

Ministry of Tourism, Culture and Sport

Confirmation Letter

January 31, 2013

Ministry of Tourism, Culture and Sport

Culture Programs Unit
Programs and Services Branch
Culture Division
435 S. James Street, Suite 334
Thunder Bay ON P7E 6S7
Tel.: 807-475-1628
Email: paige.campbell@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes culturels
Direction des programmes et des services
Division de culture
435, rue James sud, bureau 334
Thunder Bay ON P7E 6S7
Tél.: 807-475-1628
Email: paige.campbell@ontario.ca



January 31, 2013

Colin Varley
Stantec Consulting Ltd.
2791 Lancaster Rd., Suite 200
Ottawa, ON K1B 1A7

Dear Mr. Varley,

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, *AMHERST ISLAND WIND ENERGY PROJECT STAGE 1 ARCHAEOLOGICAL ASSESSMENT*, Revised Report Dated January 9, 2013, Filed by MTCS Toronto Office January 14, 2013, MTCS Project Information Form Number P002-243-2011, Stantec Project No. 160960595, MTCS File Number HD00579

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.¹ This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.²

The report documents the assessment of the study area as depicted in Figure 10 of the above titled report and recommends the following:

It is Stantec's professional opinion that all parts of the Project Study Area demonstrate elevated potential for the presence of significant archaeological deposits of integrity (Figure 10). It should be anticipated for Project component siting exercises that Stage 2

¹ This letter constitutes the Ministry of Tourism, Culture and Sport's written comments where required pursuant to section 22 of O. Reg. 359/09, as amended (*Renewable Energy Approvals under the Environmental Protection Act*), regarding the archaeological assessment undertaken for the above-captioned project. Depending on the study area and scope of work of the archaeological assessment as detailed in the report, further archaeological assessment reports may be required to complete the archaeological assessment for the project under O. Reg. 359/09. In that event Ministry comments pursuant to section 22 of O. Reg. 359/09 will be required for any such additional reports.

² In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

Archaeological Assessment is likely to be required for all locations of project-related infrastructure construction, including all turbine pads, access roads, underground cable links, construction offices, laydown areas and temporary storage areas and any other areas where soil disturbances into and below the topsoil may occur.

Stage 2 archaeological survey generally takes two forms: pedestrian survey and test pit excavation survey. Pedestrian survey, the preferred methodology, requires that the area to be surveyed be ploughed as if the ground were to be cultivated and allowed to weather through one hard or several light rainfalls. After weathering the ground is walked at a slow pace and the locations of artifacts recorded using a Geographic Positioning System (GPS). During a pedestrian survey only diagnostic artifacts are collected; all others are left *in situ*.

If ploughing is not technically feasible in some locations due to the nature and extent of existing ground cover or other conditions, Stage 2 assessment will need to be completed using a test pit excavation strategy. In this instance standard archaeological test pits of 30 x 30 cm or greater are excavated and all excavated soils passed through screens of 6 mm mesh. During test pit survey all artifacts encountered are retained. In either case the survey interval will be at no more than 5 m.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Paige Campbell
Archaeology Review Officer

cc. Sean Fairfield, Algonquin Power Co.

Stage 1 Archaeological Assessment



**FINAL REPORT - Original
AMHERST ISLAND WIND ENERGY
PROJECT**
STAGE 1 ARCHAEOLOGICAL
ASSESSMENT

**Various lots, South Shore
Concession, North Shore
Concession, Concessions 1 – 3,
Amherst Island; and Lot 19,
Concession 1; part of Lots 16-26,
Concession 1; part of Lots 16-27,
Broken Front, Township of
Ernestown, Loyalist County, ON**

Prepared for:
Windlectric Inc.
2845 Bristol Circle
Oakville, Ontario L6H 7H7

Prepared by:
Colin Varley, Licence #P002
Stantec Consulting Ltd
2791 Lancaster Rd., Suite 200
Ottawa, ON K1B 1A7

Project No. 160960595

October 4, 2012

PIF # P002-243-2011

Executive Summary

Specific sections of the *Ontario Regulation 359/09, Renewable Energy Approvals Under Part V.0.1 Of The Environmental Protection Act* pertain to Archaeological Resources. In order to meet the conditions of the regulation, Stantec Consulting Ltd was retained by Windlectric to conduct a Stage 1 Archaeological Assessment of the location of the Amherst Island Wind Energy Project.

Based on principles of archaeological potential modelling, existing archival records and characteristics identified on the Ministry of Tourism and Culture's Archaeological Potential Determination Checklist (see Appendix A), it is Stantec's professional opinion that the Project Study Area demonstrates potential for the presence of archaeological deposits of integrity. Stage 2 Archaeological Assessment should occur within areas of any project related infrastructure construction, including all turbine pads, access roads, underground cable links, construction offices, laydowns and temporary storage areas and any other areas where soil disturbances into and below the topsoil may occur.

The following report details the findings of the Stage 1 Archaeological Assessment as completed under Section 22 of O.Reg 359/09. The assessment was conducted in accordance with the Ministry of Tourism and Culture's 2011 *Standards and Guidelines for Consultant Archaeologists*.

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Appendix A Archaeological Potential Determination Checklist

Project Personnel

Project Director	Colin Varley, M.A., R.P.A., Licence #P002
Archival Research	Tavis Maplesden, B.A. (Hons) Christienne Uchiyama, B.A. (Hons), Licence #R309
Site Reconnaissance	Christienne Uchiyama, B.A. (Hons),
Report and Graphics	Tavis Maplesden, B.A. (Hons) Christienne Uchiyama, B.A. Sarah Rogers, B.Sc., G.Dip. Colin Varley, M.A., R.P.A.

1.0 Introduction

Stantec Consulting Ltd. (Stantec) was retained by Windlectric to prepare a Renewable Energy Approval (REA) Application, as required under *Ontario Regulation 359/09 – Renewable Energy Approvals under Part V.0.1 of the Environmental Protection Act* (O.Reg. 359/09). According to subsection 6.(3) of O.Reg. 359/09, the Project is classified as a Class 4 Wind Facility and will follow the requirements identified in O.Reg. 359/09 for such a facility.

The Stage 1 Archaeological Assessment (AA) was conducted in accordance with the 2011 *Standards and Guidelines for Consultant Archaeologists* prepared by the Ontario Ministry of Tourism and Culture (MTC) (MTC, 2011a).

2.0 Project Context

2.1 DEVELOPMENT CONTEXT

2.1.1 Project Description

Windlectric Inc. (the Proponent or Windlectric) is proposing to develop, construct, and operate the 56 - 75 megawatt (MW) Amherst Island Wind Energy Project (the Project) within Loyalist Township (the Township) in the County of Lennox and Addington (the County) in eastern Ontario, in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province.

The basic components of the proposed Project include up to 36 Siemens wind turbines. The turbine model proposed utilizes the same 36 turbine pad locations that have been subject to the assessment required under REA. The layout includes 34 Siemens SWT-2.3-113 2300 kW and two (2) Siemens SWT-2.3-113 2221 kW model wind turbines. The final layout will result in a total installed nameplate capacity of approximately 56 - 75 MW. The number of wind turbines will be dependent upon final selection of the model of the wind turbine most appropriate to the proposed Project. The proposed Project will also include a 34.5 kilovolt (kV) underground and/or overhead electrical power line collector system, fibre optic data lines from each turbine and/or wireless technology for the communication of data, a transmission line, truck turnaround areas, a submarine cable, an operations and maintenance building, permanent dock, a substation, a switching station, an un-serviced storage shed, one connection point to the existing electrical system, cable vault areas, meteorological tower(s) (met tower(s)), access road(s) to the met tower site(s), and turbine access roads with culvert installations, as required, at associated watercourse crossings.

Temporary components during construction may include staging areas for the turbines, access roads, met tower(s), collector lines and transmission line as well as crane paths, a temporary dock, site office(s), batch plant, central staging areas, and associated watercourse crossings. The electrical power line collector system would transport the electricity generated

from each turbine to the substation, along the submarine cable to the mainland and then to a switching station located near to an existing Hydro One Networks Inc. (HONI) 115 kV transmission line.

The Proponent has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider:

- two alternative mainland transmission line routes;
- two alternative switching station locations and corresponding point of common coupling with the HONI line;
- three alternative mainland temporary dock locations along the mainland;
- a submarine cable with three alternative submarine cable routes near the mainland;
- three alternative mainland submarine cable landing locations and corresponding cable vault locations;
- up to three alternative met tower locations; and,
- up to four potential locations for an operations and maintenance building.

Final selection of the sites to be used would be based on the results of consultation activities, detailed design / engineering work, and the conditions experienced during construction.

2.1.2 O.Reg.359/09

The Renewable Energy Approvals Regulation (O.Reg.359/09) was issued under *Part V.0.1 of the Environmental Protection Act* (2009). The Regulation outlines specific requirements for the approval of renewable energy projects. Certain sections of O.Reg.359/09 pertain to archaeological resources.

Section 20(1) of O.Reg.359/09 states:

20. (1) A person who proposes to engage in a renewable energy project shall consider whether engaging in the project may have an impact on any of the following:

1. An archaeological resource at the project location.

This assessment has been prepared as per Section 22(2) which ensures that:

(a) an archaeological assessment is conducted by a consultant archaeologist; and

(b) an archaeological assessment report is prepared by the consultant archaeologist mentioned in clause (a) and submitted to the Ministry of Culture. O. Reg. 359/09, s. 22 (2).

The Stage 1 Archaeological Assessment was completed in the pre-submission phase of the Project. All field examination of the Project area was completed from public roads and no properties were required to be accessed during this stage of the assessment.

2.1.3 Study Area

The Project Study Area includes Amherst Island, an approximately 3-15 km wide corridor stretching between the Island and the mainland where the submarine cable is proposed. The mainland portion of the Project Study Area stretches from the mainland shoreline, north of the Invista Transformer Station and is generally bounded by i) County Road 4 to the West; ii) the Canadian National Railway line to the North; and iii) approximately 500 m East of Jim Snow Drive to the East (Figure 2). In accordance with O. Reg. 359/09, the Project Location includes all land and buildings/structures associated with the Project and any air space in which the Project will occupy. This includes structures such as turbines, access roads and power lines as well as any temporary work areas (the 'constructable area' for the Project) which are required to be utilized during the construction of the Project.

The Project Study Area is composed of approximately 6643 ha (appr. 16400 acres) of developed and agricultural land, comprising the entirety of Amherst Island in the County of Lennox and Addington and approximately 410 ha (appr. 1000 acres) on the mainland (Figures 1 and 2). The majority of land use is agricultural with some pockets of undeveloped and wooded areas throughout. As the Project Study Area includes an area that constitutes an entire inhabited island, there are small hamlets and settlements to be found as well.

The Project Study Area is located in the Napanee Plain physiographic region, encompassing a geographic area of approximately 700 square miles around the Town of Napanee. The Napanee Plain is characterized by a flat to undulating plain of Limestone with Clay deposits to the south and a small amount of long, thin Drumlins (Chapman and Putnam 1984).

The majority of the surficial geology of the Project Study Area is Napanee Clay, a calcareous, stone-free clay characterized by poor drainage (Figure 3). Also present in large pockets are Farmington Loam, a shallow till over limestone bedrock characterized by good drainage and Lansdowne Clay, a stone-free clay characterized by imperfect drainage. There are a small number of Drumlins within the Project Study Area that are comprised of Bondhead Loam, a calcareous, stony loam characterized by good drainage. There are also small pockets of Muck and Peat, which are organic soils with poor to very poor drainage (Gillespie *et al.*, 1963).

The major topographic feature of the area is Lake Ontario, which borders the island part Project Study Area on all sides and the mainland part to the south. There are numerous secondary watercourses running throughout the entirety of the Project Study Area (Figures 1 and 2).

2.2 HISTORICAL CONTEXT

2.2.1 Archaeological Culture History of Eastern Ontario

Overall, archaeological research in many parts of Eastern Ontario has been fairly limited, at least compared to adjoining areas in Southern Ontario and northern New York State, resulting in

only a limited understanding of the cultural processes that occurred in this part of the province. The following summary of the prehistoric occupation of Eastern Ontario (see Table 2.1 for chronological chart) is based on syntheses in Archaeologix (2008), Ellis and Ferris (1990), Jacques Whitford (2008), Pilon (1999) and Wright (1995).

Identifiable human occupation of Ontario begins just after the end of the Wisconsin Glacial period. The first human settlement can be traced back 11,000 years, when this area was settled by Native groups that had been living to the south of the emerging Great Lakes. This initial occupation is referred to as the "Palaeo-Indian" archaeological culture.

Table 2.1: Southern Ontario Prehistoric Cultural Chronology, Years Before Present (BP)

Archaeological Period	Time	Characteristics
Early Paleo-Indian	11,000–10,400 BP	caribou and extinct Pleistocene mammal hunters, small camps
Late Paleo-Indian	10,400–10,000 BP	smaller but more numerous sites
Early Archaic	10,000-8,000 BP	slow population growth, emergence of woodworking industry, development of specialised tools
Middle Archaic	8,000–4,500 BP	environment similar to present, fishing becomes important component of subsistence, wide trade networks for exotic goods
Late Archaic	4,500-3,100 BP	increasing site size, large chipped lithic tools, introduction of bow hunting
Terminal Archaic	3,100-2,950 BP	emergence of true cemeteries with inclusion of exotic trade goods
Early Woodland	2,950-2,400 BP	introduction of pottery, continuation of Terminal Archaic settlement and subsistence patterns
Middle Woodland	2,400-1,400 BP	increased sedentism, larger settlements in spring and summer, dispersed smaller settlement in fall and winter, some elaborate mortuary ceremonialism
Transitional Woodland	1,400-1,100 BP	incipient agriculture in some locations, seasonal hunting & gathering
Late Woodland (Early Iroquoian)	1,100-700 BP	limited agriculture, development of small village settlement, small communal longhouses
Late Woodland (Middle Iroquoian)	700-600 BP	shift to agriculture as major component of subsistence, larger villages with large longhouses, increasing political complexity
Late Woodland (Late Iroquoian)	600- 350 BP	very large villages with smaller houses, politically allied regional populations, increasing trading network

Early Palaeo-Indian (EPI) (11,000-10,400 before present BP) settlement patterns suggest that small groups, or “bands”, followed a pattern of seasonal mobility extending over large territories. Many (although by no means all) of the EPI sites were located on former beach ridges associated with Lake Algonquin, the post-glacial lake occupying the Lake Huron/Georgian Bay basin, and research/evidence indicates that the vegetative cover of these areas would have consisted of open spruce parkland, given the cool climatic conditions. Sites tend to be located on well-drained loamy soils, and on elevations in the landscape, such as knolls. The fact that assemblages of artifacts recovered from EPI sites are composed exclusively of stone skews our understanding of the general patterns of resource extraction and use. However, the taking of large game, such as caribou, mastodon and mammoth, appears to be of central importance to the sustenance of these early inhabitants. Moreover, EPI site location often appears to be located in areas which would have intersected with migratory caribou herds. In the Ottawa Valley it appears that the palaeo-environment had not recovered sufficiently from the former

glaciations to have allowed an EPI occupation. There is, however, some evidence of EPI incursion to the Rideau Lakes area.

The Late Palaeo-Indian (LPI) period (10,400-10,000 BP) is poorly understood compared to the EPI, the result of less research focus than the EPI. As the climate warmed the spruce parkland was gradually replaced and the vegetation of Southern Ontario began to be dominated by closed coniferous forests. As a result many of the large game species that had been hunted in the EPI period either moved north with the more open vegetation, or became locally extinct. Like the EPI, LPI peoples covered large territories as they moved around to exploit different resources. Environmental conditions in Eastern Ontario and the Ottawa Valley were sufficient to allow for a Late Palaeo-Indian occupation, although the evidence of such is still very limited.

The transition from the Palaeo-Indian period to the Archaic archaeological culture of Ontario prehistory is evidenced in the archaeological record by the development of new tool technologies, the result of using an increasing number of resources as compared to peoples from earlier archaeological cultures, and developing a broader based series of tools to more intensively exploit those resources. During the Early Archaic period (10,000-8,000 BP), the jack and red pine forests that characterized the LPI environment were replaced by forests dominated by white pine with some associated deciduous elements. Early Archaic projectile points differ from Palaeo-Indian forms most notably by the presence of side and corner notching on their bases. A ground stone tool industry, including celts and axes, also emerges, indicating that woodworking was an important component of the technological development of Archaic peoples. Although there may have been some reduction in the degree of seasonal mobility, it is still likely that population density during the Early Archaic was low, and band territories large.

The development of more diversified tool technology continued into the Middle Archaic period (8,000-4,500 BP). The presence of grooved stone net-sinkers suggests an increase in the importance of fishing in subsistence activities. Another new tool, the bannerstone, also made its first appearance during this period. Bannerstones are ground stone weights that served as counterbalance for "atlatls" or spear-throwers, again indicating the emergence of a new technology. The increased reliance on local, often poor quality chert resources for chipped stone tools suggests that in the Middle Archaic groups inhabited smaller territories lacking high quality raw materials. In these instances lower quality materials which had been glacially deposited in local tills and river gravels were used.

This reduction in territory size appears to have been the result of gradual region-wide population growth, which forced a reorganization of subsistence patterns, as a larger population had to be supported from the resources of a smaller area. Stone tools designed specifically for the preparation of wild plant foods suggest that subsistence catchment was being widened and new resources being more intensively exploited. A major development of the later part of the Middle Archaic period was the initiation of long distance trade. In particular, native copper tools manufactured from sources near Lake Superior were being widely traded.

During the later part of the Middle Archaic (5,500-4,500 BP) a distinctive occupation, or tradition, known as the Laurentian Archaic, appears in south-eastern Ontario, western Quebec, northern New York and Vermont. Laurentian Archaic sites are found only within the transitional zone

between the deciduous forests to the south and coniferous forests to the north known as the Canadian Biotic Province and are identifiable through the association of certain diagnostic tool types, including ground slate semi-lunar knives (or “ulus”), plummets for use in fishing, ground slate points and knives, and ground stone gouges, adzes and grooved axes. It is thought that there was less reliance on plant foods and a greater reliance on hunting and fishing in this region than for Archaic peoples in southern and south-western Ontario. Laurentian Archaic sites have been found in the middle Ottawa River valley, along the Petawawa and Trent River watersheds and at Brockville.

The trend towards decreased territory size and a broadening subsistence base continued during the Late Archaic (4,500-2,900 BP). Late Archaic sites are far more numerous than either Early or Middle Archaic sites. It appears that the increase in numbers of sites at least partly represents an increase in population. However, around 4,500 BP water levels in the Great Lakes began to rise, taking their modern form. It is likely that the relative paucity of earlier Archaic sites is due to their being inundated under the rising lake levels.

The appearance of the first true cemeteries occurs during the Late Archaic. Prior to this period, individuals were interred close to the location where they died. However, with the advent of the Late Archaic and local cemeteries individuals who died at a distance from the cemetery would be returned for final burial at the group cemetery often resulting in disarticulated skeletons, occasionally missing minor bone elements (e.g. finger bones). The emergence of local group cemeteries has been interpreted as being a response to both increased population densities and competition between local groups for access to resources, in that cemeteries would have provided symbolic claims over a local territory and its resources.

Increased territoriality and more limited movement are also consistent with the development of distinct local styles of projectile points. The trade networks which began in the Middle Archaic expand during this period, and begin to include marine shell artifacts (such as beads and gorgets) from as far away as the Mid-Atlantic coast. These marine shell artifacts and native copper implements show up as grave goods, indicating the value of the items. Other artifacts such as polished stone pipes and slate gorgets also appear on Late Archaic sites. One of the more unusual of the Late Archaic artifacts is the “birdstone”, a small, bird-like effigy usually manufactured from green banded slate.

The Early Woodland period (2,900-2,200 BP) is distinguished from the Late Archaic period primarily by the addition of ceramic technology. While the introduction of pottery provides a useful demarcation point for archaeologists, it may have made less difference in the lives of the Early Woodland peoples. The first pots were very crudely constructed, thick walled, and friable. It has been suggested that they were used in the processing of nut oils by boiling crushed nut fragments in water and skimming off the oil. These vessels were not easily portable, and individual pots must not have enjoyed a long use life. There have also been numerous Early Woodland sites located at which no pottery was found, suggesting that these poorly constructed, undecorated vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

Other than the introduction of this rather limited ceramic technology, the life-ways of Early Woodland peoples show a great deal of continuity with the preceding Late Archaic period. For instance, birdstones continue to be manufactured, although the Early Woodland varieties have "pop-eyes" which protrude from the sides of their heads. Likewise, the thin, well-made projectile points which were produced during the terminal part of the Archaic period continue in use. However, the Early Woodland variants were side-notched rather than corner-notched, giving them a slightly altered and distinctive appearance. The trade networks which were established in the Middle and Late Archaic also continued to function, although there does not appear to have been as much traffic in marine shell during the Early Woodland period. These trade items were included in increasingly sophisticated burial ceremonies, including construction of burial mounds.

In terms of settlement and subsistence patterns, the Middle Woodland (2,200 B.C.-1,100 BP) provides a major point of departure from the Archaic and Early Woodland periods. While Middle Woodland peoples still relied on hunting and gathering to meet their subsistence requirements, fish were becoming an even more important part of the diet. Middle Woodland vessels are often heavily decorated with hastily impressed designs covering the entire exterior surface and upper portion of the vessel interior. Consequently, even very small fragments of Middle Woodland vessels are easily identifiable.

It is also at the beginning of the Middle Woodland period that rich, densely occupied sites appear along the margins of major rivers and lakes. While these areas had been utilized by earlier peoples, Middle Woodland sites are significantly different in that the same location was occupied off and on for as long as several hundred years. Because this is the case, rich deposits of artifacts often accumulated. Unlike earlier seasonally utilized locations, these Middle Woodland sites appear to have functioned as base camps, occupied off and on throughout the course of the year. There are also numerous small upland Middle Woodland sites, many of which can be interpreted as special purpose camps from which localized resource patches were exploited. This shift towards a greater degree of sedentism continues the trend witnessed from the Middle Archaic, and provides a prelude to the developments that follow during the Late Woodland period.

There are three complexes of Middle Woodland culture in Ontario. The complex specific to eastern Ontario is known as "Princess Point" most notably represented by ceramics decorated with a stamped zigzag pattern applied at various angles to the exterior of the vessel, known as "pseudo scallop shell". Another common decorative style is the dentate stamp, a comb-like tool creating square impressions.

The relatively brief period of the Transitional Woodland period is marked by the acquisition of cultivar plants species, such as maize and squash, from communities living south of the Great Lakes. The appearance of these plants began a transition to food production, which consequently led to a much reduced need to acquire naturally occurring food resources. Sites were thus occupied for longer periods and by larger populations. Transitional Woodland sites have not been undiscovered in eastern Ontario.

The Late Woodland period in southern Ontario is associated with societies referred to as the Ontario Iroquois Tradition. This period is often divided into three temporal components; Early, Middle and Late Iroquoian (see Table 3.1). In eastern Ontario, especially in the Ottawa River Valley, there is considerable overlap of people continuing to practice a hunting and gathering economy and those using limited horticulture as a supplement to gathered plants. For the most part, however, classic Late Woodland sites in eastern Ontario are limited to an area at the east end of Lake Ontario and along the St. Lawrence River valley. Middle Iroquoian sites have not been identified east of Kingston.

During the Late Iroquoian period a distinctive material culture emerges at the east end of Lake Ontario and along the St. Lawrence River up to Québec City, known as the St. Lawrence Iroquois (SLI). SLI sites are characterized by large semi-permanent villages and associated satellite settlements. The inhabitants of these villages and satellites practiced horticulture of staple crops which made up the bulk of their diet. Other food resources were hunted, fished and gathered. SLI village sites can be extensive, up to 10 acres or more in size and composed of a number of longhouse structures. Special purpose satellite settlements, such as hunting and fishing camps, are smaller in area and in the number and size of structures within the settlement. The inhabitants of these villages and satellites practiced horticulture of staple crops which made up the bulk of the diet. Other food resources were hunted, fished and gathered (cf. Pendergast, 1974; Jaimeson, 1990; Stewart, 1992). Late Woodland village sites can be extensive, up to 10 acres or more in size and composed of a number of longhouse structures. Satellite settlements are smaller in extent and in the number and size of structures within the settlement. SLI sites are located in territory on either side of the St. Lawrence River, from the east end of Lake Ontario to the vicinity of Quebec City (Jamieson, 1990).

Overall conditions in the Project Study Area are considered very favourable for prehistoric occupation, including access to a wide variety of niches for the harvesting of plant, fish and animal resources, and access to major transportation routes along the Lake Ontario shoreline.

2.2.2 Historic Period Context

Originally part of the historic Midland District, the Counties of Lennox and Addington were created as part of the United Counties of Frontenac, Lennox and Addington by the 1792 decree of Governor John Graves Simcoe. In 1864, there was a further separation leading to what are now the two counties of Frontenac and of Lennox and Addington. Unlike other historic counties with multiple names, Lennox and Addington only ever existed as separate entities on paper and never needed to be united. The townships were named for Charles Lennox and Henry Addington, both members the British aristocracy and parliament.

The original settlers of the Lennox and Addington area were United Empire Loyalists (UEL), fleeing a post-Revolution United States for the relative safety of Canada in and around 1784. Prior to their arrival most of the land remained in wilderness and, as it had never been surveyed, little was known about its condition. The large numbers of Loyalists fleeing America for Nova Scotia and New Brunswick eventually caused a land shortage that forced the British to look for other areas to open. Thus, the north shore of Lake Ontario, from Kingston westward, was quickly surveyed and land allotments distributed (Herrington, 1915). Initial land grants were for 200 acres per person with larger allotments given to those who had actively fought for the Crown in the Revolutionary War. Each applicant drew a number that corresponded with a certain parcel of land in one of the five 'Towns' laid out. It was their responsibility to clear and cultivate the land (Herrington, 1913).

The first European claimant of Amherst Island (historically Isle de Tonti/Ile Tonti) was the French explorer Robert de la Salle (La Salle) who named it for his lieutenant Henri de Tonti (Figure 4). Prior to that, it had been known by its Aboriginal name Kaouenesgo. De la Salle was a key figure under the Governorship of New France of Louis du Buade du Frontenac in opening up the Lake Ontario region for trade. He set up Fort Frontenac at what is now Kingston, to capitalize on the fur trade and included Amherst Island in his seigniorship as a seat of control of water access to the Bay of Quinte.

In 1792, Amherst Island was designated as part of the historic County of Ontario. It consisted of the islands of the St. Lawrence River, and existed until 1800 when the county was dissolved and the islands attached to their respective counties on the north shore of Lake Ontario (Herrington, 1913). The islands were not initially included in the UEL land grants, and were to remain in the hands of First Nations, but when it was noted that the major ones, including Amherst, were essentially the size of townships, they were reallocated to European settlement (Burleigh, 1980).

In 1796, the western half of the island was granted to Sir John Johnson, a Loyalist Brigadier General and leader of the King's Royal Regiment of New York, with the eastern half being granted to him at a later date. Johnson, an American-born aristocrat, was forced to abandon a sizable estate when he fled to Canada with his followers and tenants. After the war he was appointed by Governor Frederick Haldimand to supervise the settling along the St. Lawrence and Bay of Quinte. He was regarded by the Loyalist settlers in the region as their leader and was a front runner for first Governor of Upper Canada which he lost to John Graves Simcoe. Johnson was also appointed Inspector of Indian Affairs and championed their causes, even

putting stop to certain proposed practices by the British government when he felt that they were detrimental to Native interests (Earle, 2000). Johnson never settled on the island but instead left his son to act as his agent. The island as an entire holding subsequently changed hands a number of times, including one memorable account whereby the sister of Johnson, a Maria Bowes, lost it in a game of cards to the Earl of Mountcashel, whose later financial troubles forced its seizure by the Sherriff in 1857 (Burleigh, 1913).

By 1803, the northern shore of the island had begun to be settled and, over the next few decades, the population steadily climbed until by the early 1840s there were over 2000 inhabitants. As a popular stop over and harbour for boats travelling Lake Ontario between Kingston and parts west the island flourished but, like many marine settlements, with the advent of rail and road travel, floundered as its importance waned. Walling's 1860 Map (Figure 5) shows the extent to which Amherst Island had already been settled, particularly the north shore, and the already established settlements of Emerald and Stella. Virtually all of the lots on the island are shown as occupied on the map. The map also shows two churches on the island and one school, located halfway between the two settlements.

Meacham's 1878 Map (Figures 6 to 8) shows in greater detail the further development of the island, with at least four churches of different denominations, including one Catholic church established to accommodate the large wave of Irish immigration to the island mid-century (Burleigh, 1980). Two cemeteries are depicted at either end of the north shore of the island and there were three schools, including one serving the southern shore. Also evident are the shipping docks and a Post Office associated with the hamlet of Emerald, as well as a store and blacksmiths in both Emerald and Stella. There is also a note regarding a sulphur spring on the eastern outskirts of Emerald.

Meacham's map also shows that the mainland portion of the Project Study Area was also fully settled and that the majority of the homes in the mainland Project Study Area were located immediately alongside the road to Kingston (Figure 9). No public buildings or businesses are indicated within the limits of the mainland Project Study Area.

2.3 ARCHAEOLOGICAL CONTEXT

There are presently no registered prehistoric period archaeological sites or components within the Project Study Area (MTC, 2011b). The lack of existing prehistoric period sites is likely a result of limited archaeological survey on the island, rather than a paucity of archaeological resources being present. Overall conditions in the Project Study Area would have been very favourable for prehistoric occupation, including access to a wide variety of econiches for the harvesting of plant, fish and animal resources, and access to major transportation routes, such as the Trent River and the Cataraqui River, along the Lake Ontario shoreline.

There is at present one registered historic period archaeological site within a 1 km radius the Project Study Area (MTC 2011b) This site is the shipwreck of the schooner William Jamieson, Borden designation BaGe-4. This wreck was registered into the Ontario Sites Database at the MTCS in 1995 by Jonathan Moore of Parks Canada. The wreck was originally identified by recreational scuba divers in the early 1960's but never entered into the official archaeological

record. The wreck is situated approximately 300 m west of the North tip of Barry Point on Amherst Island. The wreck is upright and the hull is intact. It is situated at a depth of approximately 75 feet on a level and silty lake bottom; this site has extensive mussel infestation.

The William Jamieson was a two masted schooner built in 1878 at Mill Point, Ontario and was lost off Barry Point on May 15, 1923 (Kohl, 1997). The vessel was owned and crewed by Captain W. Savage and Mate P. McManus, both of Picton, Ontario. The balance of her crew consisted of Philip Haskell, Richard Woodward and a Mrs. Tierney. The William Jamieson left Oswego heading to Picton carrying a cargo of 250 tons of coal. The vessel was caught up in storm south of Amherst Island and made her way through the Upper Gap in an effort to find safe harbor. However, the storm had weakened the seams of the vessel allowing water to fill her hold (Kohl, 1997). The ingress of water was slow enough to allow the crew to beach the vessel on the north shore of Amherst Island, allowing enough time for the crew to jump ashore. Despite the efforts of the crew to secure the vessel on the beach, it slowly slid back into the deeper water offshore.

The wreck was discovered in 1963 by recreational scuba divers from the Aqua Fins Scuba Club in Kingston, Ontario. As there was no standing legislation at the time to protect the wreck, the divers collected numerous artifacts including the ships bell, compass and numerous examples of crockery (Kohl, 1997). These artifacts are now said to be in the possession of the descendants of the crew of the ship (Kohl, 1997).

sprang several leaks and began taking on water. As the sinking of the schooner was slow all hands managed to get on the lifeboats and there was no loss of life.

The lack of terrestrial historic period archaeological resources is again likely the result of a lack of archaeological survey on the island.

2.3.1 Site Reconnaissance

2.3.1.1 Field Methods

A visit was made to the Project Study Area on July 7th and 8th, 2011 to assess general conditions. Private property was not accessed during the site visit and all observations were recorded from public property (*i.e.*, public roads). All roads within the Project Study Area were visited and locations of Project infrastructure were surveyed from all possible directions.

2.3.1.2 Results of the Site Visit

In general, the Project Study Area was found to be undisturbed, although a quarry was noted on the north side of Front Road in Lot 10, North Shore Concession. In the locations of Project components land was either undeveloped or agricultural in nature. The site visit confirmed the presence of features of archaeological interest throughout the Project Study Area (e.g., knolls, watercourses).

3.0 Analysis and Conclusions

The assessment of archaeological potential for the Project Study Area considered both prehistoric and historic period resources. Archaeological potential modeling for prehistoric era sites is based largely on the identification of landscape features which are either known to have attracted past habitation or land use, or which appear to have potential for attracting human use. These features include: navigable rivers and lakes; confluences of watercourses; smaller sources of potable water; ridges or knolls that overlook areas of resource potential; outcrops of high-quality stone for tool making; and, most importantly, combinations of these features. In general it has been demonstrated that areas within 200-300 m of watercourses, or other significant bodies of water (ASI, 1990; Cox, 1989), and in particular those areas with multiple water sources (Young et al., 1995), are considered to be of elevated archaeological potential.

Patterns of land use by historic Euro-Canadians to some extent mirror those of the prehistoric period. This is not surprising, since the same general needs must be met, i.e., proximity to potable water, access to natural resources, and a level, well drained habitation site. On the other hand, the Euro-Canadian conversion of both fertile and more marginal land for agricultural purposes, the development of non-water travel routes, the exploitation of different resources such as subsurface mineral deposits, and other differences in land use patterns make potential modeling of Euro-Canadian and other non-Aboriginal historic sites somewhat less reliable. Fortunately, these sites are more visible than their prehistoric counterparts, which helps offset this lower level of predictive reliability.

Areas of archaeological potential are largely determined from a limited number of criteria generally accepted as being of importance in human land-use, and thus in the deposition of materials that eventually result in archaeological sites. In order to demonstrate the widespread archaeological potential of the Project Study Area we have created a map of the Project Study Area and overlaid on this map buffer zones for various elements that elevate archaeological potential as partly determined by criteria set out by the MTC (see also Finalyson, 2009). The resulting map, Figure 10, shows that most of Amherst Island can be considered to have elevated archaeological potential. Specific criteria upon which the map was based are shown in Appendix A.

4.0 Recommendations

It is Stantec's professional opinion that most parts of the Project Study Area demonstrate elevated potential for the presence of significant archaeological deposits of integrity. It should be anticipated for Project component siting exercises that Stage 2 Archaeological Assessment is likely to be required for most locations of project-related infrastructure construction, including all turbine pads, access roads, underground cable links, construction offices, laydown areas and temporary storage areas and any other areas where soil disturbances into and below the topsoil may occur.

Areas found within the limits of the buffer zones in Figure 10 indicate locations where archaeological survey of either pedestrian or test pit methodology must be completed at 5 m intervals. Areas outside of the buffer zones can be surveyed at 10 m intervals during test pit methodology survey. Even in the areas outside of the buffer zones pedestrian survey must be completed at 5 m intervals, as per the 2011 *Standards and Guidelines for Consultant Archaeologists*.

Stage 2 archaeological survey generally takes two forms: pedestrian survey and test pit excavation survey. Pedestrian survey, the preferred methodology, requires that the area to be surveyed be ploughed as if the ground were to be cultivated and allowed to weather through one hard or several light rainfalls. After weathering the ground is walked at a slow pace and the locations of artifacts recorded using a Geographic Positioning System (GPS). During a pedestrian survey only diagnostic artifacts are collected; all others are left *in situ*.

If ploughing is not technically feasible in some locations due to the nature and extent of existing ground cover or other conditions, Stage 2 assessment will need to be completed using a test pit excavation strategy. In this instance standard archaeological test pits of 30 x 30 cm or greater are excavated and all excavated soils passed through screens of 6 mm mesh. During test pit survey all artifacts encountered are retained. In either case the survey interval will be at no more than 5 m. During Stage 2 assessment all field activities will be recorded using a GPS.

5.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O.1990, c O.18. Ontario. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the Study Area have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site

immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

The Cemeteries Act, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of cemeteries at the Ministry of Consumer Services.

6.0 Closure

This report has been prepared for the sole benefit of Windlectric Inc. and may not be used without the express written consent of Stantec Consulting Ltd and Windlectric Inc.. Any use which a third party makes of this report is the responsibility of such third party.

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Signed Original On File

Tavis Maplesden, B.A.

Archaeological Technician

Tel: 613 738-0708 ext. 3278

Fax: 613 738-0721

Tavis.Maplesden@Stantec.com

Colin Varley, M.A., R.P.A.

Senior Archaeologist and Heritage Planning
Consultant

Tel: 613 738-6087

Fax: 613 738-0721

Colin.Varley@Stantec.com

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8.0 Maps



Legend

-  Project Study Area
-  Railway
-  Watercourse

Notes

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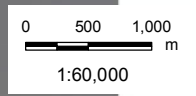
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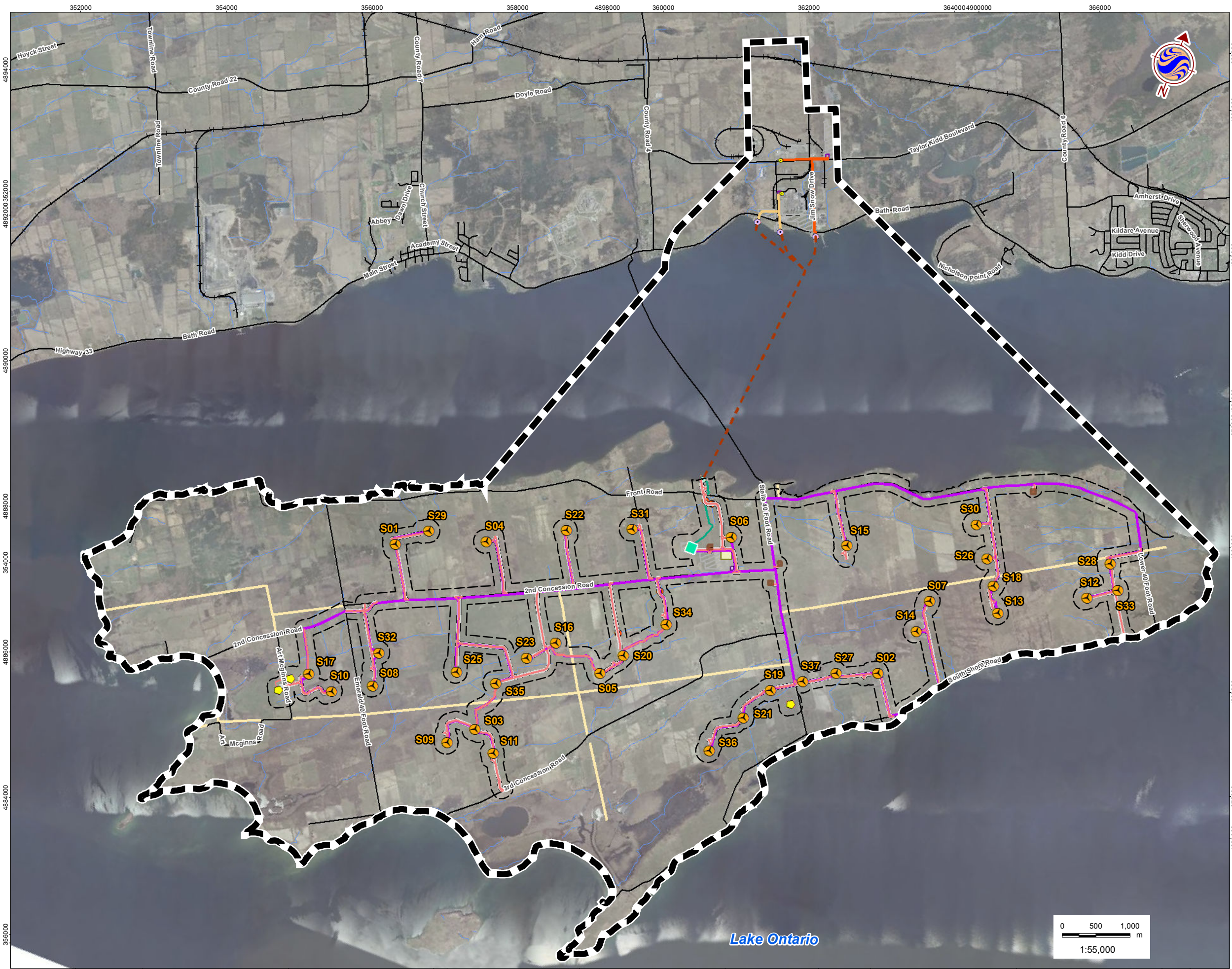
Figure No.

1

Title

Site Location





Legend

Project Components

- Project Study Area
- 120m Zone of Investigation
- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)

TransmissionLine

- Mainland Option 1
- Mainland Option 2
- Island Transmission Line

Land Use

- Central Staging Area
- Switching Station (Potential Location)

Existing Features

- Road
- Unopened Road Allowance
- Railway
- Watercourse

Notes

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Figure No.
2

Title
Site Plan

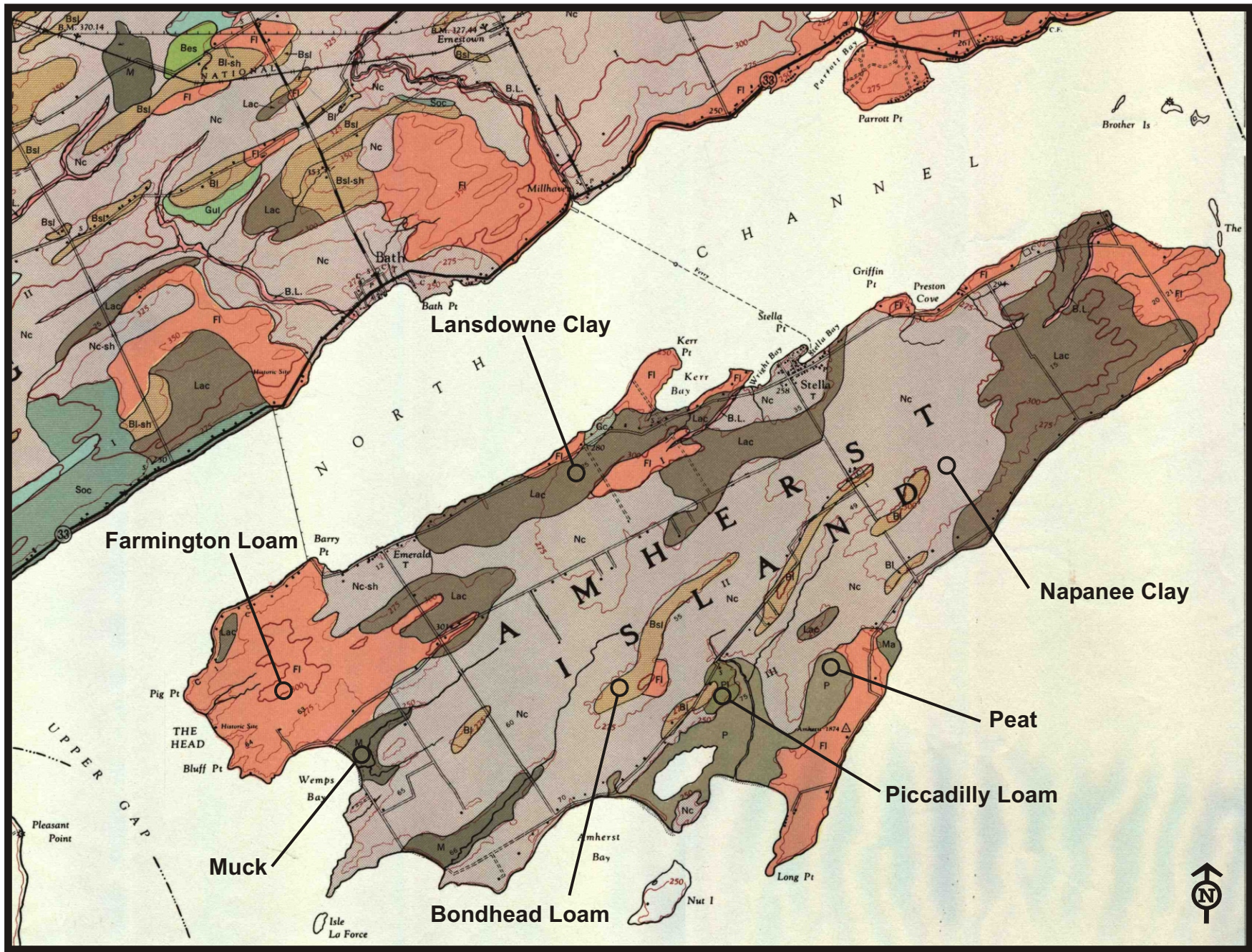
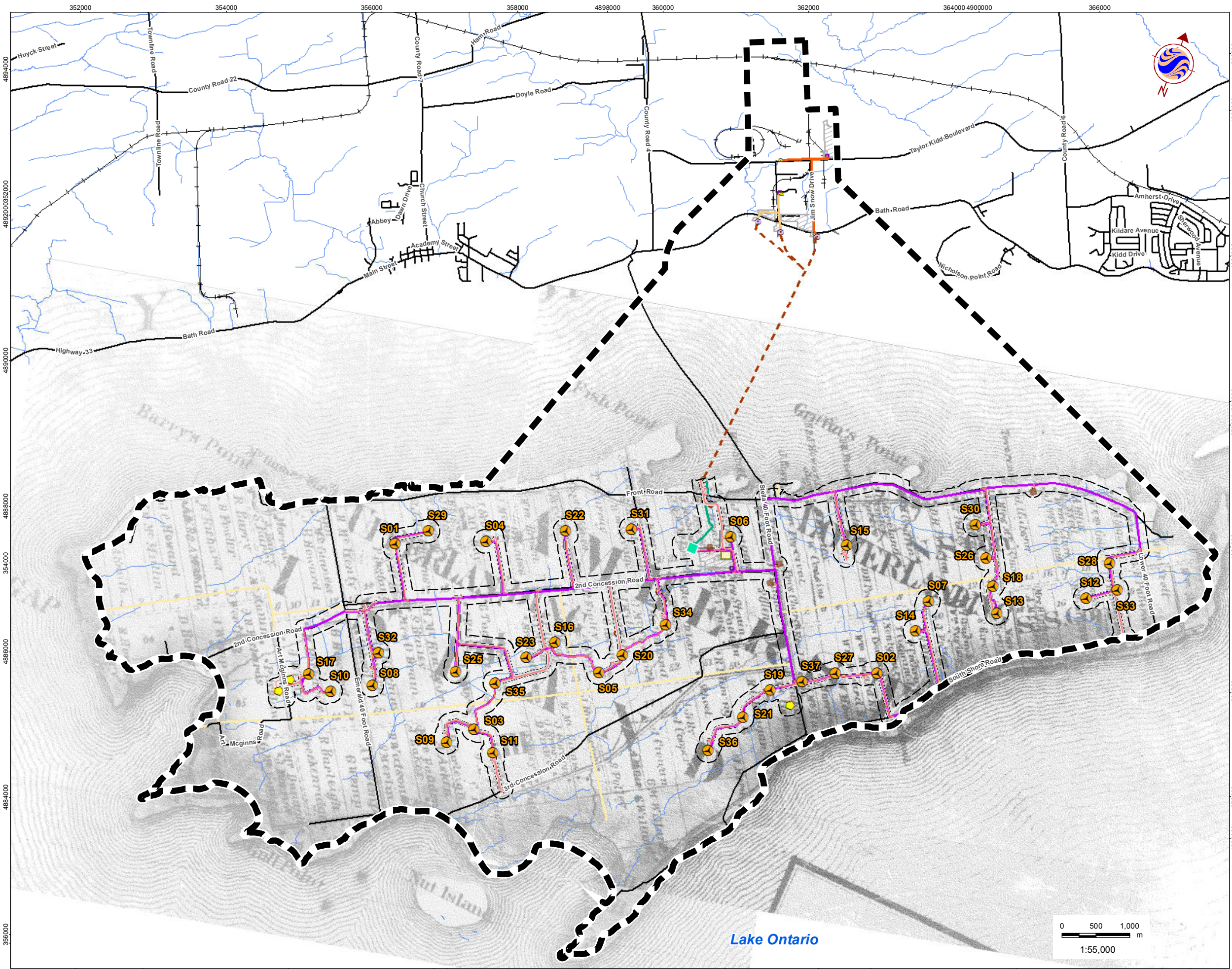


Figure 3 - Soil Types In and Near the Project Area

(Source: Gillespie et al., 1963)



Figure 4 - 1790 Map of Isle Tonti



Legend

- Project Study Area
- 120m Zone of Investigation
- Project Components**
- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)
- TransmissionLine**
- Mainland Option 1
- Mainland Option 2
- Island Transmission Line
- Land Use**
- Central Staging Area
- Switching Station (Potential Location)
- Existing Features**
- Road
- Unopened Road Allowance
- Railway
- Watercourse

Notes

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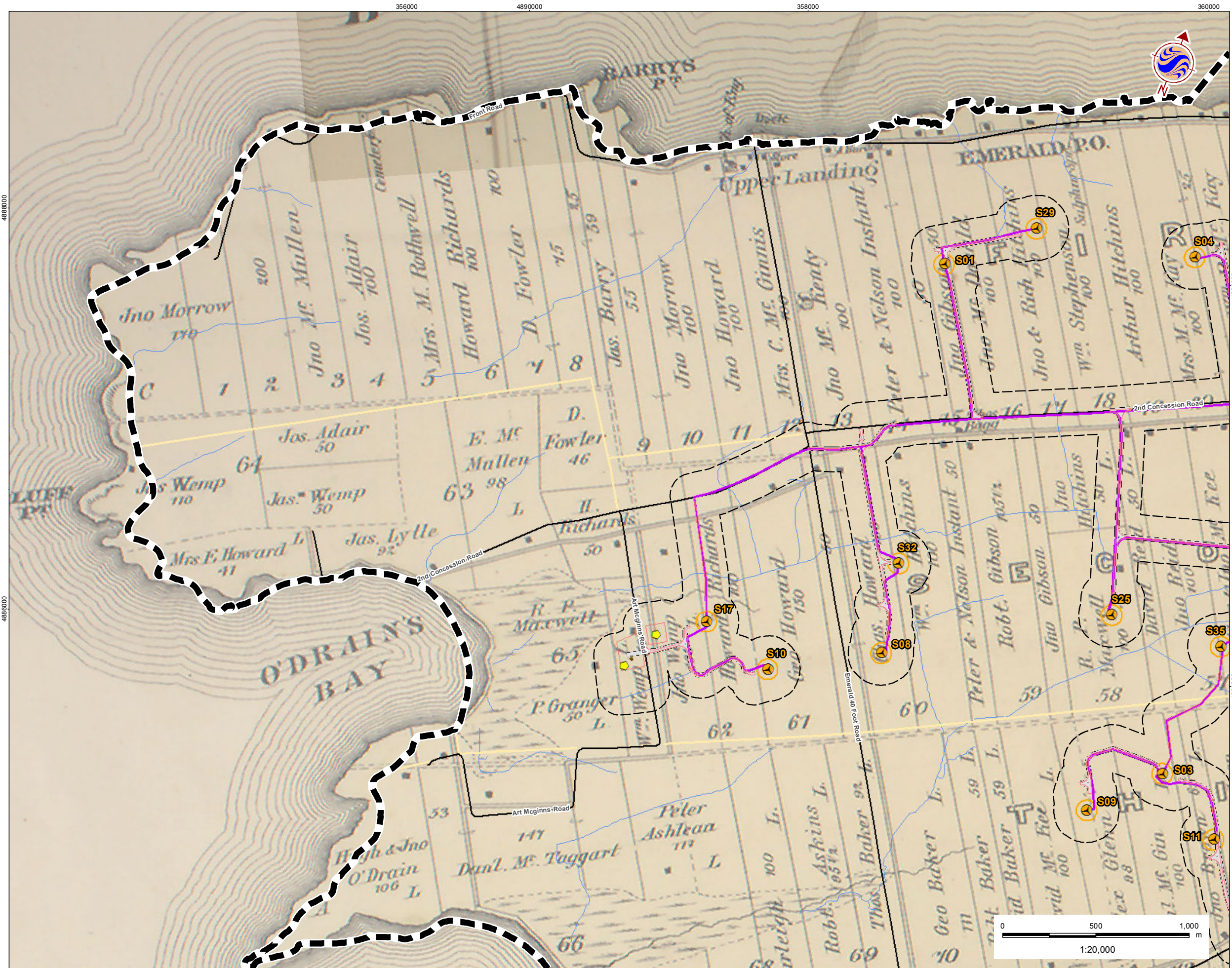


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Figure No.
5

Title
Walling's 1860 Historic Mapping of Amherst Island Overlaid by Project Components



Legend

- Project Study Area
- 120m Zone of Investigation
- Project Components**
- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)
- TransmissionLine**
- Mainland Option 1
- Mainland Option 2
- Island Transmission Line
- Land Use**
- Central Staging Area
- Switching Station (Potential Location)
- Existing Features**
- Road
- Unopened Road Allowance
- Railway
- Watercourse

Notes

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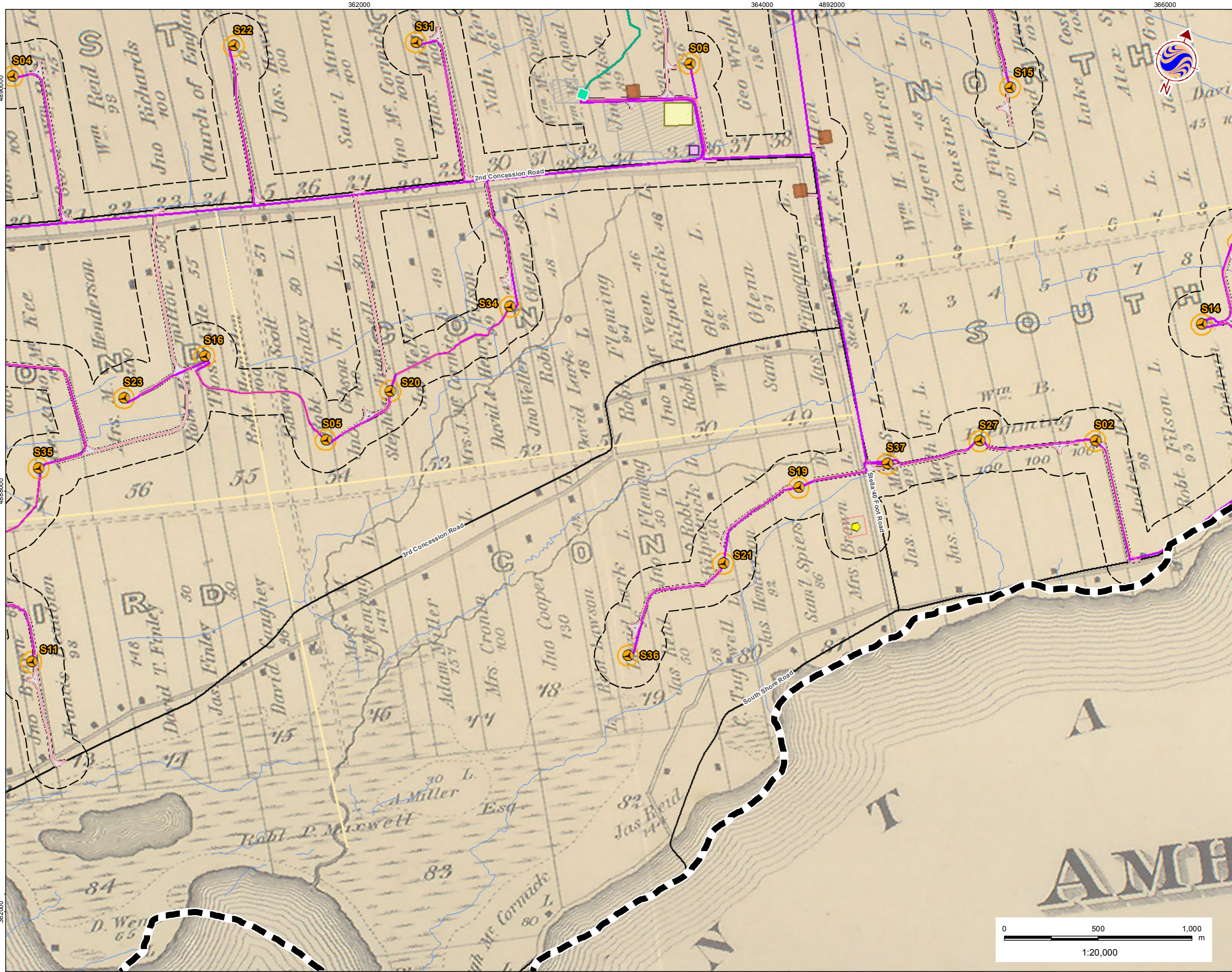
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Figure No.
6

Title
Meacham's 1878 Historic Mapping Overlaid by Project Components (Western Portion)



Legend

Project Study Area

- Project Study Area
- 120m Zone of Investigation

Project Components

- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)

TransmissionLine

- Mainland Option 1
- Mainland Option 2
- Island Transmission Line

Land Use

- Central Staging Area
- Switching Station (Potential Location)

Existing Features

- Road
- Unopened Road Allowance
- Railway
- Watercourse

Notes

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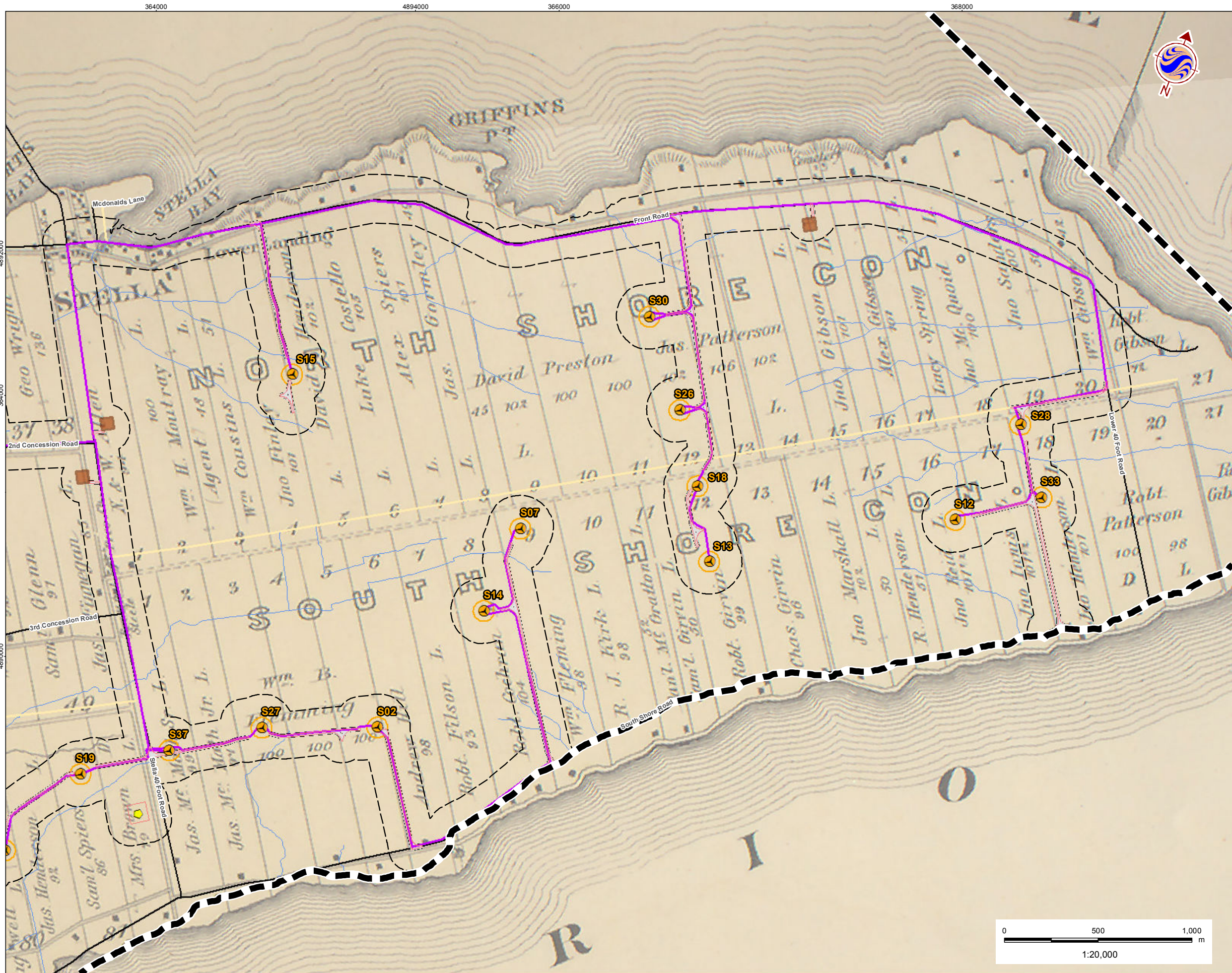


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Figure No.
7

Title
Meacham's 1878 Historic Mapping Overlaid by Project Components (Central Portion)



Legend

- Project Study Area
- 120m Zone of Investigation
- Project Components**
- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)
- TransmissionLine**
- Mainland Option 1
- Mainland Option 2
- Island Transmission Line
- Land Use**
- Central Staging Area
- Switching Station (Potential Location)
- Existing Features**
- Road
- Unopened Road Allowance
- Railway
- Watercourse

Notes

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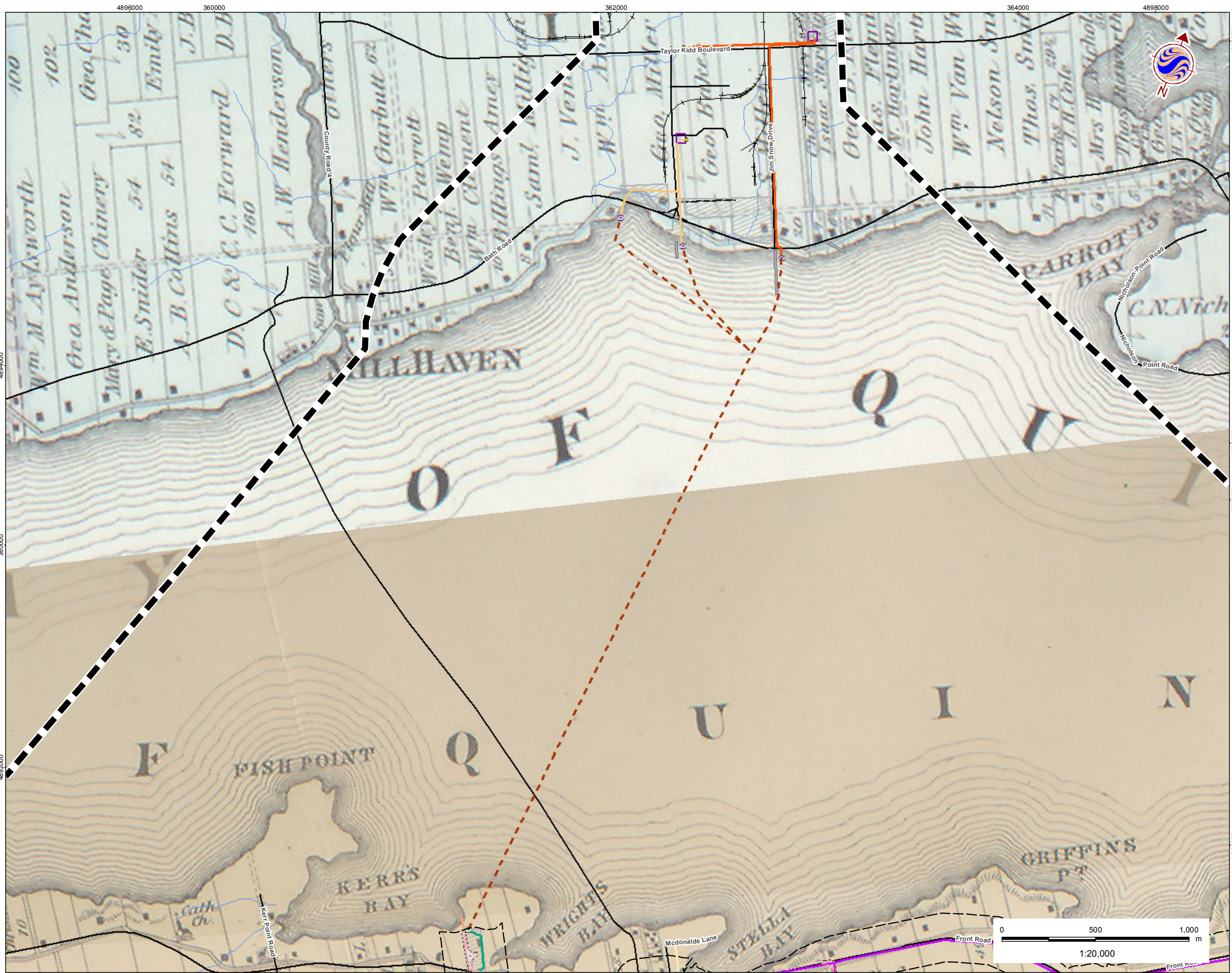
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Figure No.
8

Title
Meacham's 1878 Historic Mapping Overlaid
by Project Components (Eastern Portion)



Legend

Project Components

- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)

TransmissionLine

- Mainland Option 1
- Mainland Option 2
- Island Transmission Line

Land Use

- Central Staging Area
- Switching Station (Potential Location)

Existing Features

- Road
- Unopened Road Allowance
- Railway
- Watercourse

- ### Notes
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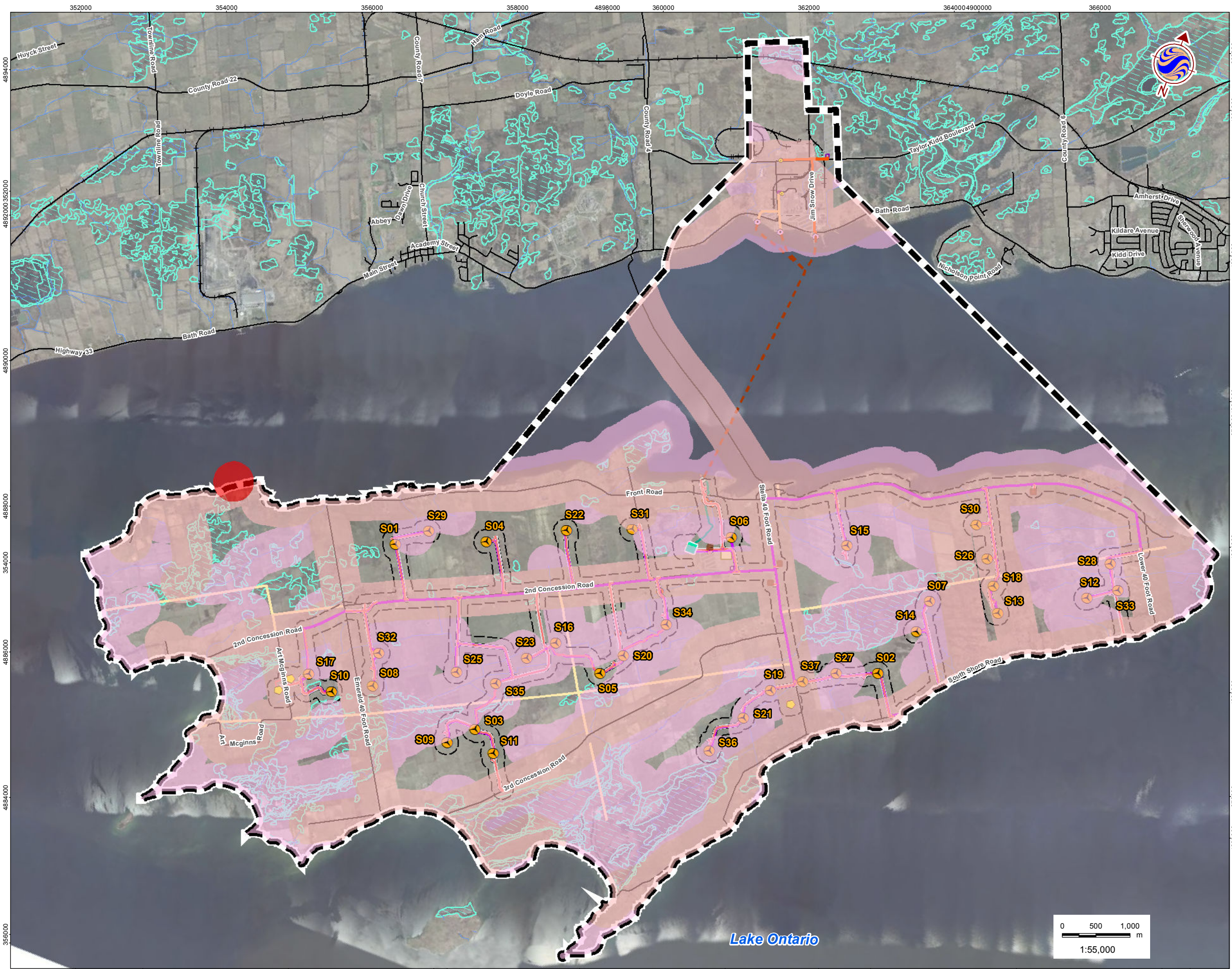


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Figure No.
9

Title
Meacham's 1878 Historic Mapping Overlaid
by Project Components (Mainland Portion)



Legend

- Project Study Area
- 120m Zone of Investigation
- Historic Resources Potential
- Prehistoric Resources Potential
- Registered Archaeology Site

Project Components

- Turbine
- Met Tower (Potential Location)
- Substation (Potential Location)
- Collector Lines
- Access Road
- Submarine Cable Path
- Laydown Area and Crane Pad
- Potential Culvert Location
- Point of Common Coupling
- Mainland Cable Vault (Potential Location)
- Island Cable Vault
- Turbine Blade Tips
- Constructible Area
- Mainland Dock (Potential Location)
- Island Dock
- Batch Plant (Potential Location)
- Site Office (Potential Location)
- Storage Shed
- Operation and Maintenance Building (Potential Location)

Transmission Line

- Mainland Option 1
- Mainland Option 2
- Island Transmission Line

Land Use

- Central Staging Area
- Switching Station (Potential Location)

Existing Features

- Road
- Unopened Road Allowance
- Railway
- Watercourse
- Wetland (MNR)

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Figure No.
10

Title
Standard 300 Metre Buffers Around
Features of Archaeological Potential

Appendix A

Archaeological Potential Determination Checklist

Archaeological Potential Determination Checklist					
	Feature of Archaeological Potential	Yes	No	Not Available	Comment
1	Known archaeological sites within 250 m?		✓		If Yes, potential determined
<i>PHYSICAL FEATURES</i>					
2	Is there water on or near the property?	✓			
2a	Primary water source within 300m	✓			If Yes, potential determined
2b	Secondary water source within 200m	✓			If Yes, potential determined
2c	Past water source within 300m		✓		If Yes, potential determined
3	Elevated topography	✓			If yes, and Yes for any of 4-9, potential determined
4	Pockets of sandy soil in a clay or rocky area	✓			If yes, and Yes for any of 3, 5-9, potential determined
5	Distinctive land formations	✓			If yes, and Yes for any of 3-4, 6-9, potential determined
<i>HISTORIC USE FEATURES</i>					
6	Associated with food or scarce resource harvest areas			✓	If yes, and Yes for any of 3-5, 7-9, potential determined
7	Indications of early historic settlement	✓			If yes, and Yes for any of 3-6, 8-9, potential determined
8	Associated with historic transportation route	✓			If yes, and Yes for any of 3-7 or 9, potential determined
9	Contains property designated under the Ontario Heritage Act	✓			If yes, and Yes for any of 3-8, potential determined
<i>APPLICATION SPECIFIC INFORMATION</i>					
10	Local knowledge			✓	If Yes, potential determined
11	Recent (post-1960) disturbance (confirmed extensive and intensive)		✓		If Yes, no potential

Summary:

- If Yes to any of 1, 2a-c, or 10 Archaeological Potential is **confirmed**
- If Yes to two or more of 3-9 Archaeological Potential is **confirmed**
- If Yes to 11 or No to 1-10 **Low** Archaeological Potential is confirmed

Based on example in Ontario Ministry of Culture *Standards and Guidelines for Consultant Archaeologists, final draft, August 2006, Unit 1C-Stage 1*