# Appendix I
# Mi’kmaq Ecological Knowledge Study (MEKS)

# Sporting Mountain
# Quarry Expansion MEKS

Membertou
GEOMATICS SOLUTIONS

**March 2020**
**Version: 1**

## M.E.K.S. Project Team

Jason Googoo, Project Manager

Dave Moore, Author and Research

Craig Hodder, Author and GIS Technician

Aaron Googoo – GIS Technician

Gail Marshall - Interviewer

John Sylliboy - Traditionalist

| Prepared by: | Reviewed by: |
| --- | --- |
| _____ | _____ |
| Craig Hodder, Author | Jason Googoo, Manager |

# Executive Summary

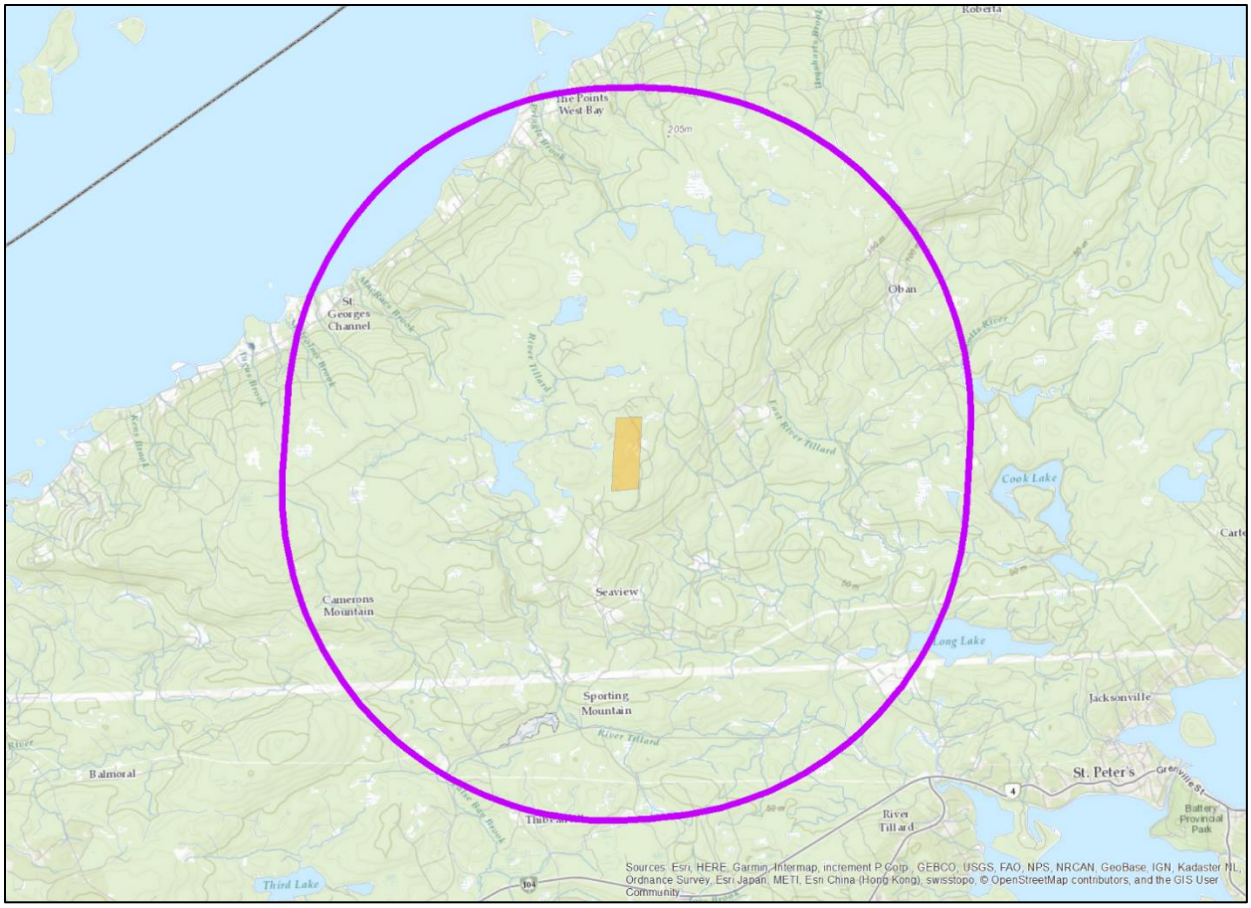
This Mi'kmaq Ecological Knowledge Study, also commonly referred to as a MEKS or a Traditional Ecological Knowledge Study (TEKS), was developed by Membertou Geomatics Solutions (MGS) for GHD Group Pty Ltd. (GHD) with regards to the proposed aggregate quarry expansion near Sporting Mountain in Richmond County, NS.

This MEKS mandate is to consider land and water areas in which the proposed project is located and to identify what Mi'kmaq traditional use activities have occurred, or are currently occurring within, and what Mi'kmaq ecological knowledge presently exists regarding to the area. In order to ensure accountability and ethic responsibility of this MEKS, the MEKS development has adhered to the "Mi'kmaq Ecological Knowledge Protocol, 2nd Edition". This protocol is a document that has been established by the Assembly of Nova Scotia Mi'kmaq Chiefs (ANSMC), which speaks to the process, procedures and results that are expected of a MEKS.

The Mi'kmaq Ecological Knowledge Study consisted of two major components:

- **Mi'kmaq Traditional Land and Resource Use Activities**, both past and present,
- A **Mi'kmaq Significance Species Analysis**, considering the resources that are important to Mi'kmaq use.

The Mi'kmaq Traditional Land and Resource Use Activities component utilized interviews as the key source of information regarding Mi'kmaq use within the Project Site and Study Area.




*Project Site (orange areas) and Study Area (purple outline) are identified by the Project Team.*

The Study Area will consist of an area within a 5 km radius around the Project Site.

Interviews were undertaken by the MEKS Team with Mi'kmaq knowledge holders from the communities of Potlotek, We'koqma'q, and Membertou First Nations. The interviews took place between October and December 2019.

Interviewees were shown topographical maps of the Project Site and Study Area and asked to identify where they undertake their activities as well as to identify where and what activities were undertaken by other Mi'kmaq, if known. This MEKS processed information from twenty (20) interviewees, including interviewees from other recent studies, within the analysis portion. Permission was requested of the interviewee(s) to have their information incorporated into the GIS data. These interviews allowed the team to develop a collection of data that reflected the most recent Mi'kmaq traditional use in this area, as well as historic accounts.

**All interviewee's names are kept confidential and will not be released by MGS as part of a consent agreement between MGS and the interviewee to ensure confidentiality.**

The data gathered was also considered in regard to its significance to the Mi'kmaq people. Each species identified was analyzed by considering their use as food/sustenance resources, medicinal/ceremonial plant resources and art/tools resources. These resources were also considered for their availability or abundance in the areas listed above, and their availability in areas adjacent or in other areas outside of these areas, their use, and their importance, with regards to the Mi'kmaq.

**Historic Review Summary**

The Project Site is a rectangular site of approximately 40ha that sits on the southwest edge of an elevated plateau called South Mountain. The Project Site is within Sub-District (Sub-Unit) 330a, Sporting Mountain, of District 330, Fault Ridges, Region 300, Avalon Uplands. The granites and volcanic rocks of 330a, Sporting Mountain may be found exposed in the thin till cover. Early peoples had use for stone and minerals, usually found in high heat and pressure formed stone, for use such as tools and weapons.

The Project Study Area 5km radius also includes Natural History of Nova Scotia District 860, Sedimentary Lowland and a portion of Unit 916, Bras d'Or Lake (West Bay).

The Project Site and Study Area are within the Traditional Mi'kmaq Territory of Unama'kik.

The Project Site is within the Traditional Hunting Territory #47, last assigned to Newell Denys (Nu'weli'dj – "Little Newell") and covered the area of West Bay, Strait of Canso to Craigmore on St. Georges Bay.
Nicolas Denys provided a record of some aspects of everyday Mi'kmaq life based on his best recollections of his experiences while living and trading among the Mi'kmaq in Acadia.

Holland's survey of Cape Breton Island for the British Government between 1765 and 1767, recorded Mi'kmaq seasonal camp locations and gave detailed descriptions of the land as he found it at that time.

Based on Hollands report that he forwarded to the King, Cape Breton Island was declared "His Majesty's Timber Reserve" until 1775 when the Island was opened to settlement. Until 1784, Cape Breton was "practically unencumbered by land title". The author of a national geography published in 1830 notes that Cape Breton was rapidly being settled in 1825.

At the time of a 1956 publication, Sporting Mountain was one of the few areas of Cape Breton Island with remaining virgin forest classified as Hemlock-White Pine-Northern Hardwood type of climax forest.

With the arrival of Planter, Loyalist and Scottish Settlers in Cape Breton, the land was occupied and improved upon. The rivers and forests that the Mi'kmaq depended on for subsistence and the new laws interfered with traditional hunting and fishing. Mi'kmaq entered the labour market of the fishery by frequenting locations such as Arichat and also to sell their crafts and wares.

Mi'kmaq encampments also appeared within or near the outskirts of communities such as Baddeck, North Sydney and Sydney where Mi'kmaq gathered to sell or barter their crafts and wares and also find work in the community.

By the mid 1800's, Mi'kmaq gathered at an annual St. Anne's Celebration, revealed a poor to very poor people of which few still practiced subsistence hunting. Most Mi'kmaq at that time relied on wage labour, making and selling crafts and small subsistence gardens to survive.

Today, there are Mi'kmaq communities located within 40km of the Project Site:

- Potlotek First Nation located 15km (9 miles) directly east of the Project Site within St. Peters Inlet at Chapel Island I. R. 5.
- We'koqma'q First Nation (Waycobah) 32km (20 miles) north-northwest on Whycocomagh I. R. 2, located on the western shore of Whycocomagh Bay

- Eskasoni First Nation 30km (19 miles) located northeast across Bras d'Or Lake on the northwest shore of East Bay is on Eskasoni I. R. 3 and 3A.
- Wagmatcook First Nation Mi'kmaq community is located on the western shore of Nyanza Bay, 38km (24 miles) north of the Project Site on Wagmatcook I. R. 1.
- Malagawatch I. R. 4 occupies all of Boom Island and most all of Big Harbour Island located between Denys Basin and Bras d'Or Lake, and is roughly 15km (9 miles) north of the Project Site. Although having some full-time residents, Malagawatch is jointly managed by all 5 Mi'kmaq Communities of Cape Breton Island.

A review of the Status Report on Specific Claims shows no active claims within the Project Site and Study Area.

**Traditional Use - Project Site Summary**

Based on the data documented and analyzed, it was concluded that there is some Mi'kmaq use reported within the Project Site.

Activities occurring in the Project Site include deer, rabbit, and partridge hunting, as well as tree root and sweetgrass picking areas. There were no fishing areas identified within the Project Site.

**Traditional Use - Study Area Summary**

Trout fishing and deer hunting were the predominant traditional use activities reported by interviewees in the Study Area. Overall, the activities took place primarily in the Current Use timeline categories.

There were other fishing, hunting, and gathering activities reported, as well.

# Table of Contents

# 1.0 INTRODUCTION

## *1.1 Membertou Geomatics Solutions*

Membertou Geomatics Solutions (MGS) is a Membertou First Nation company that was developed as a result of the 2002 Supreme Court Marshall Decision. MGS was established as a commercially viable company that could provide expertise in the field of GIS Services, Database Development, Land Use Planning Services and Mi'kmaq Ecological Knowledge Studies (MEKS). MGS is one of many companies established by the Membertou First Nation – Membertou Corporate Division and these companies provide employment opportunities for aboriginal persons and contribute to Membertou's efforts of growth and development. As well, Membertou's excellent management and accountability of their operations is further enhanced by their ISO 9001:2015 certification.

For the development of this MEKS, MGS brings to the table a team whose expertise and skills with land documentation have developed a sound MEKS. The team skills include knowledge of historical Mi'kmaq research, GIS data analysis, Mi'kmaq ecological and cultural knowledge, and Mi'kmaq community connections.

## *1.2 Sporting Mountain Quarry Expansion MEKS*

GHD Group Pty Ltd. (GHD), on behalf of Nova Construction Co. Ltd. (Nova), has contacted Membertou Geomatics Solutions (MGS) to complete a MEKS with regards to a proposed aggregate quarry expansion near Sporting Mountain, Richmond County NS.

The project includes the expansion of an existing quarry from 4 hectares to approximately 12 hectares within Nova's current property located near Sporting Mountain, Richmond County, Nova Scotia.

# 2.0 MI'KMAQ ECOLOGICAL KNOWLEDGE STUDY SCOPE & OBJECTIVES

## *2.1 Mi'kmaq Ecological Knowledge*

The Mi'kmaq people have a long-existing, unique and special relationship with the land and its resources, which involves the harvesting of resources, the conservation of resources and spiritual ideologies. This relationship is intimate in its overall character, as it has involved collective and individual harvesting of the resources for various purposes, be it sustenance, medicinal, ceremonial and/or conservation. This relationship has allowed the Mi'kmaq to accumulate generations of ecological information and this knowledge is maintained by the Mi'kmaq people and has been passed on from generation to generation, youth to elder, ***kisaku kinutemuatel mijuijij***.

The assortment of Mi'kmaq ecological information, which is held by various Mi'kmaq individuals, is the focus of MEKS, also commonly referred to as Traditional Ecological Knowledge Studies (TEKS). When conducting a MEKS, ecological information regarding Mi'kmaq/Aboriginal use of specific lands, waters, and their resources are identified and documented by the project team.

Characteristically, MEKS have some similar components to that of an Environmental Assessment; yet differ in many ways as well. Among its purpose, Environmental Assessments measure the impact of developmental activity on the environment and its resources. This is often done by prioritizing significant effects of project activities in accordance with resource legislation, such as the Federal *Species at Risk Act* and the Nova Scotia *Endangered Species Act.*

Mi'kmaq Ecological Knowledge Studies are also concerned with the impacts of developmental activities on the land and its resources, but MEKS do so in context of the land and resource practices and knowledge of the Mi'kmaq. This is extremely important to be identified when developing an environmental presentation of the Study Area as

Mi'kmaq use of the land, waters and their resources differs from that of non-Mi'kmaq use. Thus, the MEKS provides ecological data which is significant to Mi'kmaq society and adds to the ecological understandings of the Project Site and Study Area.

## *2.2 Mi'kmaq Ecological Knowledge Study Mandate*

This project will require the documentation of key environmental information in regard to the project activities and its possible impacts on the water, land and the resources located here. The MEKS must be prepared as per the **Mi'kmaq Ecological Knowledge Study Protocol** (MEKSP) ratified by the Assembly of Nova Scotia Mi'kmaq Chiefs on November 22, 2007, and the 2nd Edition released in 2014.

MGS proposed to assist with the gathering of necessary data by developing an MEKS which will identify Mi'kmaq traditional land use activity within the Project Site and in the surrounding areas. This MEKS had gathered, identified, and documented the collective body of ecological knowledge which is held by individual Mi'kmaq people. The information gathered by the MEKS team is documented within this report and presents a thorough and accurate understanding of the Mi'kmaq's use of the land and resources within the Project Site and Study Area.

***It must be stated, however, that this MEKS preparation and/or acceptance of this report is not considered Consultation within itself, nor is it deemed to fulfill the Duty to Consult owed by the Crown to the Mi'kmaq. This report does not replace any Consultation process that may be required or established in regard to Aboriginal people. As well, this report cannot be used for the justification of the Infringement of S.35 Aboriginal Rights that may arise from the project.***

## *2.3 Mi'kmaq Ecological Knowledge Study Scope & Objective*

This MEKS will identify Mi'kmaq ecological information regarding Mi'kmaq traditional land, water and resource use within the Project Site/Study Area. The data that the study will gather and document will include traditional use from both the past and present time frames. The final MEKS report will also provide information that will identify where the proposed project activities may impact the traditional land and resource of the Mi'kmaq. If such possible impact occurrences are identified by the MEKS then the study will also provide recommendations that should be undertaken by the proponent. As well, if the MEKS identifies any possible infringements with respect to Mi'kmaq constitutional rights, the MEKS will provide recommendations on necessary steps to initiate formal consultation with the Mi'kmaq.

## *2.4 MEKS Project Site and Study Area*

This MEKS will focus on the Project Site. This site is defined as the existing and proposed quarry expansion areas. These areas are located near Sporting Mountain in Richmond County, NS, at approximately 8.5 km northwest of St. Peters, NS.

The Study Area will consist of a larger area that is defined by a 5km radius around the Project Site.

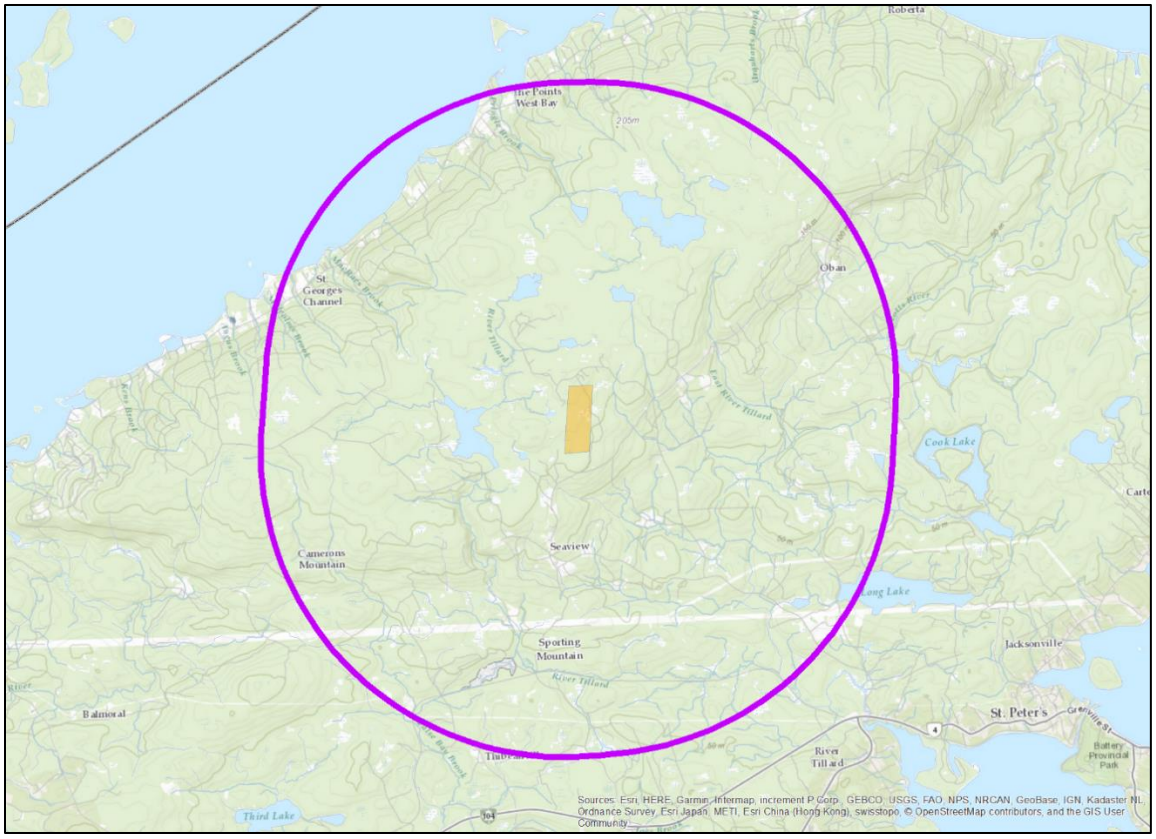



*Figure 1. Project Site (orange areas) and Study Area (purple outline) are identified by the Project Team.*

# 3.0 METHODOLOGY

## *3.1 Interviews*

As a first step to gathering traditional use data, the MEKS team initiated dialogues with knowledge holders in Potlotek, We'koqma'q, and Membertou First Nations, given their close proximity to the Project Site.

Knowledge holders were contacted by the MEKS team members and interviews were conducted between October and December 2019.

For this MEKS, seventeen (17) informants provided information in regard to past and present traditional use activities. These individuals were from the communities of Potlotek, We'koqma'q, and Membertou First Nations. All of the interviews that were completed following the procedures identified within the Mi'kmaq Ecological Knowledge Protocol (MEKP) document. Prior to each interview, interviewees were provided information about the MEKS, including the purpose and use of the MEKS, consent to utilize their information in this MEKS, an agreement of non-disclosure of their personal information in any reports, and the future use of the traditional use information they provided. Information gathered from other MEKS conducted in the area were utilized in this study as well.

During each interview, individuals were provided a map of the Project Site and Study Area and asked various questions regarding Mi'kmaq use activities, including where they undertook their activities or where they knew of activities by others, when such activities were undertaken, and how that type of resource was utilized. Other information gathered could be species habitats, changes in species populations, and/or general information about the land related to its' use. When required or preferred, interviews were conducted in the Mi'kmaq language.

## *3.2 Literature and Archival Research*

With regards to this MEKS, various archival documents, maps, oral histories and published works were reviewed in order to obtain accurate information regarding the past or present Mi'kmaq use or occupation relevant to the Project Site and Study Area.

As part of the historical review process, it should be noted there may be other sources of Historical and Archaeological data available but may have restricted access or not uncovered within this project's Historical Review. A complete listing of the documents that were referenced is outlined in the *Sources* section of this report.

## *3.3 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 consisted 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, amd capturing observation points with the assistance of a Mi'kmaq knowledge holder. Observation points are stops on the site 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, density of vegetation, available paths and trails, or difficult terrain can cause some data gaps.

This site visit took place in October 2019. MGS staff, accompanied by a Mi'kmaq knowledge holder from We'koqma'q conducted the 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 species, fir, and poplar were observed the most throughout the entire Project Site as noted in Table 1 and Figure 2 below.

| | | | |
|---|---|---|---|
| maple | 14 | black spruce | 13 |
| birch | 9 | golden thread | 8 |
| raspberry | 7 | deer signs | 6 |
| partridge berry | 6 | pine | 6 |
| snowberry | 5 | balsam fir | 4 |
| "woman's sage" (pearly everlasting) | 4 | cat tail | 3 |
| coltsfoot | 3 | goldenrod | 3 |
| rock larch | 3 | fern | 2 |
| mushroom | 2 | sweet gale | 2 |
| alder | 1 | beech | 1 |
| Labrador tea | 1 | moss | 1 |
| ostrich fern | 1 | purple iris | 1 |
| rose | 1 | wild pea | 1 |
| yarrow | 1 | | |

*Table 1. Summary of species at observation points*

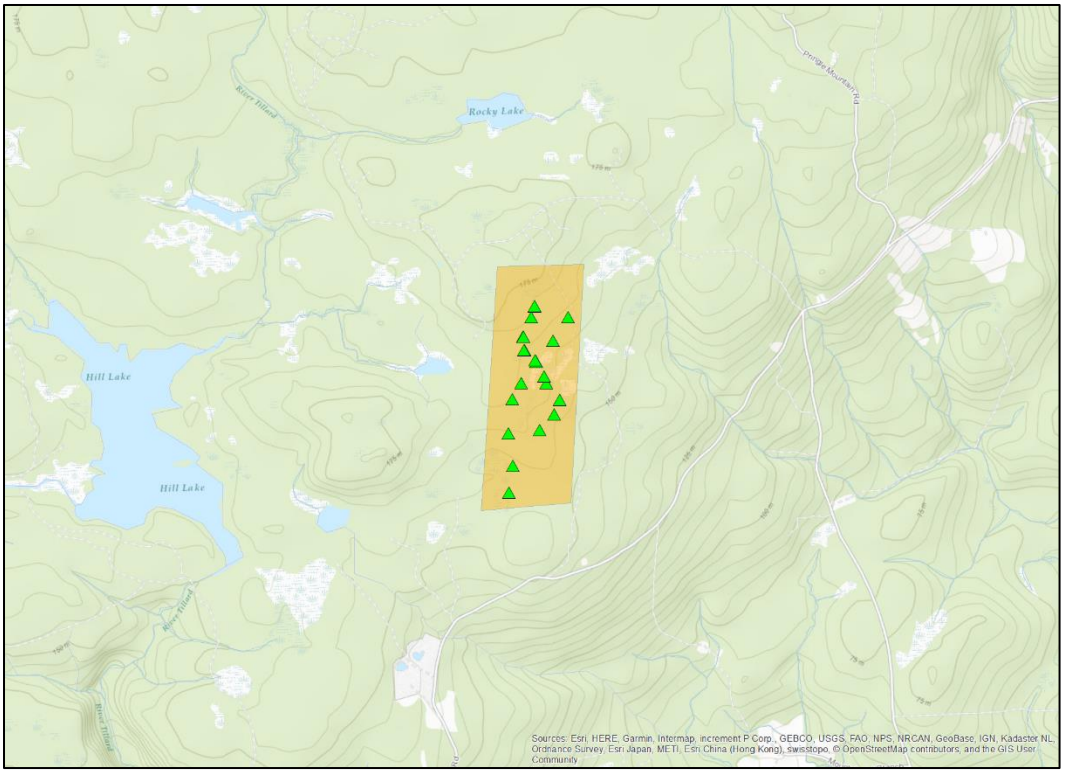



*Figure 2. Observation points (green triangles) taken throughout the site visit*

*Figure 3. The southwest side of the existing quarry*

*Figure 4. Deer tracks found in some mud*

*Figure 5. Maples and spruce trees along side of a cut*

# 4.0 MI'KMAQ LAND, WATER AND RESOURCE USE

## *4.1 Overview*

The Mi'kmaq Land, Water and Resource Use Activities component of the MEKS provides relevant data and analysis in regard to Mi'kmaq traditional use activities that are occurring or have occurred within the Study Area. It identifies the type of traditional use activities that are occurring, it provides the general areas where activities are taking place and it presents an analysis regarding the significance of the resource and the activity as well.

The Mi'kmaq traditional use activities information that is provided by interviewees is considered both in terms of "Time Periods" and in regard to the "Type of Use" for a given resource. The Time Periods that the MEKS team differentiates traditional use activities by are:

**"Current Use" – a time period within the last 10 years**
**"Recent Past" – a time period from the last 11 – 25 years ago**
**"Historic Past" – a time period previous to 25 years past**

The "Type of Use" categories include spiritual use and sustenance use, such as fishing, hunting, or medicinal gathering activities.

Finally, the study analyzes the traditional use data in consideration of the type of land and resource use activities and the resource that is being accessed. This is the Mi'kmaq Significant Species Analysis, an analysis which ascertains whether a species may be extremely significant to Mi'kmaq use alone and if a loss of the resource was to occur through project activities, would the loss be unrecoverable and prevent Mi'kmaq use in the future. This component is significant to the study because it provides details as to Mi'kmaq use activities that must be considered within the environmental understanding of the Project Site and Study Area.

By analyzing the traditional use data with these variables, the MEKS thoroughly documents Mi'kmaq traditional use of the land and resources in a manner that allows a detailed understanding of potential effects of project activities on Mi'kmaq traditional use activities and resources.

## *4.2 Limitations*

By undertaking a desktop background review and conducting interviews with Mi'kmaq participants in traditional activities, this study has identified Mi'kmaq Traditional Use activities that have occurred or continue to occur in the Study Area and Project Site. This has allowed the study to identify traditional use activities in a manner that the MEKS team believes is complete and thorough, as required by the MEKP. Historical documents within public institutions were accessed and reviewed and individuals from nearby Mi'kmaq communities were interviewed. The interviews were undertaken with key Mi'kmaq community people, identified by the MEKS team, who are involved and are knowledgeable regarding traditional use activities. Through the historical documentation review and the interview process, the MEKS team is confident that this MEKS has identified an accurate and sufficient amount of data to properly reflect the traditional use activities that are occurring in the Study Area.

The MEKS process is highly dependent on the information that is provided to the team. Since only some of the Mi'kmaq traditional activity users and not all Mi'kmaq traditional activity users are interviewed, there is always the possibility that some traditional use activities may not have been identified by this MEKS.

## *4.3 Historical Review Findings*

The Historical Review looks at a collection of sources holding knowledge of the natural and cultural history relevant to the Project Site location and surrounding larger Study Area. A review of these sources provides the pieces of a larger story of the land and people. We attempt to tell that story and pass on the knowledge gained.

Context is very important in the telling of this story. The landscape, climate and creatures were somewhat different at various periods of time than what is here in present-day.

**Project Site**

The Project Site is a rectangular shaped parcel of land approximately 1.1km long orientated north and south by approximately 0.4km wide. The project Site has an area of 0.4km$^2$ (437,972.6 m$^2$, 43.8 hectares or 108.2 acres) and is located on the southwest edge of the elevated plateau of South Mountain in Seaview. There is an existing quarry in the southern quarter of the Project Site. The area of the proposed expansion has been previously clear-cut.

The topography within the Project Site is a gentle southeast slope from the high ground at the northwest corner at 175-180m elevation to the southeast corner at approximately 150m elevation. There are some low terraced wetlands within the southeast slope. *(1)*

The Study Area is a further 5km offset of the Project Site and 5km radius at the Project Site corners. The Study Area includes Mountain Lake, centered approximately 265m west of the Project Site and Hill Lake, centered approximately 1.5 km west of the Project Site. An area of high ground of approximately 180m elevation is located between the Project Site and Hill Lake. Hill Lake has a surface area of approximately 0.4km$^2$ (400114.51 m2, 40.1 hectares or 98.9 acres) and at an elevation of approximately 150m. Hill Lake has a large catchment area including the eastern portion of the plateau that includes the sub-watersheds of Mountain Lake, Rocky Lake 0.7km north and Paddys Lake 1.5km northeast of the Project Site. Hill Lake receives waters from Paddys Lake

and Rocky Lake through River Tillard which provides further downriver connection to the Atlantic Ocean though River Tillard flow into St. Peters Bay. The River Tillard flow continues from the Hill Lake outlet at the southeast corner of the lake and flows southwest though a steep 95m drop in elevation from Hill Lake outlet, through to 55m elevation at a small lake/pond located 3.2km downriver and 2.1km south of Hill Lake. Within that distance, River Tillard meanders from 125m to 85m elevation through an approximate 1.4km long gorge with a 75-190m wide floor with walls up to 35m high. There is at least one falls located a short distance downstream from the Hill Lake outlet. At 85m elevation, River Tillard changes flow direction from southeast to south-southwest from a ledge, down the south slope of South Mountain to the small lake/pond at 55m elevation. River Tillard continues southeast for 2.4km southeast to the community of Sporting Mountain at an elevation of approximately 35m. From the community of Sporting Mountain, River Tillard meanders for another 4.0km east through low and rolling topography of 35-10m elevation to meet East River Tillard at approximately 325m upriver of the 5m contour. East River Tillard receives waters from numerous brooks flowing down the southeast slope of Sporting Mountain as well as the sub-watersheds of Cook Lake, Cranberry Lake east of the Study Area as well as Long Lake through Kyle Lake, within the southeast quadrant of the Study Area. River Tillard meanders northeast and southeast for additional 3.0km before emptying into the saltwater of St. Peters Bay. *(1)*

The northeast quadrant of the study area includes the portions of South Mountain to the north known as Campbells Mountain and to the northeast known as Pringle Mountain which has Pringle Lake roughly centered in mid plateau and 2.8km northeast of the Project Site. Pringle Lake is a large lake of 650,655$m^2$ (65 hectare, 161 acres) that has an elevation in the range of 160-165m. Donnellys Lake is downstream at an elevation of approximately 155m. Pringle Lake and Donnellys Lake flow northwest in a steep drop through a narrow cut in the northwest slope from the outlet of Donnellys Lake at 150m elevation to 5m elevation before emptying into the waters at The Points West Bay. MacDonalds Lake located on the plateau between Pringle Lake and Hill Lake, flows down the southeast slope of South Mountain to eventually join East River Tillard. *(1)*

The northwest quadrant of the Study Area includes the shoreline of West Bay, the Bras d'Or Lakes from Angus Brook, north to The Points West Bay. The southeast quadrant of the Study area has within the low and hilly topography at the base of the south slope of South Mountain. South Mountain itself fills the northwestern half of the Study Area with elevations of 185m in the southwest and 190m in the northwest of the Study Area. The southeastern half of the Study Area is low elevations and has a scattering of knobby hills of 45-80m elevation above a floor of 30-50m elevation.

The nearest community of population and business/service hub is St. Peters approximately 8.6km southeast of the Project Site and approximately 4.0km southeast of the Study Area. The River Bourgeois area is another populated community approximately 6.8km south of the Project Site and 1.7km south of the Study Area limits. The Study Area has smaller communities of Oban to the northeast of the Project Site, Seaview south of the Project Site and Sporting Mountain also south of the Project Site. An electrical transmission line corridor runs east-west through the south portion of the Study Area. A network of rural and resource roads are found throughout the Study Area that have access to Provincial and National road networks via West Bay Highway/Road, Trunk No. 4, Mountain Road, Exit 47 on Highway 104 and Sporting Mountain Road. *(1)*

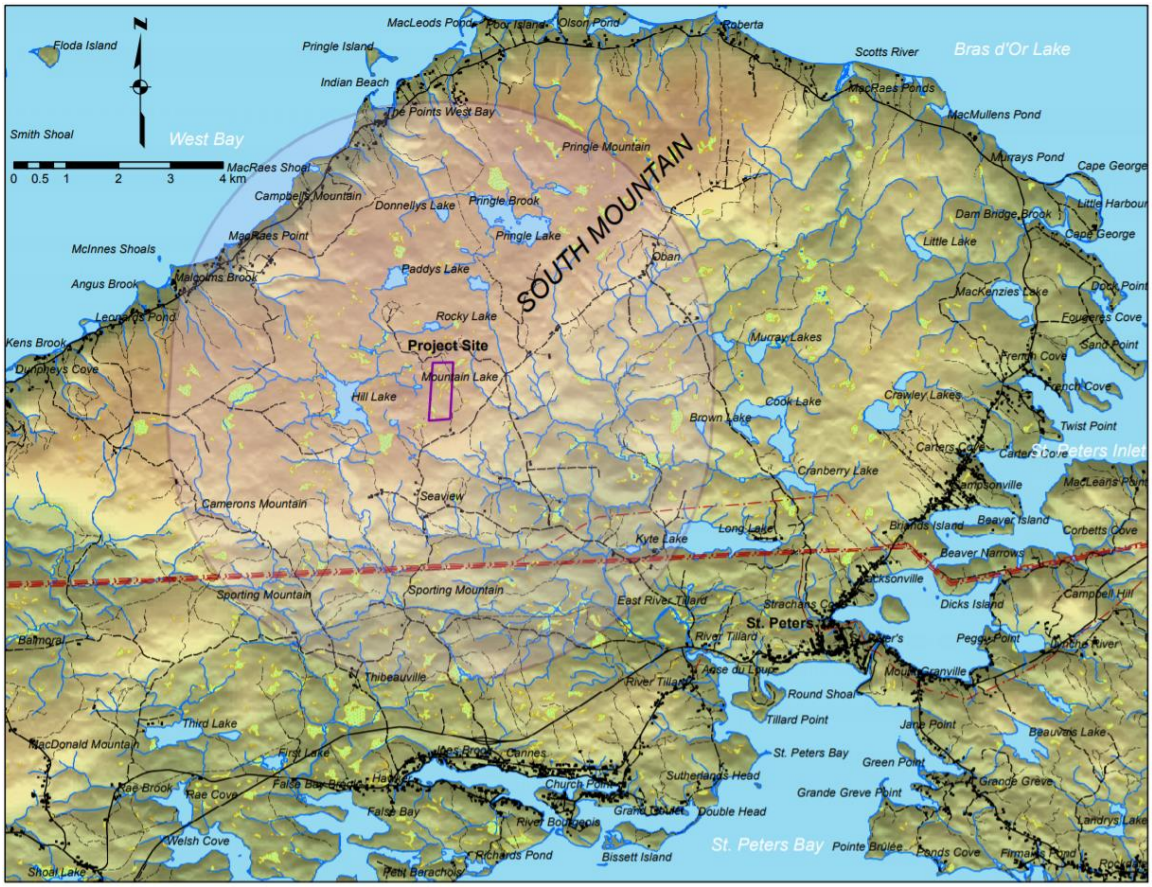



*Figure 6. Project Site and Project Study Area Context Map (1)*

**The Natural History**

The natural history of the Project Site and Study Area helps explain how the present-day landscape came to be and what resources were available to early peoples.

Ancient geologic forces built up sediment, extruded magma, superheated and metamorphosed rock that was later broken, folded and eroded to shape the landscape that would eventually provide early peoples habitats for hunting and natural resources for gathering. There is evidence of early peoples within the Province and Maritime Region during the emergence of land from beneath the receding ice of the last glacial period beginning 14,000 years ago. There was also a dramatic rise in sea levels in the last 6,000 years that flooded former shorelines and lowlands.

The Project Site lies within the Cape Breton Hills ecodistrict (310) of the Ecological Land Classification for Nova Scotia developed by the Nova Scotia Department of Natural Resources *(47)* The Cape Breton Hills ecodistrict includes most hardwood covered hills on the island in the 150-300m elevation range. Distributed throughout the island, the hills are typically steep hill slopes topped with plateaus and are comprised of older igneous and metamorphic bedrock that resists erosion. The plateaus of the Cape Breton Highlands ecodistrict (210) are distinct with the highlands having boreal and near boreal ecosystems. The Northern Plateau ecodistrict (100) are the interior plateaus of the Cape Breton Highlands distinct with extensive barrens, exposed bedrock, lichens, mosses and the stunted spruce and balsam fir forests. *(47)*

The top of Sporting Mountain (South Mountain) is described as hummocky to level terrain with imperfectly drained, coarse to medium textured soils supporting forests of black spruce, white spruce and balsam fir. Wet forests of black spruce, tamarack and red maple are found on poorly drained soils. Open woodlands of black spruce and patches of lichen are found on thin soils to bedrock or gravelly soils. The above description also applies to the East Bay Hills, Boisdale Hills and North Mountain (West Bay) of the Cape Breton Hills ecodistrict (310). *(47)*

In addition to Sporting Mountain (South Mountain), Creignish Hills, Kelly's Mountain and Mabou Highlands are included with the Cape Breton Hills ecodistrict (310). Lower elevation hills including Mount Young, Washabuck/Cains Mountain and Rear Forks Baddeck are also included with the Cape Breton Hills ecodistrict.

The lowlands east and southwest of South Mountain (Sporting Mountain) are a portion of the Bras d'Or Lowlands ecodistrict (510). The Bras d'Or Lowlands includes the lowland surrounding the Bras d'Or Lakes, Loch Lomond, Mira River and the Sydney coalfield. The eastern half of the Bras d'Or Lowlands ecodistrict are covered mostly in shallow and stony glacial till and the western half covered in mostly imperfectly drained clay-loam soils. The bedrock underlying the Bras d'Or Lowlands ecodistrict consists of

Carboniferous period sedimentary  conglomerates, sandstones, siltstones, shales, mudstones, coal, limestone, gypsum and salt. *(47)*

Nova Scotia Museum of Natural History developed The Natural History of Nova Scotia classification system based on the Biophysical Land Classification System of terrestrial landscapes that was expanded to include marine landscapes. The system divides the landscape and adjacent marine areas into regions of similar climate, geology and vegetation. *(2)*

The Project Site location is within Natural History of Nova Scotia, Avalon Uplands Region (300), Fault Ridges District (330), Sporting Mountain Sub-District /Sub-Unit (330a).

The Avalon Uplands (Region 300) typically are sharply defined landscape features of raised and level plateaus in the 100-300m elevation range with abrupt steep slopes of roughly 100m drop in elevation at the margins. The plateau blocks are comprised of the most ancient rocks in the Province which are hard erosion resistant igneous and metamorphic rock *(2)*

Fault Ridges (District 330) are comprised of two elongated blocks with Sporting Mountain (330a) located between West Bay and St Peters Inlet and East Bay Hills (330b) located east of Bras d'Or Lake and southeast of East Bay. Both blocks are comprised of granites and Fourchu Group volcanic/marine sediment mix deposits with Sporting Mountain (330a) having mostly granites and East Bay Hills (330b) comprised mostly of Fourchu Group ash, lava and sediment mix. Being on the low end of an ancient tilted plain that rises to the north of the Bras d'Or Lakes, both fault blocks are about 180m in elevation forming low ridges on a lowland landscape. Sporting Mountain Block (330a) steepest slopes are on the northwest slope with a fault along the southeast slope but showing little sign of scarp slope until northeast of Oban. The plateau surface is poorly drained with numerous pockets of ponds and outlets as well as several lakes. The slopes of the Sporting Mountain faulted block have fast flowing streams that run straight

towards West Bay on the steep north and northwest slopes. Drainage on the less defined southeast slopes of the Sporting Mountain block has more of a disorganized pattern. Mixed stands of Red Maple, White Birch, Yellow Birch, American Beech, Fir and White Spruce cover the Faulted Ridges. At present, there are few moose on the blocks but deer form winter yards on the side slopes. *(2)*

It is the granites of Sporting Mountain (330a) where Quartz may be found for use as tools and weapons by early peoples. The volcanic rocks found to northeast and northwest of the Project Site may also contain minerals useful for utility. Surficial geology mapping shows the top of South Mountain as bedrock, described as having a thin cover of till with exposed bedrock. Surficial geology mapping also shows a few drumlins scattered around the top of South Mountain and west of the Project Site. *(6)*

The lowlands within the eastern southwestern portion of the Study Area has an environment is dominated by exposure to Atlantic Ocean winds with the coastal forests extending inland from the coastline from Lower L'Ardoise to St. Peters Bay, Lennox Passage including Isle Madame as well as the eastern shore of the Strait of Canso. The Lowlands have been eroded from weak metamorphic Carboniferous sandstones of the sediments of an ancient river system and drowned to form Chedabucto Bay. The coastal forest of White Spruce, Balsam Fir, Maple and Birch dominates the vegetation within lowlands. Shoreline habitats within the lowlands are typically subject to winter sea ice which is not favourable to year-round waterfowl. However, wading shorebirds make use of salt marsh and estuary habitats within the Lowlands. *(2)* The lowland habitats east and southwest of South Mountain would be the preferred location within the Study Area for early peoples hunting and gathering.

A portion of the northwest quadrant of the Study Area includes West Bay of Bras d'Or Lake. Bras d'Or Lake is approximately 260 $km^2$ of brackish water. The Bras d'Or Lakes has connections with the Atlantic Ocean through the Great Bras d'Or Channel into the Sydney Bight over an -8m minimum depth and the long and narrow Little Bras d'Or

Channel that connects St Andrews Channel with the Sydney Bight over a minimum depth of -6m. *(2)*

It is through Little Bras d'Or Channel and Great Bras d'Or Channel that the rising sea level flooded the pre-Bras d'Or Lakes system consisting of several small valley, freshwater lakes interconnected by a variety of river system patterns approximately 6,000 years ago. *(3)* The Natural History of Nova Scotia has the influx of ocean water into the pre-Bras d'Or Lakes system at 4,500 years ago. A possible previous saltwater incursion was cut off by the post glacial land rebound for a period of 9,000 to 4,500 years ago until subsidence again allowed the seawater into the freshwater system. *(2)* There is a present-day constructed canal connection through a narrow isthmus at St. Peters that had an area of natural shallow land between the Bras d'Or Lakes and St. Peters Bay.

Bras d'Or Lake is interpolated to be underlain with Carboniferous Windsor Group sedimentary rock that includes shale, sandstone, gypsum and salt. Glacial erosion and possible solution collapse of gypsum and salt deposits formed a lowland now flooded as the Bras d'Or Lakes. Glacial erosion over hundreds of thousands of years, carved out the now flooded lowland as well as the deep channels of St Andrews Channel at -280m and East Bay at -81m depths. *(2)*

The Lakes provide habitat for American Oyster, Sand Shrimp, Blueback Herring, Black Spotted Stickleback, Greenland Cod and feral Rainbow Trout. These support Great Blue Heron, Cormorant and Bald Eagle bird populations. *(2)*

**Ice**

Evidence from deep-ocean sediments indicate that there have been at least 16 glacial periods that lasted approximately 100 thousand years each. Each period obliterated the landscape formed by the previous ice flow and eradicated the vegetation of each interval warm period. Only the last two glacial periods of the Illinoian and the Wisconsin have been identified within Nova Scotia. The last glacial period was the Wisconsin Glaciation

which began 75 thousand years ago and ended between 12 and 10 thousand years ago. During this period glaciers both crossed over and formed within the province while being fed by the high amounts of precipitation in the region. After extensive sampling in Nova Scotia, evidence indicates that successive glaciation in the last 75,000 years had four distinct phases with different and shifting ice centers. *(2)*

The Phase 1A ice flow across the Project Site and Study Area was directly eastward from the Northumberland Strait and Northumberland shore area until shifting to a south-southeast direction from the Gulf of St Lawrence area in the Phase 1B ice flow. The Phase 2 ice flow direction radiated south and southeast from an ice center in the Gulf of St Lawrence and flowed southeast across the Project Site and Study Area. During Phase 3, there was a long ice ridge aligned roughly from present-day Barrington, Shelburne County, northeast through Mount Uniacke, and then directly eastward though Canso and offshore of Fourchu Bay. The ice flow direction during Phase 3 was north-northwest across the Project Site and Study Area from the ridge offshore of present-day Canso. Phase 4 ice flows were from localized ice centers located on mainland and Cape Breton Highlands as well as the Bras d'Or Lakes and through present-day St Georges Bay to Chedabucto Bay, The Project Site and Study Area was in between the St. Georges Bay to Chedabucto Bay ice center and the Bras d'Or Lakes ice center during Phase 4. *(2)(6)*

Although no specific time frames are given with the different phases, the Project Site and Study Area are thought to be ice free approximately 12,000 years ago and possibly remained so during a cold period approximately 10,500 years ago. The Younger Dryas Period was a cold period that saw local ice centers in locations similar to Phase 4, advance flows again in directions radiating from their center ridges. *(6)* Sources have the Younger Dryas Period a northern hemisphere cold event lasting 1000 years to 1500 years. *(44)(45)* The impacts of the Younger Dryas Period were not consistent across the northern hemisphere as there were varied regional impacts influenced by local conditions. *(46)* Nova Scotia sources have the cold period lasting approximately 200 years based on analysis of lake sediment and peat beds throughout the Province. *(2)(6)* During the Younger Dryas Period, previously colonized plants that followed the previously receding

glaciers were then covered in permanent snowfields and some large mammals became extinct. *(2)*

Glaciers take about 30,000 years to form and when average temperatures increase and when snow accumulation is less than snow loss, glaciation ceases and the ice sheets begin to recede at 4 times the rate of their formation. *(5)*

The last of the glaciers receded with the Bay of Fundy being ice free between 16 and 14 thousand years ago. Northern portions of the province experienced periodic stalls and advancement of a remnant ice cap centered near the Antigonish Highlands approximately 15 thousand years ago. The flow direction was westward into lowlands and southwestward to offshore of present-day Sheet Harbour. By 13 thousand years ago the ice sheets had receded to the approximate coastline of today and then only residual ice caps remained in highland areas at approximately 12 thousand years ago. *(2)*

As the last remnant glaciers receded and the climate warmed again, the landscape was colonized by tundra vegetation of willow shrubs and herbaceous plants between 10 and 7.5 thousand years ago to be replaced boreal vegetation such as fir, spruce and birch until 6 thousand years ago when pine and oak was prominent. *(2)*

Until 4 thousand years ago, temperatures were 2 degree Celsius warmer than today and forests of hemlock mixed with beech and maple was the dominant vegetation. Gradual cooling to present day temperatures and increased moisture favoured spruce forests. (2) At past Bras d'Or Lake levels of -25m approximately 6350 years ago, West Bay was a lowland plain extending southeast from the base of North Mountain and extending northwest from the base of South Mountain, as well extending northeast from the present-day shoreline at Dundee. The plain was topped with drumlin fields that extended into the small lake among the drumlins leaving a single channel link off Poor Point and Morrison Head, to a larger main lake (Bras d'Or Lake) to the northeast. Today, many of the drumlins are submerged as shoals and some tops form present-day islands. The bathymetric map below shows the depths less than -25m as red-orange and therefore

exposed before rising lake levels and shallows would be areas of yellow-green. Deeper depths are shown in blue to purple and were lakes and river channels at the time of -25m lake levels. *(4)*

The largest lake at that time was a smaller version of Bras d'Or Lake with the deepest portion being centered north of present-day Roberta and directly east of Johnstown. St. Peters Inlet was a lowland plain dotted with hills where a river meandered through flowing north from a narrow notch and river valley. The river source appears to be a small lake on the north side of the isthmus and opposite present-day St. Peters Bay. This plain extended north as far as Red Islands on the east with the north flowing river channel on the west edge of the plain off Cape George, before meeting the waters of the main lake that would later rise to become present-day Bras d'Or Lake. *(3)(4)*

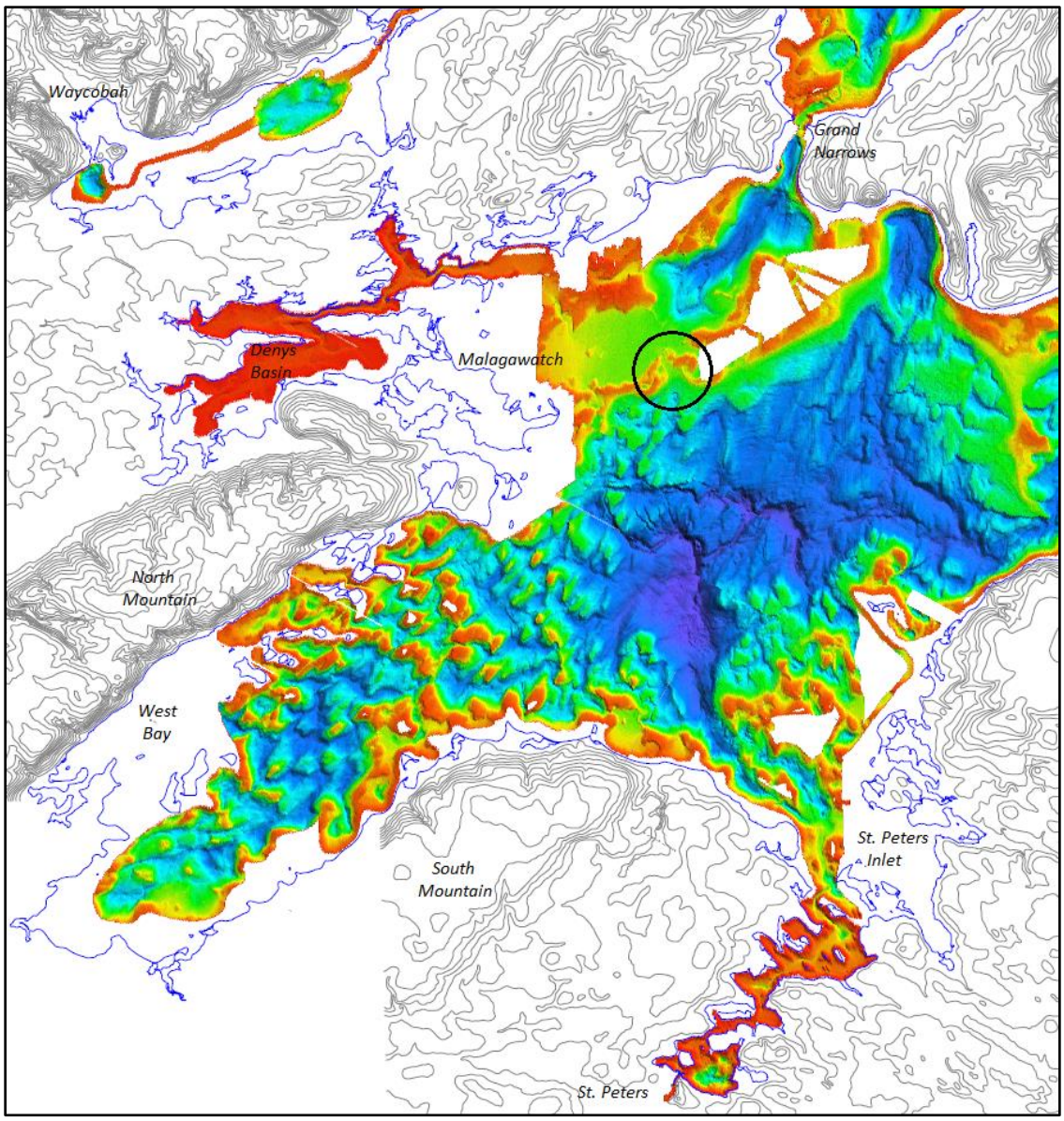



*Figure 7. Bathymetric Map (1)(4)*

All the waters draining the early lakes of West Bay, East Bay, St. Peters Inlet as well as the early Bras d'Or Lake of that time of -25m lake levels, had a single connection to Great Bras d'Or Channel and St Andrews Channel. Flow was through a single narrow channel or river (circled on the Bathymetric Map) through high ground between present-day Pipers Cove and Big Harbour Island and meeting River Denys in shallows east of present-day Malagawatch (*4)*

Archaeological evidence of early peoples is scarce along the shores of the Bras d'Or Lakes. Any evidence would have been submerged along with the former shorelines and land features as early as approximately 6,000 years ago.

The Natural History of Nova Scotia lists 5 Archaeological time periods applied to the Province of Nova Scotia that are prior to and including the first period of early European contact with the Mi'kmaq. *(2)*:

11,000-10,000 Years BP, Paleo-Indians

The earliest evidence of early peoples east of the State of Maine is found at the foot of the Cobequid Mountains at Debert, Nova Scotia. There is evidence of an encampment on the site dated to be in use roughly 11,000 to 10,500 years BP. *(7).* At this time, local ice sheets remained centered at locations of Bras d'Or Lakes/Highlands of Cape Breton, Canso, Baie Verte and South Mountain adjacent to the Annapolis Valley. There was a large ice sheet centered on the Eastern Mainland of province with ice flows into St. Georges Bay, Minas Basin and along the Eastern Shore. *(2)(6)* The time of the Debert Site occupation is within the approximate period of the glacial re-advances of the Younger Dryas Period of 11,000 and 10,000 years BP. Increasingly harsh conditions are thought to have caused the early peoples to abandon the region. *(2)*

10,000-5,000 Years BP, the Great Hiatus

The rising sea levels and submerging coastlines are thought to be responsible for the lack of physical evidence of early peoples for this time period. Any evidence of coastal settlements of that period would be lost to coastal erosion and submergence. *(2)*

Sea level rise on the Atlantic Coast was a combination of land rebound after ice sheets receded, rising ocean temperatures and water released by melting glaciers. *(2)* As the thick and heavy ice sheet centers depressed the earth's mantle, the areas of mantel along the ice sheet margins were less weighted by ice and rose slightly through displacement. There was an ice sheet center located in the Gulf of St Lawrence. As the weight of the ice

sheets diminished with melting, the depressed center areas rebounded and rose in elevation while the mantel of the former ice margin areas lowered in elevation. *(8)*

5,000-3,500 Years BP, the Archaic Period

A period characterized by physical evidence of stone tools some of which are found offshore and possibly lost during deep water fishing. There was a cultural influence or cultural presence of peoples in the southern part of the province dated at a time between 3,500 and 2,500 BP known as the Susquehanna Tradition. The Susquehanna Tradition originated in area of the mid-Atlantic states of today and is identified by some unique artifacts. *(2)*

2,500-500 Years BP, the Ceramic Period

Evidence of pottery is introduced to the archaeological record during this period as are burial mounds. Ceramic period sites are scattered throughout the province and a 10m diameter burial mound was discovered at Whites Lake, HRM, dated at 2,300 BP. *(2)*

500-100 Years BP, the Contact Period

The first European contact with the Mi'kmaq was most likely with Portuguese fishermen roughly 500 years ago. *(2)*

However, there are other period delineations being used in the Province and Maritime publications which differ in the number of periods, names, and time span of periods. The Archaeological Periods Table below places the periods in context with each other. It is useful to provide these various periods for reference and context when reviewing archaeological reports and placing in time the artifacts and features found.

Artifacts are archaeological objects that can be recorded and removed from the site such as flakes (chips from tool or point manufacture), arrow/spear tips (points), tools, bones, preforms (unfinished tool or point blanks) and pottery sherds. Features are archaeological finds that cannot be removed from the site and can only be recorded such as charred or

discoloured ground, a storage pit or Historic Period building foundations as some examples.

| | | Archaeological Periods | * (Dates are Approximate) | |
|---|---|---|---|---|
| **Time** | **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) | < Maritme Woodland |
| | \| | 3,000 - 500 yrs. B.P. | 3,000 - 500 yrs. B.P. | +/- 3,000 yrs. B.P. |
| | ↓ | \| | \| | - Present |
| 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) | — | — | — | — |

*Table 2. Archaeological Periods (2)(9)*

One archaeological site near Waycobah has been found on a sand spit at the outlet of the tidal Denas Pond (Narrows Pond), Little Narrows. The source claims that the site was known for use by Mi'kmaq as a campsite for spearing and smoking eels. The archaeological finds included a few artifacts of arrow head, broken spear point and pieces of pottery of unfamiliar origin. A partial wigwam site was uncovered that included six points. Several years later smoking hearths were uncovered as well as a diamond shape tool thought to be of Beothuk origin. The author speculated that the site had seen use over

3,000 years and some of the unfamiliar items may relate to accounts by the Mi'kmaq that the Beothuk were driven out of Cape Breton Island to Newfoundland. *(10)*

**Contact**

By 1502 the fishery off the coasts of the new-found land had been established and countries and captains had their preferred fishing areas and fishing stations. Ocean crossing became more common place as captains established their routes and landmarks. French records alone have 70 vessels travelling to the New World between 1523 and 1556. *(11)*

The Contact Period is 500 to 100 years BP, although Norse people visited the region as early as 1000 years BP and colonized the northern tip of Newfoundland. Portuguese and Basque fishermen were the first Europeans to establish continuous contact with the Mi'kmaq and began arriving 500 years BP. They arrived to find Mi'kmaq peoples inhabiting the thick forests of Nova Scotia, eastern New Brunswick, eastern Quebec, Prince Edward Island and southern Newfoundland. *(2)*

As early as 1481, fishing fleets from Bristol, England were sailing to the Atlantic Coast of North America. Most likely, fleets of French and peoples from the Basque Provinces were also sailing to these Atlantic Coasts. One such Bristol fleet recorded finding an island they called the *Isle of Brasil* and no doubt found the fishing grounds of the Grand Banks. Due to competition, news of discoveries were kept quiet to be able to exploit the resources unhindered by competing fleets. *(12)*

Recent research has confirmed a Basque whale fishery had visited the Gulf of St. Lawrence and Labrador coast from the 1540's to the early 1600's. The Basque also participated in the cod fishery while establishing ports such as Plaisance (Placentia) in Newfoundland and Cape Breton until the arrival of other nation's fleets. *(13)*

By 1534, there was a fishery of ports, watering places along the Atlantic Coast from Southeastern Labrador to Southern Nova Scotia. As a sideline to fishing, fishermen began trading with the Mi'kmaq, Beothuk and Montagnais-Naskapi, the peoples that they encountered while drying their catch along the shores. *(12)*

**Traditional Mi'kmaq Territory**

*Mi'kma'ki* is the Traditional Mi'kmaq territory and covered an area that extended from the St. John River, east to include Cape Breton Island, southern Newfoundland. *Mi'kma'ki* also covered the lands from the Gaspe' Peninsula, south to the south shore of Nova Scotia. Mainland peninsular Nova Scotia is named *Kmitkinag* by Mi'kmaq and Cape Breton Island is named *Unama'ki*. *Mi'kma'ki* is further divided into seven political districts. *(14)*

The Project Site and Study Area are within the Traditional Mi'kmaq Territory of Unama'ki. 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 are collectively known as Mi'kma'ki. The sources reviewed provided very general boundaries of 7 Districts of Mi'kma'ki and have just enough detail to give an approximation of boundaries along the coast but not much detail for the interior boundaries. *(15)(16)(17)(18)*

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 Maliseet Communities. Until then, the 7 Districts of Mi'kma'ki are proposed as follows:

| | |
|---|---|
| ***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. |
| ***Kespek*** (Last Land) | All the land and waters draining into the Gulf of St. Lawrence north of Escuminac Point, N. B. including the Miramichi River watershed and north to include the Gaspe' Peninsula and south shore of the St Lawrence River. This was the last land to be added to Mi'kmaq territory after a war with the Iroquois. |
| ***Siknikt*** (Drainage Area) | All the lands and waters draining into the Gulf of St. Lawrence and Northumberland Strait south of Escuminac Point, N. B. to and including the Wallace River watershed and Wentworth Valley. All the lands and waters draining into Cobequid Bay, the Minas Basin, and Bay of Fundy west of Five Islands N. S. and including the Petitcodiac River watershed and all drainage along the Bay of Fundy coast to Mispec Point on the east side of St. John Harbour. |

| | |
|---|---|
| ***Epekwitk*** (Lying in the Water) | |
| ***aqq Piktuk*** (The Explosive Place) | This District combines the entire Island of Prince Edward Island with all the lands and waters draining into the Northumberland Strait and St. Georges Bay from Mainland N. S. east of Abercrombie Point to Cape Blue. The District includes the East River of Pictou watershed to and including the Tracadie River and Little Tracadie River watersheds. |
| ***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. |
| ***Kespukwik*** (Last Flow, Land Ends) | This District includes all the lands and waters draining into the Bay of Fundy from approximately Margaretsville, the Gulf of Maine coast and the Atlantic to the western shore of the LaHave River. The LaHave River Watershed may have divided by east and west districts with the eastern watershed a portion of Sipekni'katik and the western watershed is a portion of Kespukwik. Champlain's early map |

of the LaHave River show two separate Mi'kmaq communities on either side of the river located near Upper Kingsburg and at Green Bay near Petite Riviere (LaHave Islands Marine Museum, 2016). This may indicate a community of each district sharing the LaHave River.

***Unama'kik*** (Land of Fog)
***Aqq Ktaqmkuk*** (Land Across the Water)

This District combines all of Cape Breton Island with the Southern Coast of Newfoundland.

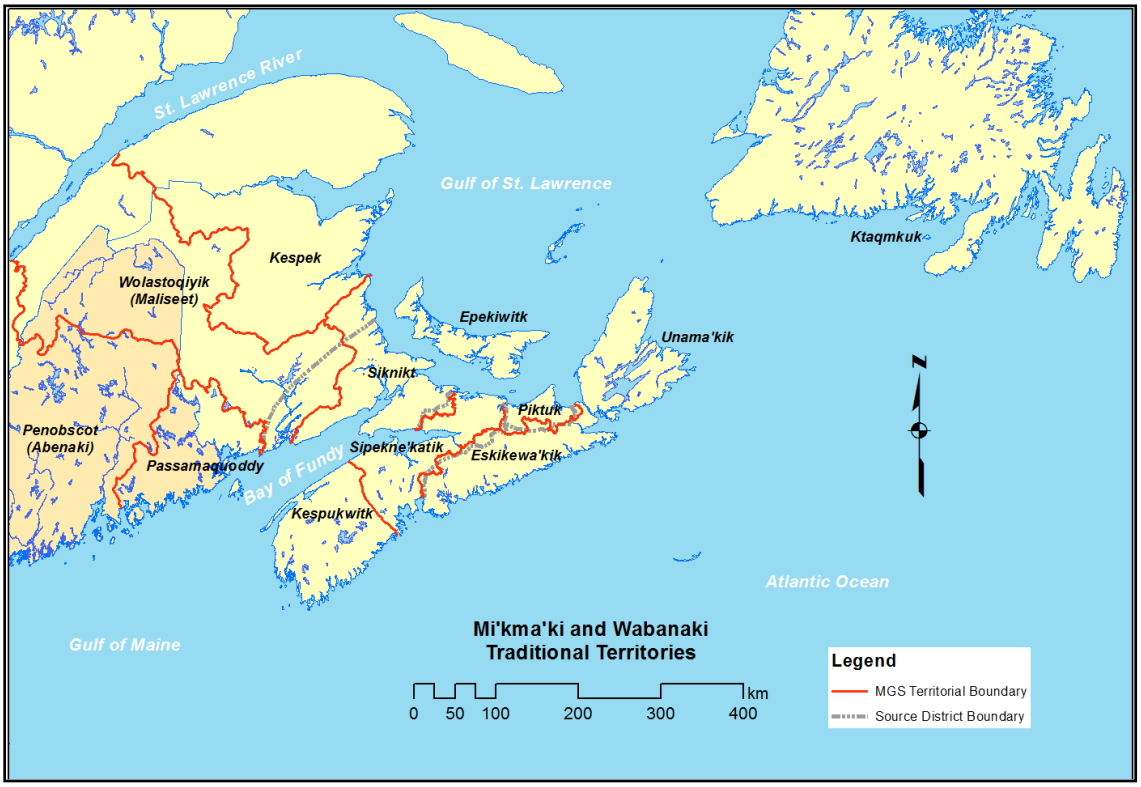



*Figure 8. Mi'kmaq Political Districts with Maliseet, Passamaquoddy and partial Penobscot Traditional Territories. (15)(16)(17)(18)*

**Traditional Hunting Territories**

Mi'kmaq had an intimate knowledge of the ecology of their territory and fit their lives to seasonal cycles of the vegetation, animals and fish. Due to climate conditions, agriculture for food was a risk for Mi'kmaq. Highly mobile Bands consisting of several related families would assemble at favorite camp sites. In the fall and winter small groups of 10-15 people would disperse for winter hunting. *(19)*

It was the duty and responsibility of the Chief of each political district to assign the hunting territories to families and any changes to the territories were made in the presence of the Council of Elders which met in the spring and fall of every year. *(20)*

The territories usually surrounded lakes and rivers and were passed on only to sons. However, if there were no sons, then the district was assigned to another family. *(21)* The Mi'kmaq respected the boundaries of the assigned territories and only took from the land what they needed for the family to survive thereby preserving game and fish for the family's future survival. *(20)*

The hunting territories of mainland Nova Scotia were numerous compact interior territories that encompassed the watersheds of interior lakes and rivers. It was inland where Mi'kmaq did most their game hunting during colder months of the year after they moved inland from the summer coastal camps. *(21)(20)* Cape Breton Island Mi'kmaq hunting territories are larger and more regional than mainland territories, encompassing shorelines and interior river systems, indicating a more sparse population. *(21)* The hunting territory that was required to support 2 hunters and their families was approximately 400 square miles. *(22)*

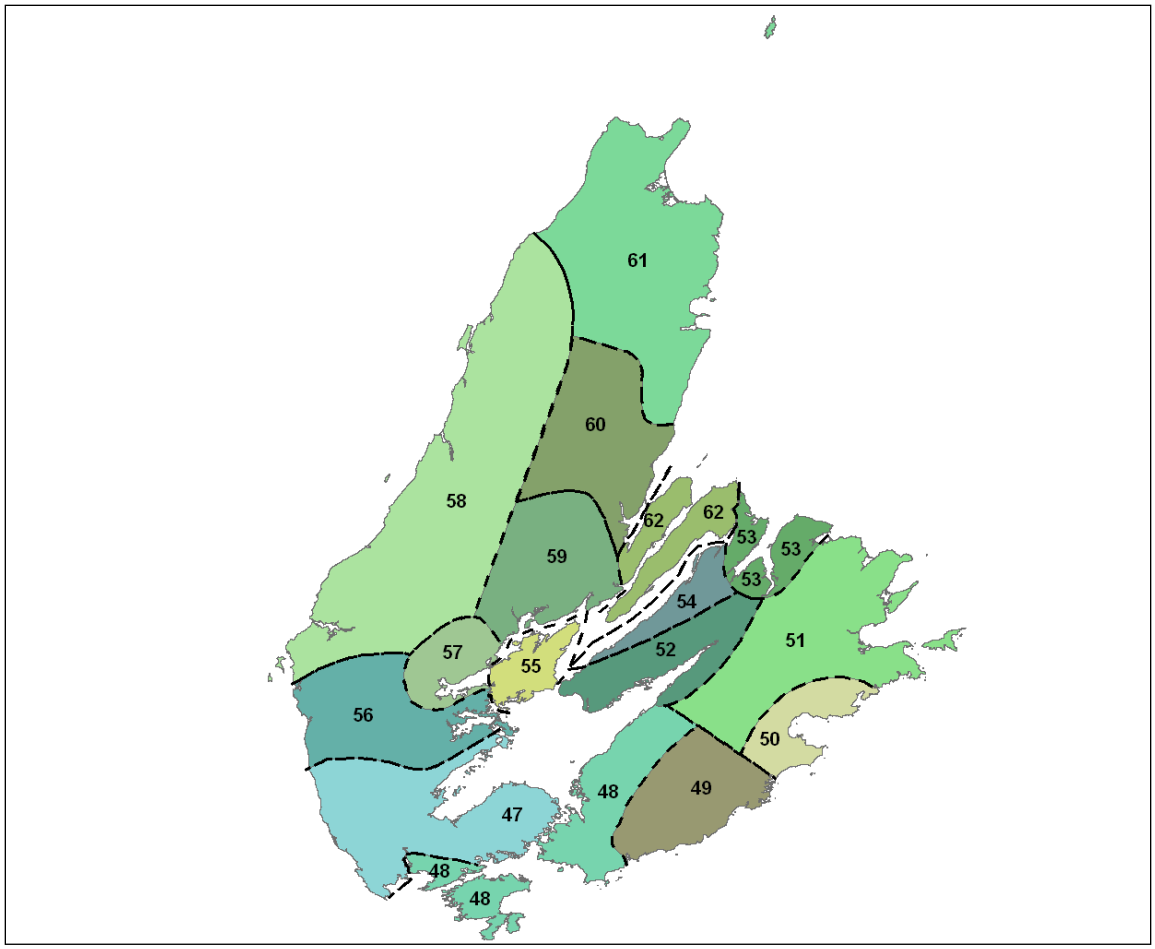


*Figure 9. Cape Breton Island Hunting Territories Derived from Elders in 1920's (21)*

The Project Site is within the Traditional Hunting Territory #47 assigned to Newell Denys (Nu'weli'dj – "Little Newell") and covered the area of West Bay, Strait of Canso to Craigmore on St Georges Bay. Territory #48 assigned to Matthew Morris (Mu'lis), included the eastern side of St. Peters Inlet including the East Bay Hills. Hunting Territory #48 also included Isle Madame, shores of The Big Basin including the Evanston area and the Atlantic Ocean from St Peters Bay to Grand River.*(21)*

| Ref. No. | Family Assigned | Family Hunting District | Traditional Name |
|---|---|---|---|
| 47 | Newell Denys (Nu'weli'dj – "Little Newell") (Noel?) | West Bay, Strait of Canso to Craigmore on St Georges Bay | Wi'a'yadjitck "Little place where red paint is found |
| 48 | Matthew Morris (Mu'lis) East Bay | East Bay, St. Peters Canal north to Salmon River | Muyala'yatc "Narrow Gorge" |

*Table 3. Cape Breton Island Hunting Territories Recorded Circa 1929 (21)*

The warmer months were times of abundance with surrounding areas of coastal camps providing fish, shellfish, fowl and eggs. Offerings were made to spirits but the Mi'kmaq rarely stockpiled enough food for the entire winter. They brought with them from the coast smoked and sun-dried seafood as well as dried and powdered hard boiled eggs. Berries were boiled and formed into cakes that were sun-dried. Grease and oils from boiled marrow and fat were stored and transported in animal bladders. Root vegetables such as *segubun* (wild potato), which was similar to today's sweet potatoes, and wild nuts were also part of the winter food supply. *(20)*

| Month | Seasonal Locations | Seasonal Groupings | Food Resource |
|---|---|---|---|
| Jan. | Sea Coast | Bands | Smelt, Tomcod, Seals & Walrus Beaver, Moose, Bear, Caribou |
| Feb. (Period of Winter Famine Begins) | Inland | Bands & Family Units | Smelt, Tomcod (ending) Seals & Walrus, Beaver, Moose, Bear, Caribou |
| Mar. (Period of Winter Famine) | Inland | Bands & Family Units | Smelt, Seals & Walrus (ending) Scallops, Crab, Urchins, Winter Flounder, Beaver, Moose, Bear, Caribou |
| April (Period of Winter Famine ends) | Sea Coast | Villages | Smelt, Winter Flounder, Scallops, Crab, Urchins, Sturgeon, Brook Trout, Alewife, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou |
| May | Sea Coast | Villages | Smelt, Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou |
| Jun. | Sea Coast | Villages | Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou |
| Jul. | Sea Coast | Villages | Scallops, Crab, Urchins, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries |
| Aug. | Sea Coast | Villages | Scallops, Crab, Urchins, Codfish, Skates Lobsters, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries, Blueberries, Ground Nuts |

| | | | |
|---|---|---|---|
| Sept. | Sea Coast | Villages | Scallops, Crab, Urchins,<br>Codfish, Skates, Salmon, Herring, Eels, Fall Bird Migrations, Beaver, Moose, Bear, Raspberries, Blueberries, Ground Nuts, Cranberries |
| Oct. | Small Rivers | Villages | Scallops, Crab, Urchins, Smelt<br>Codfish, Skates, Salmon, Herring, Eels, Brook Trout, Fall Bird Migrations, Beaver, Moose, Bear, Blueberries, Ground Nuts, Cranberries |
| Nov. | Inland | Bands | Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts, Cranberries |
| Dec. | Rivers | Bands | Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts, |

*Table 4. Mi'kmaq Annual Sustenance (23)*

Due to climate conditions, agriculture for food was a risk for Mi'kmaq. *(19)* Mi'kmaq rarely planted and harvested food and later preferred to trade with Europeans for bread, dried peas and beans. Some small plots at certain locations on the south shore of Nova Scotia, such as Jordan Bay and Islands within the Roseway River, were being cultivated at the time of European contact. *(20)* Mi'kmaq may have cultivated tobacco which was a precious luxury for Mi'kmaq. *(19)*

When fish, game and plants within the proximity of an encampment became scarce, the Mi'kmaq moved the encampment miles away to a new location with the women being responsible for breaking camp, transporting and setting up the next camp. *(24)(20)*

When a moose was taken, the hunter would take only the heart and organs back to the camp to feast and share with friends. The women were dispatched to retrieve the meat by following a trail of broken branches left by the hunters. The women dressed the moose and cut up the meat at the kill site and then carried it back to the camp to share. The meat was shared among all the families with the hunter usually receiving the least share of the kill. *(20)*

**Denys' Ways of the Mi'kmaq**

In his later years, Nicolas Denys provided a record of some aspects of everyday Mi'kmaq life based on his best recollections of his experiences while living and trading among the Mi'kmaq in Acadia. Denys colonized settlements, established forts/trading houses and fishing stations throughout the Maritime Region beginning in 1632 at La heve, (Lahave River) in 1632 and Port Rossingnol (Liverpool) in 1633 with the other prominent locations including St. Pierre, (St. Peters 1650-51), Miscou Harbour (Shippegan Island, N. B. 1645) and Nepisiguit (Bathurst, N. B. 1652) and Chedabouctou (Guysborough 1659).*(25)(26)(27)* While each of these establishments had their own successes and failures, none became permanent as it was the constant battles on the ground and in the courts with business and territorial rivals that hampered Denys in most all his business ventures. While he chose to write about his experiences later in life without the aid of notes which Denys did not often write or keep during his active lifetime in Acadia, his accounts may have some errors. However, Denys' accounts can be accepted in that context Denys was thought to be an honest to a fault. He thought his accounts of New France would be invaluable to those interested in colonizing settlements. Although his two volume *Description Geographique et Historique des Costes De L'Amerique* and *Histoire Naturelle De L'Amerique* was of limited success at the time of original publication in 1672, Denys' efforts prove invaluable today as a historic record of Acadia and Mi'kmaq life in the earliest time of European contact. *(25)*

St. Pierre was one of Nicholas Denys' favoured locations of his other establishments until it was destroyed by a fire in 1668-69. He and his entourage had to walk from St. Pierre to his Nepisiguit (Bathurst) location during that winter. *(25)* Some sources report he returned to France in 1670 to remain *(28)* and lived impoverished in Paris, France in 1684-85. *(25)(28)* After approximately 40 years in New France and though many ventures and personal setbacks, one source has Denys living his last days at his Nepisiguit (Bathurst) location until his death in 1688. *(25)(28)*

Denys descriptions of the ways of the Mi'kmaq begins with Denys arrival 37-38 years prior, stating that the Mi'kmaq had not yet changed their traditional ways with the exception of the use of iron kettles, knives, axes, arrow heads and a few firearms. The Mi'kmaq subsistence was of boiled or roasted meat and fish. Prior to metal kettles and pots, boiled meat was cooked in hollowed out fallen trees near frequented encampments. The hollowed fallen trees were filled with water heated by cycling hot stones from a fire. Roasted meat was by hanging on sticks and placing close to the fire and everyone including children had their own stick and piece of meat to cook themselves. High fat soups were the favoured drink and food was consumed in large quantities and in as long a session as supplies allowed. Animals were plentiful and were hunted only in proportion to their needs and they had a need for oils and grease from animal fat, whale blubber and seal oil for food and utility. Moose bones were crushed and boiled to create a skimmed white and dense cake of fat which Denys referred to as Moose Butter. Denys describes in his book summer and winter hunting techniques for Moose, Beaver, Lynx and Bear as food as well as techniques for hunting sea birds using torches at night to startle sleeping birds on the water surface and knocking them down during the bird's panicked flight circling the torches. Torches were also used in fishing salmon and trout. *(29)*

When animals and resources become scarce within an area, the Mi'kmaq would move to another area some 45-60 miles away. Encampment shelters consisted of round, one fire wigwams for small families (10-12 persons) and longer, two fire wigwams were for larger families. Wigwams were constructed of birch bark cladding stitched with fir roots and fastened on to long poles joined at the top and fir boughs carpeted the floors which was covered in thick bear or young moose hide. *(29)*

Denys describes the use of used moose hide bedding for making footwear (moccasins) as it is oilier and more pliable than new hides. Hides were used for robes, leggings and sleeves and clothing decoration used dyed porcupine quills sewn into patterns. Very specific parts of animals were utilized for many purposes such as bird livers for working new hides, tendons from the back of moose beaten into threads for sewing. Tobacco was in the form of dried leaves (Willow) which was dried and formed into a 4" thick cake

forming a mild tobacco which was smoked in pipes crafted from wood, hollow bones, lobster claws and sometimes hollowed out green or red stone. Men were required to master skills for hunting and fishing as well as the skills necessary for crafting tools and weapons used for hunting and carving up the animals. Bows were made of Maple, arrows of Cedar, quills of eagle feathers and sometimes tipped with sharp bone. Snowshoes were framed with beech and corded with moose hide strips with the thickest strips near the center of the shoe. Lances were also of Cedar as it split straight, tipped with a large pointed bone for spearing animals during winter hunts. Canoes were constructed of birch bark taken in a single piece if possible and sewn with Fir roots, framed in Beech and lined with Cedar slats. Paddles were crafted out of Beech and sails of birch bark or moose hide were used when there was a favourable wind. Basket bags were woven from crushed cat tail stalks. Some form of bag-like net is described by Denys as placed at the only opening of weirs made of wood fence placed in rivers to catch seasonal runs of fish. *(29)*

Denys ends his book reminding the reader that what he described were in days of old and much of the troubling Mi'kmaq superstitions were replaced by religion and iron and steel replaced most of the raw materials traditionally used for weapons and tools. Denys talks about the shrewd trading practices of the Mi'kmaq women who reserved and traded their best skins and crafts for food with the crews of passing ships who must have been some of Denys' stiff competition. *(29)*

The St. Pierre location was later revived between 1713-1758 as the Acadian community and French Military presence of Port Toulouse that guarded the strategic portage and haul-over road between the Bras d'Or Lakes and Atlantic Ocean. *(30)*

*Figure 10. St Peters Today and Port Toulouse 1749-60 (31)*

**Mi'kmaq and Louisbourg**

It is difficult to discuss the history of Unama'ki Mi'kmaq and Cape Breton Island without discussing Louisbourg. The period of French at Louisbourg and elsewhere on the island represents a period of close ties between Mi'kmaq and the French of which both benefited.

In the early days of establishing a French colony on Isle Royale, the priority was to find a harbour and establish the fishery, to transplant colonists from Plaisance, Newfoundland (Placentia), and to attract Acadians and the native allies to the new colony. The priorities were eventually accomplished with the exception of attracting native allies to settle in the new colony of Louisbourg. *(32)*

The site chosen for Louisbourg was *Harve a' L'Anglais* (English Bay) because it was ice free and close to fishing and shipping routes. Other contenders were the French fishing base at St. Anne's and the Spanish fishing base at *Baie des Espagnols* (Spanish Bay) or Sydney. Both bays froze during the winter months and Spanish Bay was too wide to defend with a canon. From a military perspective, Louisbourg was surrounded by crashing ocean surf and difficult bog terrain which was thought to provide the military advantage to the fortress. *(33)*

During Louisbourg's short history, the Mi'kmaq had all but abandoned Cape Breton for a time in search of better hunting. The French tried in vain to persuade the Mi'kmaq to return and settle at Louisbourg but the Mi'kmaq returned in small numbers as most suspected that they would be drafted into labour or farming. Occasionally Chiefs would come to Louisbourg to demand tribute in the form of gifts for their loyalty. *(33)*

Since Louisbourg was founded in 1713, it was the Unama'ki Mi'kmaq and the tribes of the northeast that had the deepest ties with Louisbourg. Maintaining the friendly relations with their native allies through gifts of provisions which cost the Louisbourg administration 5 percent of the budget of annual expenditures and sometimes as much as 10 percent. The Louisbourg administration rationalization of these expenditures was that it would cost much more to maintain an equal number of troops. *(34)*

The Mi'kmaq of Isle Royale camped and hunted in the southern portion of the Island near Chapel Island, St. Peters and inland from the shores of the Bras d'Or Lakes. The Mi'kmaq were rarely found within the fortified town of Louisbourg but records of Mi'kmaq baptisms, domestic service and occasional visits by Mi'kmaq scouts and Chiefs indicate they did enter the fortified walls at times. *(35)*

The Mi'kmaq were valuable to the French as allies and fellow Catholics. Occasionally, groups and individual Mi'kmaq came to Louisbourg for religious or military purposes but very few stayed within the town for any length of time. *(32)*

The attitude towards native populations was vastly different between the French and English. The French recognized the natives as independent allies and not as subjects but as the sovereign owners of the land. However, the English had their own laws and interpretations of treaties that excluded and drove off the Native populations from their own traditional territories. *(36)*

To maintain the system of friendliness between the native populations and the French, an annual giving of practical tools and goods to the natives occurred during important gatherings or conferences at St. Peters.

The English attempted a similar policy but English punishments for native wrong doings were too harsh and humiliating for the Mi'kmaq. Scalp bounties for native men, women and children that were issued by the English colonies further encouraged and maintained Mi'kmaq and French friendly relations. *(36)*

The Mi'kmaq were being harassed by the British during the Indian War and finally agreed to establish themselves on Isle Royale in 1723. The location they chose was on the western shores of the Bras d'Or Lakes at a place called *Mirligueche* (Malagawatch). The source footnotes the record of the two locations of Malagawatch and Lunenburg sharing similar place names of *Mirligueche* on maps, missionary and official correspondence. Ile Royale, *Mirligueche* was often referred to as *Malagawatch* in missionary correspondence to distinguish the two locations. *Mirligueche* was 22 leagues (66 miles) from Louisbourg and on a peninsula at the entrance of Denys Basin. This location was also close to Port Toulouse (St. Peters). The French were eager to attract as many Mi'kmaq to the Isle Royale as they could and in 1726, provided a church and Presbytery for the Mi'kmaq at *Mirligueche*. It was to remain the base for Cape Breton Mi'kmaq until 1750 when Father Maillard established a mission at Isle Sainte Famille or "*Poteloteg*" (Chapel Island). The church and Presbytery at *Mirligueche* were falling into disrepair and the new Sainte Famille mission location was located on the southeastern shores of the Bras d'Or Lakes and was just 6 miles north of Port Toulouse at present-day *Potlotek* (Chapel Island I.R. 5). *(37)*

After the final defeat of the French at Louisbourg and later at Quebec, the British victors began an inventory of the new lands they had acquired. Samuel Holland was Surveyor of Eastern North America for King George III of England. Holland was sent from Quebec 1n 1765 to survey Cape Breton Island and over two summers surveyed coastal areas with the only known expeditions inland was to Loch Lomond and the head of the Grand River.

Hollands maps and drawings were lost over time but somehow his letters, notes and other documents were preserved. *(38)*

During Holland's survey of Cape Breton Island for the British Government between 1765 and 1767, he recorded Mi'kmaq seasonal camp locations in his detailed descriptions of the land as he found it at that time. Holland reports that the Mi'kmaq who gathered on the north shore of St. Patrick's Channel were not pleased with the British survey finding all their secret haunts which the French made no attempt. Holland reported that about 5 Mi'kmaq families remained on the Island year-round with many travelling to Newfoundland including their Chief. During Holland's survey he saw large groups of Mi'kmaq arrive during the summers with up to 300 Mi'kmaq families arriving one summer. The Mi'kmaq frequently reminded Holland's survey party to send a Priest and to set aside a tract of land on St. Patrick's Channel for Mi'kmaq hunting that would remain free from encroachment by European settlers. Holland learned that the Mi'kmaq frequented this area to seek valued advice of the eldest Mi'kmaq of the time who lived here year-round. *(39)*

Holland reported that the Mi'kmaq fished for salmon each season along the Grand River at the falls. Holland refers to the Mission at Famille Island where the Mi'kmaq gather. The Mission Island was one of eighteen islands between St. Peters and St. Peters Inlet of which many were cleared and covered in good grasses. Along with the remains of a fort and settlement at Port Toulouse (St. Peters) the departing French had left behind approximately 300 acres of cleared land. *(39)*

After dividing the usable land of Cape Breton into Parishes, Holland recommended the remaining 800,000 plus acres of Highlands occupying the northwestern portion of Cape Breton Island be designated "The Savage Country Principle Hunting District". It was Holland's opinion that the land was best left for fur production as he decided there were few harbours and rivers of significance within this area of Cape Breton Island. Holland did express his opinion that for the cost of providing a Roman Catholic Priest, Mi'kmaq assistance in all matters could potentially be called upon on occasion. *(39)*

Holland had found the roads that the French built between Louisbourg and the Mira River as well as between Louisbourg and East Bay. Holland commented on the quality of road design and construction with care taken in grade design and route selection. Holland found the roads in an overgrown and decaying state and most bridges damaged. Both the French and German villages established by French on the Mira were destroyed by the French during the time of capitulation. Holland found remains of French settlements within the coastal bays and usually left with cleared fields and orchards intact. The original house and buildings were usually destroyed by either the departing French or conquering English but the land seemed to be too valuable to destroy. *(39)*

One source focused on descriptions of virgin forests as observed by Denys and Holland and others. At the time of the source publication in 1956, Sporting Mountain was one of the few areas of Cape Breton Island with remaining virgin forest classified as Hemlock-White Pine-Northern Hardwood type of climax forest. The historic observations are also useful in the notes made by early explorers, entrepreneurs and Military that describe the advance of settlement at specific times of their visits. *(38)*

Charles Morris was the Survey General of Canada in 1774 and based on Hollands report that he forwarded to the King, Cape Breton Island was declared “His Majesty’s Timber Reserve” until 1775 when the Island was opened to settlement. The source wrote that archive documents noted that in 1784, Cape Breton was “practically unencumbered by land title” and confirmed Denys’ descriptions of the forests. Another Survey General, Joseph Bouchette wrote a national geography in 1830 and notes that Cape Breton was rapidly being settled in 1825. *(38)*

The source speculated that some hardwoods such as Oak, Elm, Ash and others hardwood species that occupied lowland and river valleys, were among the first lands to be cut, cleared and settled which may account for their present-day rarity on Cape Breton Island. However, the source concludes that the forests of present-day are much the same as the

primeval climax forest prior to immigrant settlement clearing with the early descriptions being of larger trees and an absence of underbrush in the climax forests. *(38)*

**Mi'kmaq in the 19th Century**

By the mid 1800's there was an estimated 500 Mi'kmaq residing on Cape Breton Island and a simple survey by a priest of the Mi'kmaq gathered at the annual St. Anne's Celebration, revealed a poor to very poor people of which few still practice subsistence hunting. Most Mi'kmaq at that time relied on wage labour, making and selling crafts and small subsistence gardens to survive. *(40)*

There was genuine concern among the Provincial politicians, newspaper editors and philanthropists that Mi'kmaq may suffer the same fate as that of the Newfoundland Beothuk and become an extinct people. *(40)*

One source referenced John Locke's "labour theory of property" where indigenous (Mi'kmaq) lands were not being utilized efficiently or not at all. Land was considered a gift from God but labour converted it into something of value. Therefore, it was easy to displace Mi'kmaq from their traditional lands and hunting territories with what was perceived to be a more productive use. *(40)*

Although not known if occurred before European contact, the Mi'kmaq of Cape Breton Island raised corn at Malagawatch in-between their seasonal rounds of hunting, fishing and gathering. The Governor of Louisbourg once commented on how skilled the Mi'kmaq were at raising corn. Later, in the mid 1800's, the Mi'kmaq began agriculture with new vigor not only for subsistence but also to strengthen their hold on Mi'kmaq lands they traditionally occupied. However, Mi'kmaq improvements to the land were not enough to prevent their improved lands from being granted out to arriving immigrants. *(40)*

The arrival of Planter, Loyalist and Scottish Settlers in Cape Breton occupied and improved upon the rivers and forests that the Mi'kmaq depended on subsistence and new laws interfered with traditional hunting and fishing. Mi'kmaq entered the labour market of the fishery by frequenting locations such as Arichat and also to sell their crafts and wares. Mi'kmaq women were increasingly more interactive with the European immigrants through sales and trade as well as door to door selling which increased their risk to European diseases such as smallpox. *(40)*

Mi'kmaq encampments appeared within or near communities such as Baddeck, North Sydney and Sydney where Mi'kmaq gathered to find work in the community and sell or barter their wares. *(40)*

Only the encampment on Kings Road in Sydney became permanent and was the subject of a court case that saw the Mi'kmaq community removed to the present location of Membertou First Nation, Membertou I. R. 28B. The Mi'kmaq of the North Sydney encampment near Pottle Lake were eventually displaced by a mining company. Some returned to their home communities of Waycobah and Wagmatcook on the Bras d'Or Lakes, while some joined the community on Kings Road, Sydney prior to that community's removal.

Today, there are Mi'kmaq communities located within approximately 40km of the Project Site. Potlotek First Nation is located 15km (9 miles) directly east of the Project Site within St. Peters Inlet at Chapel Island I. R. 5 We'koqma'q First Nation (Waycobah) is approximately 32km (20miles) north-northwest on Whycocomagh I. R. 2. Eskasoni First Nation on Eskasoni I. R. 3 and 3A is located 30km (19 miles) northeast across Bras d'Or Lake on the northwest shore of East Bay. Wagmatcook First Nation Mi'kmaq community is located on the western shore of Nyanza Bay approximately 38km north of the Project Site on Wagmatcook I. R. 1. Malagawatch I. R. 4 occupies all of Boom Island and most all of Big Harbour Island located between Denys Basin and Bras d'Or Lake and is roughly 15km (9miles) north of the Project Site. Although having some full-time residents Malagawatch is jointly managed by all 5 Mi'kmaq Communities of Cape

Breton Island and was the location of the original mission before the mission was moved to Chapel Island (Potlotek First Nation) where annual missions each summer are held.

A review of the Status Report on Specific Claims shows no active claims within the Project Site and Study Area. *(41)*

## *4.4 Mi'kmaq Traditional Use Findings*

The traditional use data gathered for this MEKS was drawn from one primary source: interviews with Mi'kmaq individuals who reside in the surrounding Mi'kmaq communities and those who are familiar with or undertake these types of activities. This data was acquired through interviews with interviewees that allowed the study team to identify the various traditional use activities, resources and areas that are currently or have been used by the Mi'kmaq, and any information that was gathered in previous MEKS in the area. Interviewees were asked to identify areas within the Study Area and Project Site where they knew of traditional use that had taken place, or currently in use. These interviews took place from October to December 2019. Information collected during previous studies was also incorporated into the information gathered.

To easily identify the traditional use data findings of this study, the analysis has been broken down into two groups. The Project Site and the Study Area.

Unless otherwise stated, areas identified by interviewees are considered to be utilized by the Mi'kmaq currently, in the recent past, and/or the historic past.

## Project Site

The Project Site, as well as locations in the *immediate* vicinity (within 50m) of the Project Site, will be considered when analyzing traditional use activities.

### Fishing

No fishing areas were identified within the Project Site by knowledge holders.

(see Appendix C, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Fishing Areas")

### Hunting

Knowledge holders had identified some hunting areas within the Project Site boundaries:

- Five (5) deer hunting areas
- Four (4) rabbit hunting areas
- Two (2) partridge hunting areas

No other species were identified within the Project Site.

(see Appendix C, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Hunting Areas")

### Gathering

One area each of roots and sweetgrass was identified as being harvested within the Project Site.

No other species were identified in the Project Site.

(see Appendix D, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Gathering Areas").

## Study Area

As mentioned previously, the MEKS data is also drawn from the Study Area. The purpose of this portion of the study is to portray other land characteristics and land use activities that may have been missed in a narrow Project Site data analysis.

### Fishing

From the data gathered, this study found that trout was the most reported fishing activity by the interviewees in the Study Area (see Appendix B, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Fishing Areas").

Thirty eight (38) trout fishing areas were found to be located:

- Pringle Lake
- McDonald Lake
- Rocky Lake
- Paddys Lake
- Donnellys Lake
- Hill Lake
- Bras d'Or Lake from St. Georges Channel to The Points West Bay
- Long Lake and Kyte Lake

Other species fished in the Study Area are bass (2 areas), eel (2 areas), lobster (2 areas), salmon (1 area), and scallop (1 area).

When analyzing timelines for fishing activities, all activities fell within the current use timeline.

**Hunting**

Deer hunting areas was reported in the Study Area the most from the interview data (see Appendix C, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Hunting Areas").

Thirty (30) deer hunting areas were found to be located in areas:

- The Points West Bay
- St. Georges Channel
- Near Paddys Lake and Rocky Lake
- South of Hill Lake
- Camerons Mountain
- Areas around Sporting Mountain and Seaview to Oban through to Long Lake
- Areas identified as throughout the Study Area

Other species identified as being hunted in the Study Area include rabbit (6 areas), partridge (3 areas), trapping areas (2 areas), and coyote (1 area).

When analyzing timelines for hunting activities, the majority of the hunting areas were utilized during the Current Use timeline. A small number were used Historically.

**Gathering**

Gathering activities for tree roots (5 areas), berries (3 areas), birch bark (2 areas), nuts (2 areas), cranberries (1 area), and sweetgrass (1 area) were found to be harvested in the areas of:

- Hill Lake
- North side of the Project Site
- South of the Project Site in the area of Seaview
- Along the powerline near Sporting Mountain

All of the gathering activities identified were found to be Current Use activities

(see Appendix D, map "Sporting Mountain Quarry Expansion MEKS – Mi'kmaq Traditional and Current Gathering Areas").

## *4.5 Mi'kmaq Significant Species Process*

In order to identify possible project activities which may be of significance to the Mi'kmaq with regards to traditional use of the Study Area, the project team undertakes a number of steps in order to properly consider the MEKS data. This involves three main components: Type of Use, Availability, and Importance.

**Type of Use**

The first component of analysis is the "Type of Use" of the resource which involves the categorization of the resource. All resources are placed into various general categories regarding the Type of Use**.** The category headings are Medicinal/Ceremonial, Food/Sustenance, and Tool/Art. These general headings are used so as to ensure further confidentiality with respect to the resources and the area where they are harvested. As well, the total number of instances where a resource harvest has been documented by the study is quantified here as well.

**Availability**

After the data is considered by the Type of Use, it is considered in accordance with its availability. This involves considering whether the resource is abundant in the Study Area or whether it is rare or scarce. Based on the information that is provided to the team from the ecological knowledge holders and/or written literature sources, the availability of the resource is then measured in regard to other water or land areas that are outside of the Study Area. This measuring is primarily done in the context of the areas adjacent to the Study Area, and if required, other areas throughout the province. By proceeding in this manner, the study can provide an opinion on whether that resource may be **Rare, Scarce** or **Abundant**.

The data is classified in accordance with following:

**Rare** – only known to be found in a minimum of areas, may also be on the species at risk or endangered plants list;

**Common** – known to be available in a number of areas; and

**Abundant** – easily found throughout the Study Area or in other areas in the vicinity.

This allows the study team to identify the potential impact of a resource being destroyed, by the proposed project activities, will affect the traditional use activity being undertaken.

**Importance**

The final factor the MEKS team considers when attempting to identify the significance of a resource to Mi'kmaq use is whether the resource is of major importance to Mi'kmaq traditional use activities. This can be a somewhat subjective process, as any traditional resource use will be of importance to the individual who is acquiring it, regardless of whether its use is for food or art, and regardless if the resource is scarce or abundant. However, to further identify the importance, the MEKS team also considers the frequency of its use by the Mi'kmaq; whether the resource is commonly used by more than one individual, the perceived importance to the Mi'kmaq in the area, and finally the actual use itself. These factors support the broad analysis of many issues in formulating an opinion on significance and supports identifying whether the loss of a resource will be a significant issue to future Mi'kmaq traditional use, if it is impacted by the project activities.

## *4.6 Mi'kmaq Significance Species Findings*

This MEKS identified resource and land/water use areas within the Project Site and Study Area that continue to be utilized by the Mi'kmaq people, to varying degrees.

**Type of Use**

The study identified the following in the Study Area:

| TYPE OF USE | NUMBER OF AREAS | NUMBER OF SPECIES |
|---|---|---|
| **Food/Sustenance** | 99 | 15 |
| **Medicinal/Ceremonial** | 8 | 3 |
| **Tools/Art** | 9 | 4 |

*Table 5. Resource Use within all Study Area*

**Availability**

During the information gathering for the Study Area, interviewees had mentioned the fishing for eels. The American Eel, while not listed on the Nova Scotia species at risk registry, is considered a threatened species and listed on the federal registry. (*42*)

No other rare or endangered species were identified by interviewees. (42)(43)

**Importance**

It is worth noting again that assigning an importance designation for any activity done by Mi'kmaq can be a subjective process, and that all activities are considered ways of preserving the Mi'kmaq way of life, in some shape or form. Scarcity and abundance of a species in an area can both increase the importance of a species.

American Eels are considered a threatened species in Canada and the Mi'kmaq still rely on these species for sustenance and for cultural ceremonies and activities. Any disturbances to their habitats could have an impact on Mi'kmaq use.

Based upon the high frequency of activities reported by the interviewees, trout fishing and deer can be considered to be the favored activity for Mi'kmaq in this particular area.

# 5.0 CONCLUSIONS

This Mi'kmaq Ecological Knowledge Study has gathered, documented and analyzed the traditional use activities that have been occurring in the Project Site and the Study Area by undertaking interviews with individuals who practice traditional use, or know of traditional use activities within these areas and reside in the nearby Mi'kmaq communities.

The information gathered was then considered in regard to species, location, use, availability and frequency of use to further understand the traditional use relationship that the Mi'kmaq maintain within the Project Site and Study Area.

**Historic Review Summary**

The Project Site is a rectangular site of approximately 40ha that sits on the southwest edge of an elevated plateau called South Mountain. The Project Site is within Sub-District (Sub-Unit) 330a, Sporting Mountain, of District 330, Fault Ridges, Region 300, Avalon Uplands. The granites and volcanic rocks of 330a, Sporting Mountain may be found exposed in the thin till cover. Early peoples had use for stone and minerals, usually found in high heat and pressure formed stone, for use such as tools and weapons.

The Project Study Area 5km radius also includes Natural History of Nova Scotia District 860, Sedimentary Lowland and a portion of Unit 916, Bras d'Or Lake (West Bay).

The Project Site and Study Area are within the Traditional Mi'kmaq Territory of Unama'kik.

The Project Site is within the Traditional Hunting Territory #47, last assigned to Newell Denys (Nu'weli'dj – "Little Newell") and covered the area of West Bay, Strait of Canso to Craigmore on St. Georges Bay.

Nicolas Denys provided a record of some aspects of everyday Mi'kmaq life based on his best recollections of his experiences while living and trading among the Mi'kmaq in Acadia.

Holland's survey of Cape Breton Island for the British Government between 1765 and 1767, recorded Mi'kmaq seasonal camp locations and gave detailed descriptions of the land as he found it at that time.

Based on Hollands report that he forwarded to the King, Cape Breton Island was declared "His Majesty's Timber Reserve" until 1775 when the Island was opened to settlement. Until 1784, Cape Breton was "practically unencumbered by land title". The author of a national geography published in 1830 notes that Cape Breton was rapidly being settled in 1825.

At the time of a 1956 publication, Sporting Mountain was one of the few areas of Cape Breton Island with remaining virgin forest classified as Hemlock-White Pine-Northern Hardwood type of climax forest.

With the arrival of Planter, Loyalist and Scottish Settlers in Cape Breton, the land was occupied and improved upon. The rivers and forests that the Mi'kmaq depended on for subsistence and the new laws interfered with traditional hunting and fishing. Mi'kmaq entered the labour market of the fishery by frequenting locations such as Arichat and also to sell their crafts and wares.

Mi'kmaq encampments also appeared within or near the outskirts of communities such as Baddeck, North Sydney and Sydney where Mi'kmaq gathered to sell or barter their crafts and wares and also find work in the community.

By the mid 1800's, Mi'kmaq gathered at an annual St. Anne's Celebration, revealed a poor to very poor people of which few still practiced subsistence hunting. Most Mi'kmaq

at that time relied on wage labour, making and selling crafts and small subsistence gardens to survive.

Today, there are Mi'kmaq communities located within 40km of the Project Site:

- Potlotek First Nation located 15km (9 miles) directly east of the Project Site within St. Peters Inlet at Chapel Island I. R. 5.
- We'koqma'q First Nation (Waycobah) 32km (20 miles) north-northwest on Whycocomagh I. R. 2, located on the western shore of Whycocomagh Bay
- Eskasoni First Nation 30km (19 miles) located northeast across Bras d'Or Lake on the northwest shore of East Bay is on Eskasoni I. R. 3 and 3A.
- Wagmatcook First Nation Mi'kmaq community is located on the western shore of Nyanza Bay, 38km (24 miles) north of the Project Site on Wagmatcook I. R. 1.
- Malagawatch I. R. 4 occupies all of Boom Island and most all of Big Harbour Island located between Denys Basin and Bras d'Or Lake, and is roughly 15km (9 miles) north of the Project Site. Although having some full-time residents, Malagawatch is jointly managed by all 5 Mi'kmaq Communities of Cape Breton Island.

A review of the Status Report on Specific Claims shows no active claims within the Project Site and Study Area.

**Traditional Use - Project Site Summary**

Based on the data documented and analyzed, it was concluded that there is some Mi'kmaq use reported within the Project Site.

Activities occurring in the Project Site include deer, rabbit, and partridge hunting, as well as tree root and sweetgrass picking areas. There were no fishing areas identified within the Project Site.

**Traditional Use - Study Area Summary**

Trout fishing and deer hunting were the predominant traditional use activities reported by interviewees in the Study Area. Overall, the activities took place primarily in the Current Use timeline categories.

There were other fishing, hunting, and gathering activities reported, as well.

**Recommendations**

***Based on the information gathered and presented in this report, there is a potential this project could affect Mi'kmaq traditional use in both the Project and Study Areas. Although the possible effects of the project could be minimal, considering the number of traditional use activities and the overall size of the proposed project, it is recommended that dialog be initiated with the Assembly of Nova Scotia Mi'kmaq Chiefs, Sipekne'katik, and Millbrook, and that traditional use activities of the Mi'kmaq be reflected upon in the overall environmental presentation.***

# Sources


1 *Nova Scotia Topographic Data Base*, Nova Scotia Data Locator,

2 Nova Scotia Museum of Natural History, *Volume 1, Topics and Habitats*, *Volume 2, Theme Regions*, Natural History of Nova Scotia, 2011

3 Shaw, J., Taylor, R. B., et al, *Sensitivity of the Coasts of the Bras d'Or Lakes to Sea-Level Rise*, Geological Survey of Canada (Atlantic), Dartmouth, 2006

4 Natural Resources Canada, 2011

5 Whiteley, Erin, *Thesis: Post-Glacial Landscapes and their Influence on Paleo-Indian Migration into Nova Scotia*, St. Mary's University, 2001

6 Stea, R.R., Conly, H., Brown, Y., *Surficial Geology of the Province of Nova Scotia, Map 92-3*, Nova Scotia Department of Natural Resources, Mines and Energy Branch, Halifax, 1982.

7 Canadian Museum of History, The Debert Palaeo-Indian National Historic Site, 2014,

8 DeMont, John, *In the eye of the storm*, Canadian Geographic, October 2010, Volume 130, No. 5, Canadian Geographic Enterprises, 2010

9 Leavitt, Robert, *Maliseet & Micmac First Nations of the Maritimes*, Second Pilot Edition, Micmac-Maliseet Institute, University of New Brunswick, Fredericton, 1991.

10 Erskine, J. S., *The Archaeology of Some Nova Scotia Indian Campsites, Nova Scotia, Proceedings of the Nova Scotia Institute of Science, Vol. 27, 1-10*, 1971

11 Hoffman, Bernard G., *Cabot to Cartier, Sources for a Historical Ethnography of Northeastern North America, 1497-1550*, University of Toronto Press, Halifax, 1961

12 Martin, Calvin, *Keepers of the Game, Indian-Animal Relationships and the Fur Trade*, University of California Press, 1978

13 O'shea, W., Corbin, C., Krause, E., *Aspects of Louisbourg*, The Louisbourg Institute, The University of the College of Cape Breton Press, 1995

14 Wicken, William C., *Thesis: Encounter with Tall Sails and Tall Tales: Mi'kmaq Society,1500-1760*, McGill University, 1994

15 Trigger, Bruce G., *Northeast*, Vol.15, Smithsonian Institute, Washington, 1978

16 Paul, Daniel M., *We Were Not Savages, A Collision Between European North American Civilizations*, 3rd ed. Fernwood, Halifax, 2006

17 UINR, CMM, NCNS., *The Mi'kmaw Resource Guide*, 3rd ed., Eastern Woodland Publishing

18 Pastore, Ralf T., *Newfoundland Micmac A History of Their Traditional Life*, Pamphlet No. 5, Newfoundland Historical Society, 1978

19 Prins, Harald E.L., *The Mi'kmaq, Resistance, Accommodation and Cultural Survival, Case Studies in Cultural Anthropology.* Holt, Rinehart and Winston, 1996.

20 Robertson, M. *Red Earth*, Nova Scotia Museum, 1969.

21 Speck, Frank G., *Beothuk and Micmac, Part II, Micmac Hunting Territories in Nova Scotia and Newfoundland*. 1914.

22 MacIntyre, Mary Ellen, *Johnstown alter could have Louisbourg link*, The Chronicle Herald, October 26, 2011

23 *Who Ate What in the Maritimes, A Chart of Micmac Annual Subsistence*, Issue 21, Cape Breton's Magazine

24 Denys, Nicholas, *The Native People of Acadia by Nicholas Denys, 1672*, Retold by Ian Maxwell, Little Daisy Press, 1993.

25 MacBeath, George, *Denys, Nicolas*, Dictionary of Canadian Biography, University of Toronto/Universite' Laval, 1966/2015.

26 *About St. Peters*, St. Peters, 2019, https://www.visitstpeters.com/about-st-peters/

27 Bently, P. A., Smith, E. C., *The Forests of Cape Breton in the Seventeenth and Eighteenth Centuries*, Proceedings of the Nova Scotia Institute of Science, Vol. XXIV-Part 1, Acadia University, 1956

28 Pothier, Bernard, *Nicolas Denys: The Chronology and Historiography of an Acadian Hero,* Acadiensis, 1971/2019,

29 Denys, N., Ganong, W. F., *The Description and Natural History of the Coasts of North America (Acadia),* The Champlain Society, Toronto, 1908

30 *St. Peters National Historic Site of Canada*, Canada's Historic Places, 2019

31 *Port Toulouse Archaeological Site BjCf-03*, Battery Provincial Park, St. Peters, Nova Scotia, Canada's Historic Places, 2019

32 Johnson, A. J. B., *Control and Order-In French Colonial Louisbourg, 1713-1758*, Michigan State University Press, 2001

33 Downey, Fairfax, *Louisbourg: Key to a Continent*, Prentice Hall, New Jersey, 1965

34 Johnston, A. J. B., *Endgame 1758, The Promise, the Glory, and the Despair of Louisbourg's Last Decade*, Cape Breton University Press, 2007

35 O'shea, W., Corbin, C., Krause, E., *Aspects of Louisbourg*, The Louisbourg Institute, The University of the College of Cape Breton Press, 1995

36 McLennan, J. S., *Louisbourg-From its Foundation to its Fal*l, Fourth Edition, The Book Room Ltd., 1979

37 Dickason, Olive Patricia, *Louisbourg and the Indians: A Study in Imperial Relations, 1713-1760*, History and Archaeology, National Historic Parks and Sites Branch, Parks Canada, 1976

38 Bently, P. A., Smith, E. C., *The Forests of Cape Breton in the Seventeenth and Eighteenth Centuries*, Proceedings of the Nova Scotia Institute of Science, Vol. XXIV-Part 1, Acadia University, Wolfville, 1956

39 Harvey, D. C., *Holland's Description of Cape Breton Island and Other Documents*, Public Archives of Nova Scotia, Publication No. 2, Halifax, 1935.

40 Parnaby, Andrew, *The Cultural Economy of Survival: The Mi'kmaq of Cape Breton in the Mid-19th Century*, 2012

41 Status Report on Specific Claims, Indigenous and Northern Affairs Canada, August 2019

42 Online: *Species at Risk in Nova Scotia: Identification & Information Guide, Mersey* Tobiatic Research Institute, 2008, http://www.speciesatrisk.ca/SARGuide/download/SAR%20Guide.pdf

43 Online: Species at Risk Overview: NS Endangered Species Act: Legally Listed Species NS Dept of Natural Resources, 2018, https://novascotia.ca/natr/wildlife/biodiversity/species-list.asp

44 Peteet, Dorothy, *Sensitivity and rapidity of vegetational response to abrupt climate change*, PNAS, vol. 97, no. 4, February 15, 2000

45 Carlson, A. E., *The Younger Dryas Climate Event*, University of Wisconsin, Elsevier, 2013

46 Meltzer, D. J., *Bar-Yosef, Ofer, Looking For The Younger Dry*as, *Hunter-Gatherer Behavior: Human Response During th Younger Dryas,* http://www.smu.edu/-/media/Site/Dedman/Departments/Anthropology/MeltzerPDFs/Meltzer-and-Bar-Yosef-2012-YD-Volume.ashx?la=en

47 *Ecological Land Classification for Nova Scotia* , Nova Scotia Department of Natural Resources, 2017

# APPENDICES

Map A

Mi’kmaq Traditional and Current Use Areas

# Sporting Mountain Quarry Expansion MEKS

Mi'kmaq Traditional and Current Use Areas

**Legend**

- Project Site
- Study Area
- Traditional Use Areas

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM
NAD83 Zone 20
Scale: 1:50,000
Version: 1
20 Mar 2020

Membertou GEOMATICS SOLUTIONS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map B

Mi’kmaq Traditional and Current Fishing Areas

# Sporting Mountain Quarry Expansion MEKS

## Mi'kmaq Traditional and Current Fishing Areas

**Legend**

- Project Site
- Study Area
- Fishing Areas

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM
NAD83 Zone 20
Scale: 1:50,000
Version: 1
20 Mar 2020

Membertou GEOMATICS SOLUTIONS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map C

Mi’kmaq Traditional and Current Hunting Areas

# Sporting Mountain Quarry Expansion MEKS

## Mi'kmaq Traditional and Current Hunting Areas

**Legend**

- Project Site
- Study Area
- Hunting Areas

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM
NAD83 Zone 20
Scale: 1:50,000
Version: 1
20 Mar 2020

Membertou GEOMATICS SOLUTIONS

# Map D
# Mi’kmaq Traditional and Current Gathering Areas

# Sporting Mountain Quarry Expansion MEKS

Mi'kmaq Traditional and Current Gathering Areas

**Legend**

- Project Site
- Study Area
- Gathering Areas

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM
NAD83 Zone 20
Scale: 1:50,000
Version: 1
20 Mar 2020

Membertou GEOMATICS SOLUTIONS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# Appendix J
# Nova Construction Co. Ltd.
# Contingency and Emergency Response Plan

# Industrial Approval Application
# Supporting Documentation
# (Contingency Plan)
# Sporting Mountain Quarry, Richmond Co., NS

**Nova Construction Co. Ltd.**
**P.O. Box 1328**
**Antigonish, NS  B2G 2L7**

**April 2016**

**TABLE OF CONTENTS**

---

Removed from Industrial Approval Application Supporting Documentation



# 6.0 CONTINGENCY PLAN

## 6.1 Introduction

(a) Nova Construction Co. Ltd. is committed to the protection of public health and safety, as well as the protection and conservation of the environment at its Sporting Mountain Quarry.

(a) The major objectives of this contingency plan are to ensure a rapid and effective response to unforeseen events occurring at the Sporting Mountain Quarry and minimize their impact.

(b) The Sporting Mountain Quarry is located on Morrison Road, Seaview, Richmond Co., NS on the property identified by PID 75044156.

(c) Copies of this contingency plan will be available on site and at the Nova Construction Co. Ltd. office (3098 Post Rd., Antigonish, NS.).

(d) The main activity at the Quarry will be the production of aggregates used for highway contracts. This will be achieved through grubbing, the removal of overburden, blasting, crushing, and stockpiling of aggregates.

(e) This contingency plan was prepared December 2015.

(f) This contingency plan was developed based on the 2004 Nova Scotia Department of Environment and Labour Contingency Planning Guidelines.

## 6.2 Planning

(a) **Hazard Assessment**

I. There is no planned storage of hazardous materials or petroleum products at the site. During production, refueling of equipment will be conducted on-site on a regular basis through a licenced fuel service provider. Equipment maintenance (including oil changes) will be performed by a qualified equipment maintenance company. The removal of waste products associated with maintenance is the responsibility of the contracted company who performed the work.

II. A spill during equipment refueling is the only emergency reasonably expected to occur that could result in potential adverse effects involving public health and safety and/or environment. In accordance with the Petroleum Management Regulations of the Nova Scotia Environment Act, all refueling activities on-site will be supervised in a manner as to be able to immediately shut off the flow of petroleum during the transfer at any time. Supervision of the transfer intends to eliminate the release and/or overflow of petroleum product causing an inverse effect to public health and safety as well as the environment.

(b) **Resources**

The following resources will be available on site to manage a potential fuel spill:

- Heavy equipment for loading and excavating.
- Suitable materials to stop/contain any potential spill (spill kits, etc.).
- Communications in the form of cellular phone and two-way radio.
- Emergency contact list.

Nova Construction Co. Ltd. will arrange contracts for fuel delivery /equipment refueling and equipment maintenance. The selected maintenance and fuel providers will be responsible for all maintenance on all heavy equipment including oil and filter changes and on-site equipment refueling.

(c) **Roles & Responsibilities**

The senior employee and onsite supervisor at the Quarry will be Mr. Ed Baxter. In the case of an emergency fuel spill, this contingency plan is to be put into action. Mr. Baxter is designated as the Response Commander and is the key individual in charge of the countermeasures phase of any response. Mr. Baxter is in charge of performing or ensuring the following criteria:

- Critical decision making.
- Communication with appropriate government agencies.

- Directing resources.
- Information exchange.
- Ensuring the site cleaned to an acceptable level of the NSE.

(d) **Command Centre**

In the event of a spill, the command centre will be established at the site/crusher control trailer.

(e) **Public Relations**

In the event of an incident such as a spill, the Response Commander will report it to the Environmental Emergencies Reporting Centre (1-800-565-1633). This is in accordance with the Emergency Spill Regulations of the Nova Scotia Environment Act. If required, members of the public who may be adversely affected by the incident shall be notified immediately.

## 6.3 Implementation & Operation

(a) **Activation**

All spills of flammable liquids (TDGA Class 3) over 100 Litres shall be reported according to Schedule 'A' of the Emergency Spill Regulations of the Nova Scotia Environment Act. Such an event will be reported by the Response Commander who will immediately contact Environmental Emergencies Reporting:

- 1-800-565-1633 24-Hour Reporting Service
- 1-902-625-0791 Local Office

(b) **Notification**

i. On site personnel discovering a release will immediately advise the Response Commander.
ii. The Response Commander will externally report all releases as required.

(c) **Notification Contact List**

**EMERGENCY RESPONSE**

| | |
|---|---|
| Fire Department | 911 |
| Ambulance | 911 |
| Police/RCMP | 911 |
| | |
| Environmental Emergencies Reporting | |
| (24-Hour Service) | 1-800-565-1633 |
| (Local Office) | 1-902-625-0791 |

**COMPANY**

| | | |
|---|---|---|
| Ed Baxter (Response Commander) | Cell: | 902-870-7883 |
| Paul White (Engineer) | Cell: | 902-863-7727 |
| Tara Alexander (Safety Coordinator) | Cell: | 902-863-8815 |
| Nova Construction Co. Ltd. | Office: | 902-863-4004 |
| Nick Ormond | Shop: | 902-863-4004 |

**OTHER**

| | |
|---|---|
| Poison Control Centre | 1-800-565-8161 |
| Department of Labour | 1-800-952-2687 |
| NS Power | 1-800-428-6230 |
| Aliant | 811 |

(d) **Response Procedures**

As identified in section 7.2 (a), the only reasonably expected environmental emergency is a fuel spill. In the event of a spill during refuelling, maintenance, or operation; the response commander is to be immediately notified so the proper action can be taken. At his discretion the Response Commander is to apply appropriate counter measures such as the use of loading and excavating equipment to remove the contaminated material and store in in an appropriate manner so it is not to be re-released into the environment until such a time it can be transported to a disposal facility.

(e) **Rehabilitation**

Immediately following an incident, the Response Commander will launch an investigation to assess damages and determine appropriate rehabilitation procedures. As a minimum following the removal of contaminated materials to an appropriate treatment facility, the area will be reinstated with suitable on-site soils and/or blasted rock from the Quarry. The area will be further contoured to match as close as possible to its original form.

(f) **Disposal**

All contaminated materials resulting from a petroleum spill shall be removed to a licensed treatment facility. Presently, the closest facility is:

- Victoria County Bioremediation Facility – Baddeck, Victoria County – 902-295-3660

At the discretion of the Response Commander, a licensed contractor may be used to clean-up and transport the contaminated materials. If required, materials will be stored in a containment area of impervious fill prior to transport and treatment.

(g) **Reporting**

Following emergency spills at the Quarry, the Site Supervisor (Response Commander) is to fill out the Emergency Spill Form. The forms will be held on record at the Nova Construction Co. Ltd. head office. If requested by the Department of Environment following an incident, the Emergency Spill Form as well as a report outlining the measures taken in response to the incident will be submitted.

## NOVA CONSTRUCTION CO. LTD.
### EMERGENCY SPILL FORM

| | |
|---|---|
| **Worksite:** Sporting Mountain Quarry | **Date:** |
| **Site Supervisor:** | |
| **Spill Information** | |
| **Time of Release** | |
| **Weather Conditions** | |
| **Substance Released** | |
| **Quantity Released** | |
| **Affected Area Location** | |
| **Affected Area Size** | |
| **Health & Safety Information** | |
| **Individuals Involved** | |
| **Individuals Affected** | |
| **Safety Measure Used** | |

| Site Rehabilitation | |
|---|---|
| **Mitigation Techniques** | |
| **Disposal Method** | |
| **Site Remediation** | |
| **Future Prevention** | |
| **Additional Comments/Information** | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**Site Supervisor:** **Reviewed By:**

## 6.4 Administrative

(a) **Training**

Nova Construction Co. Ltd. has an extensive Occupational Health and Safety Program in place under the direction of Tara Alexander, Safety Coordinator. The program includes job policies and procedures encompassing employee training with regard to jobsite safety, jobsite hazard assessment, safe work practice, and Personal Protective Equipment (PPE).

(b) **Exercises**

All employees are required to attend monthly toolbox meetings for safety concerns with the Safety Coordinator.

(c) **Maintenance of Response Equipment**

The Inspections and Maintenance sections of the company OH&S program mandate the inspection and maintenance of safety and response equipment on a monthly basis. The company employs Atlantic Tractors Ltd. to perform regularly scheduled maintenance on the heavy equipment on-site including those pieces that would be employed in response to an environmental emergency.

(d) **Updating**

This contingency Plan will be reviewed annually, or following an incident requiring its activation. Common revisions to this plan may reflect changing government regulations, company policies,

or the updating of phone numbers.  Any revisions required to the plan will be reviewed by management, and amendments to the plan will be recorded on a ``Record of Amendments`` page.

## 6.5 Dispute Resolution and Arbitration Policy

This Dispute and Arbitration Process and Policy (the Policy) grants certain rights and imposes certain obligations upon Nova Construction Co. Ltd. (Nova) with respect to the Sporting Mountain Quarry (the Quarry).

This expedited Policy shall be available to any property owner, or lessee of such property, within the County of Richmond, Nova Scotia, who is directly affected by the environmental degradation caused by the Quarry operation, which results in personal injury, loss of use or enjoyment of property, loss of income or other consequential pecuniary loss. For purposes of the remedies available under this Policy, environmental degradation shall include:

- Reduction or loss of residential quality or quantity of water;
- Adverse effects of the Quarry's surface water collection system;
- Excessive air quality degradation;
- Excessive noise.

Nothing in the Policy shall restrict or prevent a Complainant from bypassing this Policy process and instead utilizing available legal remedies within the conventional legal system of Nova Scotia. This Policy is an optional alternative remedy intended by Nova and the Department of Environment and Labour to be a simplified and cost effective alternative to resolve disputes without resorting to traditional legal remedies. To assess the Policy, the Complainant shall agree that the arbitration process under the Policy is in substitution to any traditional legal remedies and that the decision of any arbitrator shall be final and binding upon the Complainant and Nova, without further legal recourse, except as to right of appeal elsewhere described herein.

Any such claim of environmental degradation shall be restricted to those matters that are reasonably under the control of Nova, but shall not include those matters that are, in accordance with generally accepted standards of the surface mining industry, the normal and expected consequence of the Quarry operation (i.e. visual impairment of the landscape by excavation or storage of materials, or operational noise levels reasonably contemplated by the nature of the Quarry operation, as described further in section 3.0).

To assess the Policy, the Complainant shall comply with the following steps:

1. A Complaint shall be made in writing to Nova and the Department of Environment as soon as reasonably possible after the Complainant alleges to have been directly affected by environmental degradation (the occurrence), preferably within 30 days of such

alleged occurrence, or if the Complainant was not aware of this Policy, within 30 days of becoming aware of its availability as an alternative remedy for dispute resolution.

2. The Complaint shall disclose to Nova all available details of the alleged occurrence, including any information possessed by the Complainant with respect to the circumstances of the occurrence and its impact upon the Complainant.
3. The Complaint shall identify the specific remedy sought by the Complainant from Nova in order to resolve the dispute with finality.
4. At the request of Nova, the Complainant shall meet with Nova's representatives to provide such further information as may be reasonably required to properly evaluate the Complaint. The Complainant shall provide access to the Complainant's property for any testing or sampling that Nova may reasonably request. If the Complainant relates to a claim for bodily injury as a consequence of environmental degradation, the Complainant shall co-operate fully with Nova in providing such medical records and/or independent medical examination as may be necessary to properly evaluate such claim.
5. Within 15 days of receiving such Complaint or within 14 days of the Complainant having provided all reasonably requested information to the Company, Nova shall evaluate the claim and respond in writing to the Complainant and the Department of Environment and Labour. When a complaint is received the Department of Environment and Labour may require the Company to provide and expert report prepared by an independent third party with respect to any technical aspect of the complaint. Such report shall facilitate the complaint process and not usurp the role of the Company or the arbitrator. If the Complainant agrees with the response provided by Nova, the terms of the resolution shall be reduced to writing and be signed by both the Complainant and Nova before Nova is obligated to implement the terms of the resolution. If the Complainant is not satisfied with the response from Nova, the Complainant may:
    A. Choose not to refer the matter to arbitration; or;
    B. Give Notice of Intention to refer the complaint to binding arbitration.

    If the Complainant chooses not to refer the complaint to arbitration such action shall not affect the Complainant's right to conventional legal remedies, provided that all communications and exchange of information with respect to the preliminary complaint process shall remain without prejudice in any legal proceedings. Where the Complainant chooses to give Notice of Intention such Notice shall be given within 30 days of receiving the response from the Company or such other period of time as both the Complainant and Nova agree to in writing. Failure by the Complainant to give Notice of Intention as prescribed in this section shall terminate the claim, provided the Complainant shall have recourse to all other statutory or common law remedies.
6. Within 30 days of receipt of the written notice of intention to proceed to arbitration, Nova shall appoint an independent arbitrator to adjudicate upon the Complaint in a final and binding manner. Such arbitrator shall be independent and shall have no financial or personal interest in the dispute or with the parties to the dispute. The arbitrator shall

agree to hear the matter within 90 days of appointment, unless parties otherwise agree or the arbitrator determines that there are extenuating circumstances that warrant the extension of the hearing deadline. In the event the Complainant wishes to challenge the selection of such certified arbitrator, the Complainant shall forthwith apply to the Supreme Court of Nova Scotia for the removal of such arbitrator, pursuant to the provisions of Section 15 of the Nova Scotia Commercial Arbitration Act.

7. The provisions of the Nova Scotia Commercial Arbitration Act shall apply, except where revisions of this Policy, in which case the latter shall prevail.
8. A referral to arbitration shall be binding and the adjudication of the arbitration shall be final and binding upon both the Complainant and Nova, their heirs, executors, administrators, successors and assigns.
9. A failure by a Complainant to meet the mandatory timelines described in this Policy shall result the automatic deemed dismissal of the Complaint, unless Nova agrees otherwise in writing.
10. Once Notice of Intention to refer to binding arbitration is given, such intended referral shall constitute a final and legally binding dispute resolution mechanism between the Complainant and Nova. A failure thereafter by the Complainant to advance such Complaint to completion shall be deemed to be a binding dismissal of the Complaint, without right of further legal recourse against Nova with respect to the occurrence.
11. The rules of natural justice shall apply to arbitration proceedings. Unless otherwise agreed by both the Complainant and Nova, the arbitrator shall be bound by the rules of evidence that govern the trial of a civil case before the Supreme Court of Nova Scotia. The arbitrator shall base the award upon the evidence placed before him/her by the parties.
12. The powers and authorities of the arbitrator shall be as specified by this Policy and the arbitrator shall have no power to amend, vary, interfere with or adversely comment upon the terms of the Approval described herein, including this Policy. The arbitrator shall not possess tile inherent jurisdiction of a court of competent jurisdiction and shall be restricted in remedy to the awarding of special and/or general damages claimed in the Complaint, for any branch of contract or negligence attributable to Nova, that was the proximate cause for personal injury (but not including mental distress), property damage, loss of use or enjoyment of property, loss of income or other consequential pecuniary loss of the Complainant. Awarded damages shall be actual, not national or speculative. In making any claim for damages, the Complainant shall have a duty to mitigate and take preventative steps to minimize or avoid any damages claimed. To be awarded with such damages, the Complainant shall establish that the loss was foreseeable, not remote. The arbitrator shall have no authority to enforce a statutory obligation or specific performance, but may consider breach of any statutory obligation as a component in the proof of a Complaint, which shall be on a balance of probabilities.

13. Authority to award general damages shall not exceed the limits for general damages imposed upon an Adjudicator appointed under the Nova Scotia Small Claims Court Act, as amended from time to time.
14. The parties shall be responsible for the costs of presenting their own case before the arbitrator, including their own legal fees, if any. Nova shall be responsible for the costs of the arbitrator, including reasonable disbursements. Provided however, if the arbitrator concludes the Complainant was frivolous and vexatious, the arbitrator may order the Complainant to indemnify Nova for costs of the arbitrator.
15. Arbitration shall be private and the arbitrator shall restrict the proceedings to the parties, their legal counsel, necessary witnesses, and any representatives of the Department of Environment and Labour that may wish to attend.
16. The written award of the arbitrator shall be filed with both parties and the Department of Environment and Labour. In the event of a non-compliance by the unsuccessful party within 30 days of the award, the successful party may apply to have the award issued as an Order of the Supreme Court of Nova Scotia.
17. The Award of the arbitrator is final and binding upon the parties