges Bay. The District includes the entire Musquodoboit River watershed, a portion of the Shubenacadie River to and including the Stewiacke River watershed draining into Cobequid Bay. In addition, Eskikewa'kik includes the West St. Marys River watershed, East St. Marys River watershed, Country Harbour River watershed as well as the Salmon River and Milford Haven River watersheds draining into Chedabuctou Bay.

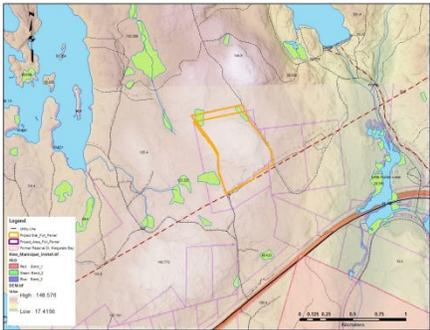
Based on the watershed boundaries of the Ingram River and the Indian River, the Project Site is within the Indian River watershed and the Eskikewa'kik (Skin Dressers) District.



Topographic with Shaded Relief (Full/Partial Parcel)



LiDAR and DEM (Full/Partial Parcel)



Municipal Unit Parcels (Full/Partial Parcel)

There is a long history of Mi'kmaq presence within the Study Area and St Margarets Bay with a Pre Contact timeline potentially going as far back as 3,500-5,000 Years Before Present.

The seasonal migration inland led the Mi'kmaq up river systems to the shores of interior lakes during the winter where small family groups hunted game and fished the rivers and lakes. Some of the larger river systems have since been dammed for power generation and during routine maintenance, the lake levels are lowered revealing early Mi'kmaq seasonal settlements.

Maritime Woodland Period sites have been found on the shores of Sandy Lake, north of Head of St. Margarets Bay and the Indian River System entering St Margarets Bay. A Sandy Lake site was dated at 1,500 to 1,000 years before present and contained artifacts of stone flakes, pottery, tools and food bones while the Indian River sites consisted of evidence of seasonal camp locations. (5)(6)

An additional group of archaeological sites are known to be located along the shores of Wrights Lake and on the peninsulas of Head of St. Margarets Bay which date to the Archaic Period. No further information was located.

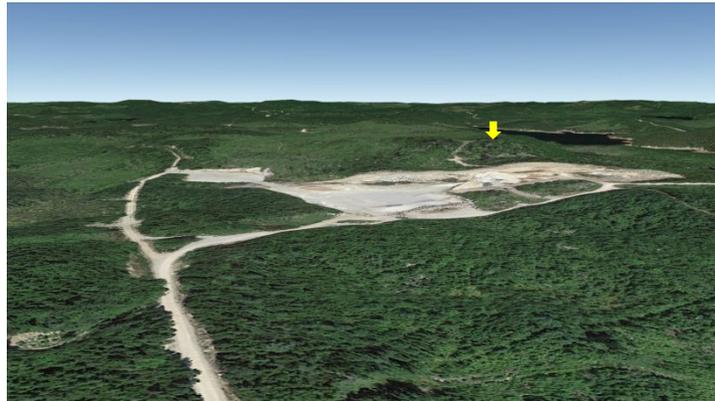
The Project Site is adjacent known Pre-Contact archaeology sites and find locations listed above and including Wrights Lake to the east. Most all known archaeological sites and find areas run through the Project Study Area north to south just east of the Project Site and Study Area center.

The Bedrock underlying the Project Site is Granite (Late Devonian Biotite Monzogranite: M-LDbmg) which was potential supply of hardened stone and quartz veins for early people's tools. However, a review of Surficial Geology shows the Project Site bedrock overlain with Stony Till Plain, Ground Moraine glacial till ranging from 2-20m thick cover of stony, sand mix derived from local granite bedrock sources. A review of Google Earth Images show no obvious outcrops for hand quarrying and ample supply of surface boulders. The till has developed Gibraltar soil cover of well drained and excessively stony soil derived from granite parent material.

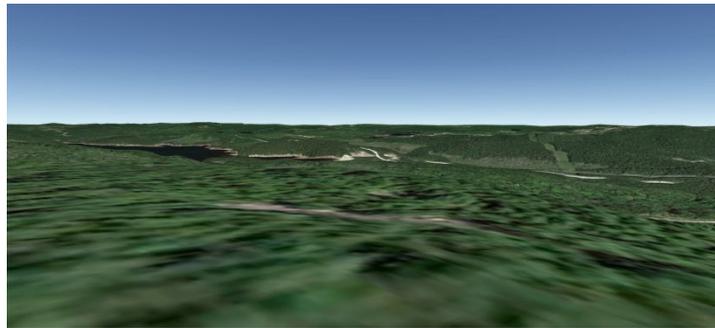
The landform of a prominent hill overlooking the Indian River valley may have been an attraction to early peoples as a vantage point. Prominent hills had potential cultural and spiritual attraction and some have been used as burial sites such as found at Whites Lake. The large knoll within the Project Site at approximately 148.0m elevation, rises steeply roughly 20m above the immediate surrounding landscape in table form which further enhances the site attraction. There are a few other raised knolls just north and west of the Project Site but range from 135m to 144m elevation inland. There appears to be a grown-in shallow crater adjacent the highest point of the knoll? This may be an early test pit or an earlier extraction of some gravel till?



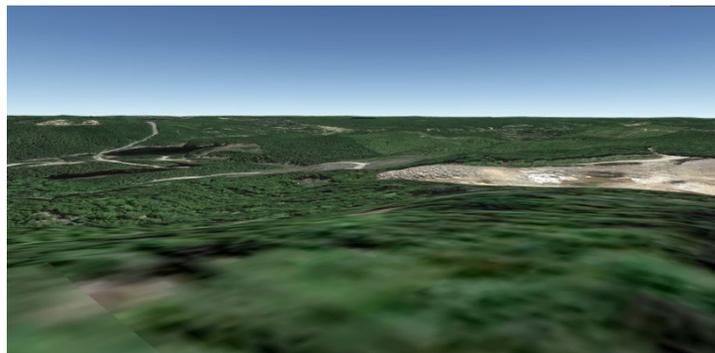
Low Oblique View SE (Google Earth Image)



Low Oblique View N (Google Earth Image)



Ground Level View NE (Google Earth Image)



Ground Level View SE (Google Earth Image)

Time	Archaeological Periods			* (Dates are Approximate)
	Natural History of N. S.	* Periods	* Northeastern Periods	* Maritime Region Tradition
11,000 B.P.	< Paleo-Indians		< Paleo-Indian	< Paleo-Indian
	11,000 - 10,000 yrs. B.P.	< Early Period	11,000 - 10,000 yrs. B.P.	11,000 - 10,000 yrs. B.P.
	↓	10,600 - 6,000 yrs. B.P.	↓	↓
10,000 B. P.	< Great Hiatus		< Early Archaic	—
	10,000 - 5,000 yrs. B.P.		10,000 - 8,000 yrs. B.P.	?
	?		↓	?
8,000 B.P.	?		< Middle Archaic	?
	?		8,000 - 6,000 yrs. B.P.	?
	?	↓	↓	?
6,000 B.P.	?	< Middle Period	< Late Archaic	< Laurentian
	?	6,000 - 3,000 yrs. B.P.	6,000 - 2,500 yrs. B.P.	+/- 5,000 yrs. B.P.
	< Archaic Period			< Maritime Archaic
	5,000 - 3,500 yrs. B.P.			5,000 - 3,700 yrs. B.P.
4,000 B.P.	↓			< Susquehanna Tradition
	< Susquehanna Tradition			4,000 - 3,500 yrs. B.P.
	3,500 - 2,500 yrs. B.P.			—
		↓	↓	?
3,000 B.P.		< Late Period	< Ceramic (Woodland)	< Maritime Woodland
		3,000 - 500 yrs. B.P.	3,000 - 500 yrs. B.P.	+/- 3,000 yrs. B.P.
	↓			
2,500 B.P.	< Ceramic Period			
	2,500 - 500 yrs. B.P.			< Middlesex
				+/- 2400 yrs. B.P.
2,000 B.P.				
	↓	↓	↓	↓
500 B.P.	< Contact Period	< Historic Period	< Historic	< Mi'kmaq, Maliseet and
	500 - 100 yrs B.P.	500 yrs B.P. - Present	500 yrs B.P. - Present	European Traditions
	—	↓	↓	↓
Present (1950)	—	—	—	—

The significant presence of Mi'kmaq in the St. Margarets Bay area continued into the Historic Period and continues today with Acadian First Nation and Sipekne'katik First Nation have land in nearby Hammond Plains.

A review of Provincial Land Grant Index sheets show 300 acres of reserve land at the mouth of the Ingram River as "Indian Reserve". There is a 500 acre parcel at Head of St. Margaret's Bay granted to Chief Phillip Bernard and two other Mi'kmaq in 1786 is listed as "Phillip Bernard et. al." rather than an Indian Reserve. (1)

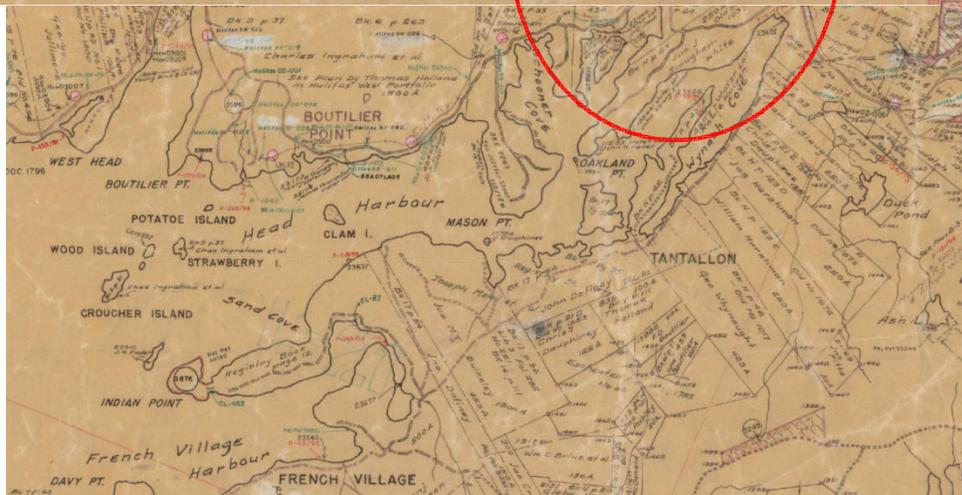
It is unknown to this study what circumstances led to these parcels to be removed from the possession of Mi'kmaw. A review of the Crown and Indigenous Relations and Northern Affairs Canada, Status Report on Specific Claims, lists the Confederation of Mainland Mi'kmaq (CMM) on behalf of Sipekne'katik First Nation and Millbrook First Nation, claim that the Ingram River Indian Reserve as well as the Sambro and the Ship Harbour Lake Indian Reserves, were subject to an unlawful surrender and sale in 1919. The last recorded entry in the Status Report is, "Settled", "Settled through negotiations", "Settlement signed by Canada", April 24, 2020 (2)

1) Online: Nova Scotia Provincial Crown Lands Record Centre Grant Index Map
<http://www.gov.ns.ca/natr/land/grantmap.htm>

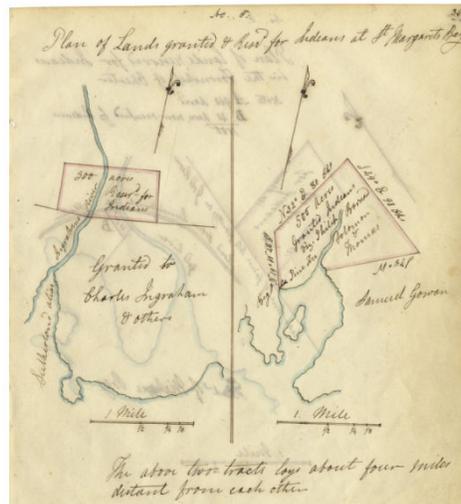
2) https://services.aadnc-aandc.gc.ca/SCBRI_E/Main/ReportingCentre/External/externalreporting.aspx



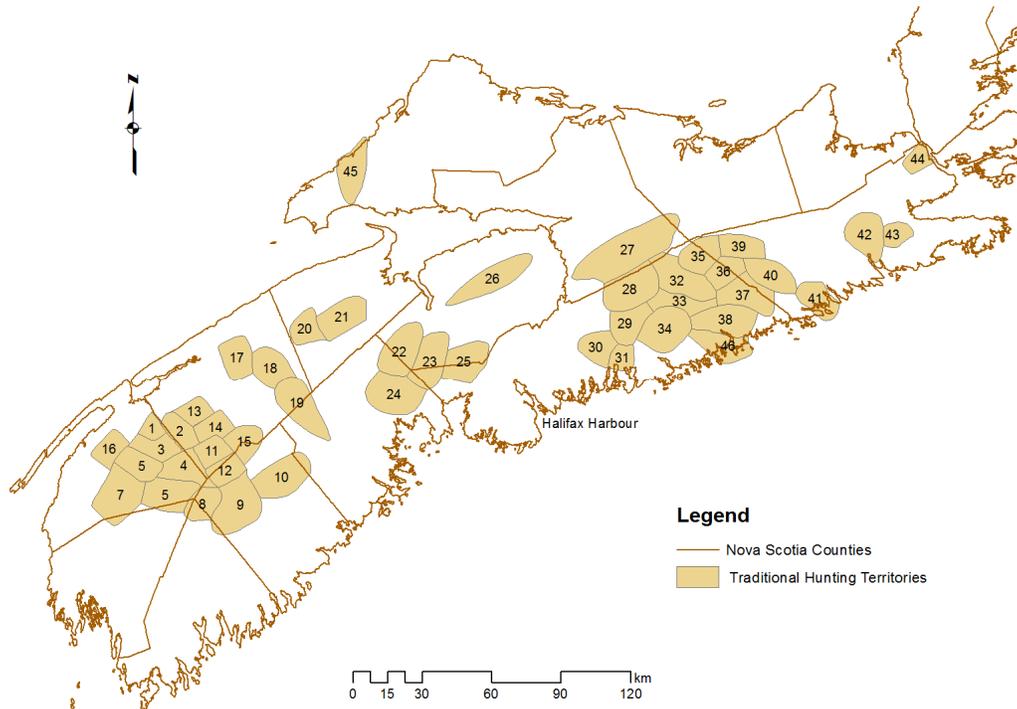
Land Grant
Index Maps
Sheet 55
above and
Sheet 56
below



Land Grant Index Map of Former Ingram River Reserve and Indian River (St. Margarets Bay) Grant



Former Ingram River 300 acre Reserve and Indian River (St. Margarets Bay) 500 acre Grant



Mainland Nova Scotia Traditional Hunting Territories ⁽³²⁾

Map #	Name of Family	Geographic Territory
25	Joe Brooks	Uniacke Lake below Mt. Uniacke
23	Tom Phillips	Ponhook (Panuke) and Caribou Lakes

It was the duty and responsibility of the chief of each political district to assign the hunting territories to families and any changes were made in the presence of the Council of Elders which met in the spring and fall of every year. ⁽⁴³⁾

The territories were hereditary and usually surrounded lakes and rivers and were passed on to sons unless there were no sons where the district was then assigned to another family. ⁽³²⁾

The hunting territories of the mainland Nova Scotia were numerous compact interior territories that encompassed the watersheds of interior lakes and rivers as Mi'kmaq did most their game hunting during colder months of the year when they moved inland from the summer coastal camps. ⁽³²⁾⁽⁴³⁾

The nearest hunting territories to the Project Site and last known assignees were Joe Brooks assigned the area south of Mount Uniacke (Territory #25), and Tom Phillips assigned the area of Panuke Lake (Territory #23).

Summary

The Project Site was ice free some time between 12,000 and 11,000 years before present. The extent of Younger Dryas Period ice advance approximately 11,000 and 10,000 years before present may have extended over the Project Site

The Project Site landscape left by the melted ice sheets consists of Granite bedrock overlain by thick stony till that developed a excessively stony soil not suitable for agriculture.

There are known archaeological sites and finds adjacent the Project Site are evidence of a significant presence of Early Peoples in the area potentially dating back to the Archaic Period of 3,500 to 5,000 year Before Present.

The high point of the area is within the Project Site with an additional feature of a dramatic rise of a table-like mesa form Knoll above the immediate surrounding landscape. The Table form landscape feature is a natural attraction as a vantage point and may have had cultural and spiritual attraction to Early Peoples.

Based on watershed boundaries, the Project Site is within Eskikewa'kik (Skin Dressers) District of the seven political districts of Traditional Territory of Mi'kma'ki. The Ingram River watershed and Big Indian Lake watershed form the boundary with Sipekni'katik (Wild Potato Area) with the Project Site within the Big Indian Lake Watershed of Eskikewa'kik.

The nearest traditional hunting territories to the Project Site and last known assignees were Joe Brooks assigned the area south of Mount Uniacke (Territory #25), and Tom Phillips assigned the area of Panuke Lake (Territory #23).

The presence of Mi'kmaq in St Margarets Bay continued into the Historic period with Reserve parcels located on the mouth of the Ingram River and another nearby reserve parcel located at Sambro. A 500 acre Land Grant located at the mouth of the Indian River at Head of St. Margarets Bay, was granted to Mi'kmaq.

The circumstances of these parcels is unknown to this study but the 300 acre Ingram River parcel was the subject of a Specific Land Claim process that was concluded as settled in 2020.

Field Sampling

Methodology

Field sampling, or site visits, are conducted as another method to gather and document plants, trees, animal signs/tracks, fish and wildlife habitats, or any other land feature which would hold significance to the Mi'kmaq (food or sustenance, social, cultural, or ceremonial purposes).

Site visits consist of site reconnaissance (to evaluate the entrances to the site, terrain characteristics, and evaluation of any other information that would affect safety or logistics of the site visit), logistics planning, as well as capturing “observation points” with the assistance of a Mi'kmaq knowledge holder. Observation points are stops along the site visit where species or landmarks significant to the Mi'kmaq were observed to be occurring. These are taken at approximate set intervals, or whenever a species or feature was deemed worthy to be noted by the knowledge holder. While every effort is made to ensure the project site receives a good coverage of observation points, weather, vegetation, available paths and trails, or difficult terrain can cause some data gaps.

Initial site visits took place in July 2021. MGS accompanied by a Mi'kmaq knowledge holder from Paqtnekek and a staff member from GHD, conducted a site visit of the Project Site. Throughout the site visit various species (and subspecies) of plants, trees, and animal signs/tracks were observed.

Site Visit Observations

Spruce species, maple, birch species, and fir trees were observed the most throughout the entire site.

Observation	# of observations
Bunchberry	30
Sweetfern	15
Winterberry	15
Goldenthread	9
Snowberry	9
Women's Sage	9
Blueberry	3
Coyote Track	1
Deer Trail	1
Labrador tea	1
Mountain holly	1

Table 1. Summary of observation points

Interim Report

GHD has contracted Membertou Geomatics Solutions (MGS) to conduct a Mi'kmaq Ecological Knowledge Study (MEKS) with regards to a proposed Quarry project off Tote Road, located near St. Margaret's Bay NS. The purpose of this interim report is to provide an update on the status of the MEKS.

The Mi'kmaq Ecological Knowledge Study will be undertaken to identify land and resource use, which is of particular importance to the Mi'kmaq people, with respect to the Tote Road Quarry Project.

The major activities involved in conducting the MEKS for this project include:

- A historical review (Research),
- A site visit,
- Community interviews,
- Data analysis/final report.

Update:

MGS has completed and submitted the research section of the MEKS in Dec. 2021 to GHD for review, see Appendix A.

MGS has completed the site visit requirements of the MEKS in July 2021, see Appendix B for Site Observation report.

It should be noted that due to current COVID19 restrictions, no community interviews were started or conducted to date for safety of community members. MGS has frequently updated GHD on the community interview status.

MGS has also notified GHD that an online interview tool is being developed by MGS to help escalate the interview process and MGS has had meetings with both KMKNO and the Province on the status of MEKS and community interviews concerns.

Nova Scotia is expected to lift all provincial restrictions in late March, 2022, MGS is "planning" to start the interview process in April/May 2022. Although, provincial protocols are being lifted in Nova Scotia, it should be noted that interviews will not commence until the communities feel safe to participate in the MEKS.

MGS will require two to three weeks after the interviews are complete to conduct the analysis and finalize the report.