

**Stage 1 Archaeological Assessment
Future Solid Waste Disposal Needs
Part of Lots 35 & 36, Abutting River Thames
Town of St. Marys (Former Township of Blanshard), Perth County
Ontario**

ORIGINAL REPORT

Prepared for:

R.J. Burnside & Associates Ltd.
292 Speedvale Avenue West, Unit 20
Guelph, ON N1H 1C4
T 226-486-1778

Archaeological Licence #P392 (Ritchie)
Ministry of Tourism, Culture and Sport PIF# P392-0171-2015
ASI File: 15EA-085

22 April 2016



**Stage 1 Archaeological Assessment
Future Solid Waste Disposal Needs
Part of Lots 35 & 36, Abutting River Thames
Town of St. Marys (Former Township of Blanshard), Perth County
Ontario**

EXECUTIVE SUMMARY

ASI was contracted by R.J. Burnside & Associates Limited, on behalf of the Town of St. Marys, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Future Solid Waste Disposal Needs Environmental Assessment in the Town of St. Marys. This study includes the identification and selection of a preferred solid waste disposal option for the town. This assessment includes an “on-site” study area and a “vicinity” study area. Both the on-site and vicinity study areas are addressed in the background research. Only the on-site study area is commented on with regards to archaeological potential.

The background research determined that no previously registered archaeological sites are located within one kilometre of the study area. A review of the historical and archaeological contexts of the study area also suggested that it has potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the degree to which soils have been impacted by disturbance.

The property inspection determined that the entire on-site study area has been subject to deep and extensive land disturbance and, as such, is considered to not retain archaeological potential.

In light of these results, the following recommendations are made:

1. The entire on-site study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance. These lands do not require further archaeological assessment; and,
2. Should the proposed work extend beyond the current study area then further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



PROJECT PERSONNEL

<i>Senior Project Manager:</i>	Andrew Riddle, PhD (P347) <i>Senior Archaeologist, Manager Environmental Assessment Projects (West) Environmental Assessment Division</i>
<i>Project Coordinator:</i>	Sarah Jagelewski, Hon BA (R405) <i>Staff Archaeologist, Assistant Manager Environmental Assessment Division</i>
<i>Project Manager (licensee):</i>	Paul David Ritchie, MA (P392) <i>Staff Archaeologist</i>
<i>Field Director:</i>	Peter Carruthers, MA, CAHP (P163) <i>Senior Associate</i>
<i>Field Assistant:</i>	John Sleath, MA (P382) <i>Staff Archaeologist</i>
<i>Report Preparation:</i>	Paul David Ritchie
<i>Graphics:</i>	Jonas Fernandez, MSc (R281) <i>Geomatics Specialist</i>
<i>Report Reviewers:</i>	Andrew Riddle Robert Pihl, MA, CAHP (P057) <i>Partner and Senior Archaeologist Manager, Environmental Assessment Division</i>



TABLE OF CONTENTS

1.0 PROJECT CONTEXT 1
 1.1 Development Context..... 1
 1.2 Historical Context 1
 1.2.1 *Aboriginal Land Use and Settlement*..... 2
 1.2.2 *Historic Euro-Canadian Land Use: Township Survey and Settlement* 4
 1.2.3 *Historic Map Review*..... 5
 1.2.4 *Summary of Historical Context*..... 6
 1.3 Archaeological Context 6
 1.3.1 *Current Land Use and Field Conditions* 7
 1.3.2 *Geography*..... 7
 1.3.3 *Previous Archaeological Research*..... 8
 1.3.4 *Summary of Archaeological Context*..... 9
 2.0 FIELD METHODS: PROPERTY INSPECTION 9
 3.0 ANALYSIS AND CONCLUSIONS 9
 3.1 Analysis of Archaeological Potential 10
 3.2 Analysis of Property Inspection Results 10
 3.3 Conclusions..... 10
 4.0 RECOMMENDATIONS 10
 5.0 ADVICE ON COMPLIANCE WITH LEGISLATION..... 11
 6.0 REFERENCES CITED 11
 7.0 MAPS 16
 8.0 IMAGES 21
 APPENDIX A: DETAILED SOIL DESCRIPTIONS 26

LIST OF TABLES

Table 1: Nineteenth-century property owners and historical features..... 5

LIST OF FIGURES

Figure 1: Future Solid Waste Disposal Needs Study Area Location 17
 Figure 2: Future Solid Waste Disposal Needs Study Area overlaid on 1879 map of Township of Blanshard 18
 Figure 3: Future Solid Waste Disposal Needs Study Area Surficial Geology 19
 Figure 4: Future Solid Waste Disposal Needs Study Area Soil Drainage 19
 Figure 5: Future Solid Waste Disposal Needs Study Area Property Inspection Results..... 20

LIST OF PLATES

Plate 1: Northwest view of on-site study area. Study area is graded and disturbed with no archaeological potential..... 22
 Plate 2: North view of on-site study area. Study area is graded and disturbed with no archaeological potential..... 22
 Plate 3: South view of on-site study area. Study area is graded and disturbed with no archaeological potential..... 22
 Plate 4: Northeast view of on-site study area. Study area is graded and disturbed with no archaeological potential..... 22
 Plate 5: West view of on-site study area. Study area is graded and disturbed with no archaeological potential..... 23



Plate 6: South view of on-site study area. Study area is graded and disturbed with no archaeological potential. 23

Plate 7: West view of on-site study area. Study area is graded and disturbed with no archaeological potential. 23

Plate 8: Southwest view of on-site study area. Study area is graded and disturbed with no archaeological potential. 23

Plate 9: South view of on-site study area. Study area is graded and disturbed with no archaeological potential. 24

Plate 10: Northwest view of on-site study area. Study area is graded and disturbed with no archaeological potential. 24

Plate 11: NNE view of on-site study area. Study area is graded and disturbed with no archaeological potential. 24

Plate 12: West view of on-site study area. Study area is graded and disturbed with no archaeological potential. 24

Plate 13: Southwest view of on-site study area. Study area is graded and disturbed with no archaeological potential. 25

Plate 14: North view of on-site study area. Study area is graded and disturbed with no archaeological potential. 25

Plate 15: Northeast view of on-site study area. Study area is graded and disturbed with no archaeological potential. 25

Plate 16: East view of on-site study area. Study area is graded and disturbed with no archaeological potential. 25



1.0 PROJECT CONTEXT

ASI was contracted by R. J. Burnside & Associates Limited, on behalf of the Town of St. Marys, to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Future Solid Waste Disposal Needs Environmental Assessment in the Town of St. Marys. This study includes the identification and selection of a preferred solid waste disposal option for the town. This assessment includes an “on-site” study area and a “vicinity” study area (Figure 1). Both the on-site and vicinity study areas are addressed in the background research. Only the on-site study area is commented on with regards to archaeological potential.

In the *Standards and Guidelines for Consultant Archaeologists (S & G)*, Section 1, the objectives of a Stage 1 archaeological assessment are discussed as follows:

- To provide information about the history, current land conditions, geography, and previous archaeological fieldwork of the study area;
- To evaluate in detail the archaeological potential of the study area that can be used, if necessary, to support recommendations for Stage 2 archaeological assessment for all or parts of the study area; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment, if necessary.

This report describes the Stage 1 archaeological assessment that was conducted for this project and is organized as follows: Section 1.0 summarizes the background study that was conducted to provide the historical and archaeological contexts for the project study area; Section 2.0 addresses the field methods used for the property inspection that was undertaken to document its general environment, current land use history and conditions of the study area; Section 3.0 analyses the characteristics of the project study area and evaluates its archaeological potential; Section 4.0 provides recommendations for the next assessment steps; and the remaining sections contain other report information that is required by the S & G, e.g., advice on compliance with legislation, works cited, mapping and photo-documentation.

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act*, RSO (1990) and regulations made under the Act, and are therefore subject to all associated legislation.

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (2005) and the S & G.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted to ASI by R.J. Burnside & Associated Ltd. on May 14, 2015.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the



study area. A summary is first presented of the current understanding of the Aboriginal land use of the study area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Aboriginal Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (BP) (Ferris 2013: 13). Populations at this time were highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 BP, the climate had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990:62-63).

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels and many sites would have been located on those former (now submerged) shorelines. This period produces the earliest evidence of heavy wood working tools and is indicative of greater investment of labour in felling trees for fuel, to build shelter, or to produce tools, and is ultimately indicative of prolonged seasonal residency at sites. By approximately 8,000 BP, evidence exists for polished stone implements and worked native copper. The source for the latter from the north shore of Lake Superior is evidence of extensive exchange networks. Early evidence exists at this time for the creation of communal cemeteries and ceremonial funerary customs. This evidence is significant for the establishment of band territories. These communal places indicate shared meaning across the community and are reflective of a people's cosmology (Brown 1995: 13; Holloway and Hubbard 2001: 74; Parker Pearson 1999: 141). Between approximately 4,500-3,000 BP, there is evidence for construction of fishing weirs. These structures indicate not only the group sharing of resources, but also the organization of communal labour (Ellis *et al.* 1990; Ellis *et al.* 2009).

Settlement and subsistence systems between 3,000 BP and 2500 BP are not entirely understood. Populations continued a semi-permanent existence and exploited seasonally-available resources. The harvesting of spawning fish continued to be an important part of their subsistence practices. There continues to be evidence for extensive and complex exchange networks (Spence *et al.* 1990:136, 138). By approximately 2,000 BP, evidence exists for macro-band camps, focusing on the seasonal exploitation of resources such as spawning fish and wild rice (Spence *et al.* 1990:155, 164). It is also during this period that maize was first introduced into southern Ontario, though it would have only supplemented people's diet (Birch and Williamson 2013:13-15). Bands likely retreated to interior camps during the winter.

From approximately 1,000 BP until approximately 300 BP, evidence indicates that lifeways were similar to the historically-described Aboriginal groups. Populations in southern Ontario were Iroquoian-speaking, though full expression of Iroquoian culture is not recognized archaeologically until the fourteenth century AD. During the Early Iroquoian phase (AD 1000-1300), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practiced (Williamson 1990:317). By the second quarter of the first millennium BP, during the Middle Iroquoian phase (AD 1300-1450), this episodic community disintegration was no longer practiced and populations now communally occupied sites throughout the year (Dodd *et al.* 1990:343). In the Late Iroquoian phase (AD 1450-1649), this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013). Through this process, the socio-political organization of the Aboriginal Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.



Samuel de Champlain in 1615 reported that a group of Iroquoian-speaking people situated between the New York Iroquois and the Huron-Wendat were at peace and remained “la nation neutre”. In subsequent years, the French visited and traded among the Neutral, but the first documented visit was not until 1626, when the Recollet missionary Joseph de la Roche Daillon recorded his visit to the villages of the Attiwandaron, whose name in the Huron-Wendat language meant “those who speak a slightly different tongue” (the Neutral apparently referred to the Huron-Wendat by the same term). Like the Huron-Wendat, Petun, and New York Iroquois, the Neutral people were settled village agriculturalists. Several discrete settlement clusters have been identified in the lower Grand River, Fairchild-Big Creek, Upper Twenty Mile Creek, Spencer-Bronte Creek drainages, Milton, Grimsby, Eastern Niagara Escarpment and Onondaga Escarpment areas, which are attributed to Iroquoian populations. These settlement clusters are believed by some scholars to have been inhabited by populations of the Neutral Nation or pre- (or ancestral) Neutral Nation (Birch 2015; Lennox and Fitzgerald 1990). The study area is situated on the periphery of the London settlement cluster (Lennox and Fitzgerald 1990: Figure 13.1, Table 13.1). The London settlement cluster has documented occupation during the fifteenth century (e.g. Lawson site – Pearce 1984).

The Thames River Valley is understood to have been generally abandoned during the sixteenth century. The region may have been occupied by Algonquian populations whom Neutral Nation groups came into conflict with during hunting forays (Murphy and Ferris 1990:260). Between AD 1638 and 1641, the Neutral Nation is reported to have taken captive 1000 individuals of the Fire Nation (Lennox and Fitzgerald 1990:418). Heidenreich (1990:Figure 15.1) indicates that these Algonquian populations may have been related to the seventeenth century Kickapoo, Miami, Potawatomi, Fox and Sauk Nations. All of these Nations practised subsistence based on seasonal resource gathering supplemented by agriculture (Callender 1978a:637; 1978b:658; 1978c:649; Callender *et al.* 1978:658; Clifton 1978:725); however the Potawatomi traditionally moved to southern Michigan from the Straits of Mackinac (Clifton 1978:729).

Between 1647 and 1651, the New York (Five Nations) Iroquois dispersed most of the populations living in southern Ontario. They subsequently controlled the area as a hunting territory for beaver (Lahontan 1703).

Beginning in the late seventeenth century, the Ojibwa began to replace the Five Nations Iroquois as the controlling Aboriginal group in southern Ontario. The Ojibwa began moving into and throughout southern Ontario between AD 1690 and 1710 and were well established in the region by the end of this period (Rogers 1978).

The eighteenth century saw the ethnogenesis in Ontario of the Métis. Métis people are of mixed First Nations and French ancestry, but also mixed Scottish and Irish ancestry as well. The Métis played a significant role in the economy and socio-political history of the Great Lakes during this time. Living in both Euro-Canadian and Aboriginal societies, the Métis acted as agents and subagents in the fur trade but also as surveyors and interpreters. Métis populations were predominantly located north and west of Lake Superior, however Métis populations lived throughout Ontario (Métis Nation of Canada [MNC] n.d.; Stone and Chaput 1978:607,608).

The study area is situated within the lands of the 1827 Huron Tract treaty between the Crown and the Chippewa Nation “inhabiting and claiming the territory [therein] described” (Aboriginal Affairs and Northern Development Canada [AADNC] 2013).



1.2.2 Historic Euro-Canadian Land Use: Township Survey and Settlement

Historically, the study area is located in the Former Township of Blanshard, Perth County in part of Lots 35 & 36, Abutting River Thames. The vicinity study area is located in part of Lots 24-28 and 35-39, Concession Abutting River Thames, part of Lots 13-20, Southern Boundary Concession and part of Lots 20-22, Concession 17 in the Former Township of Blanshard, Perth County as well as in part of Lot 36, Concession 7 in the Former Township of Nissouri, Middlesex County.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the *Ontario Heritage Act* or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 m of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Aboriginal pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Aboriginal trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Blanshard Township

Blanshard Township was originally owned by the Canada Company following the treaty of the Huron Tract. The township was opened for Euro-Canadian settlement in 1841. The first settlement occurred at “Little Falls”, now the Town of St. Marys. Settlement progressed and by 1850, the township had a population of 2,562. Blanshard Township was originally joined with Downie Township as a municipality, until its separation in 1844 (Mika and Mika 1977:212-213).

St. Marys

The town of St. Marys was originally planned by the Canada Company due to its location at a series of short waterfalls and their potential as a power source. The community was originally named Little Falls and was first settled by Euro-Canadians in 1841. With the construction of saw and grist mills by 1843, a small settlement had developed at the location. In 1844, the settlement’s name was changed to St. Marys.

In the mid nineteenth century, the community boomed as a commercial centre in the Township, with the construction of a foundry that manufactured agricultural implements and with its connection to the Grand Trunk Railway in 1849. The boom collapsed, however, once the railway was extended to Sarnia and



further still with the construction of the London, Huron and Bruce Railway that by-passed St. Marys. The community was incorporated as a village in 1855 (Mika and Mika 1983: 332-333).

1.2.3 Historic Map Review

The 1879 *Illustrated Historical Atlas of the County of Perth, Ont.* and the 1878 *Illustrated historical atlas of the county of Middlesex, Ont.* were reviewed to determine the potential for the presence of historical features within or abutting the study area during the nineteenth century (Figure 2). It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. Details of recorded land tenure and noted features are given in Table 1.

Table 1: Nineteenth-century property owners and historical features

1879 <i>Illustrated Historical Atlas of the County of Perth, Ont.</i>			
On-Site Study Area			
Lot #	Concession	Property Owner	Historical Feature(s)
35	Abutting River Thames	TOWN OF ST. MARYS	n/a
36	Abutting River Thames	TOWN OF ST. MARYS	n/a
Vicinity Study Area			
Lot #	Concession	Property Owner	Historical Feature(s)
24	Abutting River Thames	TOWN OF ST. MARYS	n/a
25	Abutting River Thames	TOWN OF ST. MARYS	n/a
26	Abutting River Thames	B. Rosenbarge	Farmhouse
27	Abutting River Thames	Henry Stennett	Farmhouses(2)
		B. Rosenbarge	Farmhouse
28	Abutting River Thames	Wm Atkinson	Farmhouse (2)
35	Abutting River Thames	TOWN OF ST. MARYS	n/a
36	Abutting River Thames	TOWN OF ST. MARYS	n/a
37	Abutting River Thames	SEVERED LOTS	n/a
38	Abutting River Thames	Peter McVannell	Farmhouse
39	Abutting River Thames	Wm. Hutchings Sr.	Farmhouse
13	Southern Boundary	TOWN OF ST. MARYS	n/a
		John West	n/a
14	Southern Boundary	TOWN OF ST. MARYS	n/a
		John W. Robinson	Farmhouse
15	Southern Boundary	TOWN OF ST. MARYS	n/a
		John Gilson	n/a
		John W. Robinson	n/a
16	Southern Boundary	Wm Houghton	Farmhouse
		Wm Atkinson	Farmhouse
		C.C.	n/a
17	Southern Boundary	T.	Farmhouse
		Wm Bennett	Farmhouse
		J.S.	Farmhouse
		W.H.	Farmhouse
		[???	n/a
		M.C.	n/a
		J.S.	n/a
		Wm Bennett	n/a
18	Southern Boundary	John S. Kelly	n/a



		[M.M.]	n/a
19	Southern Boundary	Jas Pickard	n/a
20	Southern Boundary	John Nagle	n/a
<i>1879 Illustrated Historical Atlas of the County of Perth, Ont.</i>			
Vicinity Study Area			
Lot #	Concession	Property Owner	Historical Feature(s)
20	17	TOWN OF ST. MARYS	n/a
21	17	TOWN OF ST. MARYS	n/a
22	17	TOWN OF ST. MARYS	n/a
<i>1878 Illustrated Historical Atlas of the County of Middlesex, Ont.</i>			
Vicinity Study Area			
Lot #	Concession	Property Owner	Historical Feature(s)
36	7	Thos Freshner	n/a

Use of historic map sources to reconstruct/predict the location of former features within the modern landscape generally proceeds by using common reference points between the various sources. These sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historic mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

The historic mapping indicates that Water Street South and 3rd Line are both historic transportation routes and that the study area is located within the historic limits of the Town of St. Marys.

1.2.4 Summary of Historical Context

The background research demonstrates that the study area has been occupied by Aboriginal peoples for thousands of years. The study area is located in the periphery of a documented Iroquoian settlement cluster attributed to ancestral Neutral Nation populations. The early seventeenth century occupation of the study area is not well understood, but it was likely utilized by either or both Neutral Nation groups from the east and/or Algonquian groups from the west. It was subsequently utilised by the Five Nations Iroquois and ultimately Ojibwe Nations for hunting and other resource gathering. The background research also acknowledges the presence of the Métis across Ontario, however their presence is often muted in the historical record.

The background research and historic mapping also demonstrates that the on-site study area is located in the Former Township of Blanshard, Perth County and the vicinity study area extends into the Former Township of Nissouri West, Middlesex County. The 1879 historic mapping indicates that the on-site study area is located within the historic limits of the Town of St. Marys. The vicinity study area includes several historic farmhouses. Both study areas include proximity to historic transportation routes.

1.3 Archaeological Context



This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the study area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites housed at the MTCS; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The study area is located just outside of the Town of St. Marys, in proximity to the Thames River. The on-site study area consists of a currently operational landfill adjacent to an operational quarry. The vicinity study area includes an operational quarry on the western side of the Thames River as well as agricultural lands south and west of the on-site study area. The property inspection was conducted on October 26, 2015.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the study area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow and Warner 1990: Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include: elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The study area is situated within the Stratford till plain physiographic region of southern Ontario in spillway and till plain landforms (Chapman and Putnam 1984). The Stratford till plain region consists of a large area of ground moraine, interrupted by terminal moraines. The region is characterized by a knoll-and-sag relief. Soils in the region fairly uniformly consists of calcareous silty clay and were deposited



from varved clays of the Lake Huron basin by the Huron ice lobe of the Laurentide glacier. The stoniness of the region varies. The region is located within the Lake Huron snow-belt, and is one of the most fertile regions in the Province (Chapman and Putnam 1984: 133-134).

Spillways are the former glacial meltwater channels. They are often found in association with moraines but in opposition are entrenched rather than elevated landforms. They are often, though not always, occupied by stream courses, the fact of which raises the debate of their glacial origin. Spillways are typically broad troughs floored wholly or in part by gravel beds and are typically vegetated by cedar swamps in the lowest beds (Chapman and Putnam 1984:15).

Till plain are formed by the retreat of glaciers. Till is produced from the advance of continental glacial ice. Soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil which is characteristic of glaciations (Chapman and Putnam 1984: 10, 16).

Figure 3 depicts surficial geology for the study area. The surficial geology mapping demonstrates that the on-site study area is underlain by deposits of diamicton (poorly sorted sediments), silt and fill. The vicinity study area is underlain by deposits of diamicton, sand, gravel, silt, fill and Paleozoic bedrock (Ontario geological Survey [OGS] 2010). Figure 5 depicts soil drainage for the study area. The on-site study area includes well-drained soils. The vicinity study area includes well-drained and poorly drained soils (Department of Agriculture 1951). Information on soil drainage is incomplete for all of the vicinity study area.

Soils within the on-site study area consist of Huron clay loam. Soils within the vicinity study area consist of Huron clay loam, Donnybrook sandy loam, Parkhill loam and Bottom Lands (Department of Agriculture 1951). For detailed soil descriptions, see Appendix A.

The Thames River drains an area of approximately 5,700 km² and is approximately 200 km long. The upper Thames River (above London) consists of two branches together drain an area of approximately 2,600 km². The northern branch is formed by the confluence of several small creeks and has formed a well-defined but shallow valley. At St. Marys the valley is approximately 23 m deep. The valley of Trout Creek, a tributary of the Thames at St. Marys, formerly connected the drainages of the Grand River and Thames River. The natural flow of the Thames River is highly irregular and prone to flooding however this is largely controlled by dams in the present day (Chapman and Putnam 1984:93-94).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 km east to west, and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The on-site study area is located in Borden block *AhHg*. The vicinity study area is located in Borden blocks *AhHg* and *AhHh*.

According to the OASD, no previously registered archaeological sites are located within one kilometre of the study area (MTCS 2015).



According to the background research, no previous archaeological assessments have been conducted within 50 m of the study area.

1.3.4 Summary of Archaeological Context

The review of archaeological work conducted in the area demonstrated that no previously registered archaeological sites are located within one kilometre of the study area. The historical context demonstrates that the study area is located in proximity to two historic transportation routes. These criteria are indicative that the study area possesses potential for Aboriginal and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

2.0 FIELD METHODS: PROPERTY INSPECTION

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Peter Carruthers (P163) with John Sleath (P382), both of ASI, on October 26, 2015, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the study area. It was a visual inspection only and did not include excavation or collection of archaeological resources.

Weather conditions for the inspection were a mixture of sun and cloud with a temperature of approximately 10° C. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto maps of the study area in Section 7.0 (Figure 5) and associated photographic plates are presented in Section 8.0 (Plates 1-16).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the study area. These data are presented below in Section 3.1. Results of the analysis of the property inspection are then presented for the study area (Section 3.2).



3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, list criteria that are indicative of archaeological potential. The Future Solid Waste Disposal Needs On-site study area meets the following criteria indicative of archaeological potential:

- Water sources: primary, secondary, or past water source (e.g. Thames River);
- Proximity to historic settlements (e.g. Town of St. Marys); and,
- Early historic transportation routes (e.g. Water Street South)

These criteria are indicative of potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the soil conditions and the degree to which soils have been subject to disturbance.

3.2 Analysis of Property Inspection Results

The property inspection determined that the entire on-site study area has been previously subject to deep and extensive disturbance, associated with quarry operations (Figure 5: area marked in yellow). These lands have been documented to not retain archaeological potential.

3.3 Conclusions

The Stage 1 background study determined that no previously registered archaeological sites are located within one kilometre of the study area. A review of the geography of the study area suggested that the study area has potential for the identification of Aboriginal and Euro-Canadian archaeological resources. However, the property inspection determined that the entire on-site study area has been subject to deep and extensive land disturbance. These lands are considered to not retain archaeological potential.

4.0 RECOMMENDATIONS

In light of these results, ASI makes the following recommendations:

1. The entire on-site study area has been documented to not retain archaeological potential on account of deep and extensive land disturbance; therefore, these lands do not require further archaeological assessment; and,
2. Should the proposed work extend beyond the current study area then further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MTCS should be immediately notified.



The documentation related to this archaeological assessment will be curated by ASI until such a time that arrangements for their ultimate transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner(s), the Ontario MTCS, and any other legitimate interest groups.

5.0 ADVISE ON COMPLIANCE WITH LEGISLATION

ASI also advises compliance with the following 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*, RSO 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal 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 field work 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 sec. 48 (1) of the *Ontario Heritage Act*.
- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

6.0 REFERENCES CITED

- Aboriginal Affairs and Northern Development Canada (AANDC)
2013 *Treaty Texts – Upper Canada Land Surrenders*. Huron Tract, No. 29.
<<https://www.aadnc-aandc.gc.ca/eng/1370372152585/1370372222012#ucls21>>



- ASI (Archaeological Services Inc.)
2006 Historical Overview and Assessment of Archaeological Potential Don River Watershed, City Of Toronto.
- Belden, H. & Co.
1879 *Illustrated Historical Atlas of the County of Perth, Ont.* Toronto: H. Belden & Co.
- Birch, J.
2015 Current Research on the Historical Development of Northern Iroquoian Societies. *Journal of Archaeological Research*, 23(3): 263-323.
- Birch, J. and R.F. Williamson
2013 *The Mantle Site: An Archaeological History of an Ancestral Wendat Community.* Lanham: Rowman & Littlefield Publishers, Inc.
- Brown, J.
1995 On Mortuary Analysis – with Special Reference to the Saxe-Binford Research Program. In: *Regional Approaches to Mortuary Analysis.* Edited by: L. A. Beck. New York: Plenum Press, pp. 3-23.
- Callender, C.
1978a Fox. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 636-647.
1978b Miami. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 681-689.
1978c Sauk. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 648-655.
- Callender, C., R.K. Pope and S.M. Pope
1978 Kickapoo. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 656-667.
- Chapman, L. J. and F. Putnam
1984 *The Physiography of Southern Ontario.* Ontario Geological Survey, Special Volume 2. Ontario Ministry of Natural Resources, Toronto.
- Clifton, J.A.
1978 Potawatomi. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 725-742.
- Department of Agriculture
1951 1:63,360. *Soil Map of Perth County, Ontario.* Soil Survey Report No. 15. Ottawa: Department of Agriculture.
- Dodd, C.F., D.R. Poulton, P.A. Lennox, D.G. Smith and G.A. Warrick.
1990 The Middle Ontario Iroquoian Stage. In: *The Archaeology of Southern Ontario to A.D. 1650.* Edited by: C.J. Ellis and N. Ferris. Occasional Publication of the London Chapter, OAS Number 5. London: Ontario Archaeological Society Inc., pp. 321-360.



- Edwards, T.W.D. and P. Fritz
1988 Stable-isotope palaeoclimate records from southern Ontario, Canada: comparison of results from marl and wood. *Canadian Journal of Earth Sciences*, 25: 1397-1406.
- Ellis, C.J. and D.B. Deller
1990 Paleo-Indians. In: *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. Occasional Publication of the London Chapter, OAS Number 5. London: Ontario Archaeological Society Inc., pp. 37-64.
- Ellis, C.J., I.T. Kenyon and M.W. Spence.
1990 The Archaic. In *The Archaeology of Southern Ontario to A.D. 1650*. Edited by C.J. Ellis and N. Ferris, pp. 65-124. London Chapter, Ontario Archaeological Society, London, Ontario.
- Ellis, C.J., P.A. Timmins and H. Martelle
2009 At the Crossroads and Periphery: The Archaic Archaeological Record of Southern Ontario. In: *Archaic Societies: Diversity and Complexity across the Midcontinent*. Edited by: T.E. Emerson, D.L. McElrath and A.C. Fortier. Albany, New York: State University of New York Press, pp. 787-837.
- Ferris, N.
2013 Introduction: Seeing Ontario's Past Archaeologically. In: *Before Ontario: The Archaeology of a Province*. Edited by: M.K. Munson and S.M. Jamieson. Montreal & Kingston: McGill-Queen's University Press, pp. 3-23.
- Heidenreich, C.E.
1990 History of the St. Lawrence-Great Lakes Area to A.D. 1650. In *The Archaeology of Southern Ontario to A.D. 1650*. Edited by C.J. Ellis and N. Ferris. London: London Chapter, Ontario Archaeological Society, pp. 475-492.
- Hoffman, D.W. and N.R. Richards.
1952 *Soil Survey of Perth County*. Report No. 15 of the Ontario Soil Survey. Guelph, Ontario: Department of Agriculture.
- Holloway, L. and P. Hubbard
2001 *People and place: the extraordinary geographies of everyday life*. Harlow, England: Prentice Hall.
- Karrow, P.F. and B.G. Warner
1990 The Geological and Biological Environment for Human Occupation in Southern Ontario. In *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. London Chapter, OAS, No. 5. London, Ontario, pp. 5-36.
- Lahontan, L.A.
1703 A General Map of New France, com call'd Canada. In: *New Voyages to North America. Giving a Full Account of the Customs, Commerce, Religion and Strange Opinions of the Savages of the Country*. Two Volumes. London, UK: Bonwicke *et al.*



- Lennox, P.A. and W.R. Fitzgerald
1990 The Culture History and Archaeology of the Neutral Iroquoians. In: *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. Occasional Publication of the London Chapter, OAS Number 5. London: Ontario Archaeological Society Inc., pp. 405-456.
- Métis National Council (MNC)
n.d. *The Métis Nation*. <<http://www.metisnation.ca/index.php/who-are-the-metis>>
- Mika, N. and H. Mika
1977 *Places in Ontario: Their Name Origins and History, A-E*. Belleville: Mika Publishing Company.

1983 *Places in Ontario: Their Name Origins and History, N-Z*. Belleville: Mika Publishing Company.
- Ministry of Consumer Services
2002 *Funeral, Burial and Cremation Services Act*
- Ministry of Culture
2005 *Ontario Heritage Act*.
- Ministry of Environment
1990 *Environmental Assessment Act*
- Ministry of Tourism and Culture
2011 *Standards and Guidelines for Consultant Archaeologists*. Cultural Programs Branch, Ontario Ministry of Culture, Toronto.
- Ministry of Tourism, Culture and Sport (MTCS)
2015 Email communication, Rob von Bitter, MTCS Data Coordinator, November 22, 2015.
- Murphy, C. and N. Ferris
1990 Cultural Complexes of the Early and Middle Woodland Periods. In: *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. Occasional Publications 5. London: London Chapter, Ontario Archaeological Society, pp. 125-170.
- Ontario Geological Survey (OGS)
2010 *Surficial geology of Southern Ontario*.
<http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD128-REV>
- Page, H.R. & Co.
1878 *Illustrated historical atlas of the county of Middlesex, Ont.* Toronto: H.R. Page & Co.
- Parker Pearson, M.
1999 *The Archaeology of Death and Burial*. College Station: Texas A&M University Press.

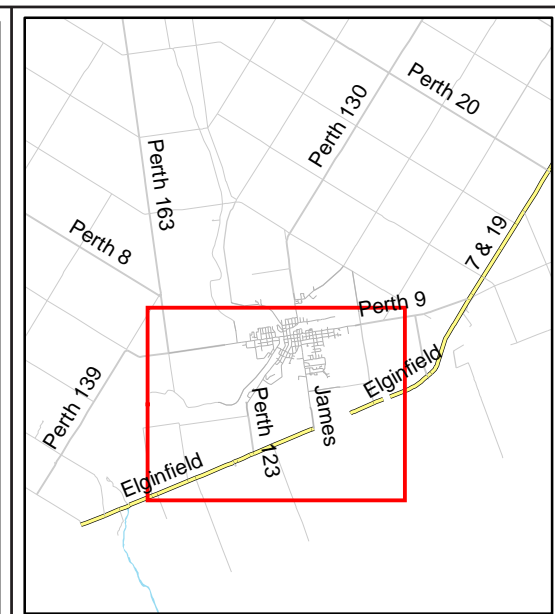
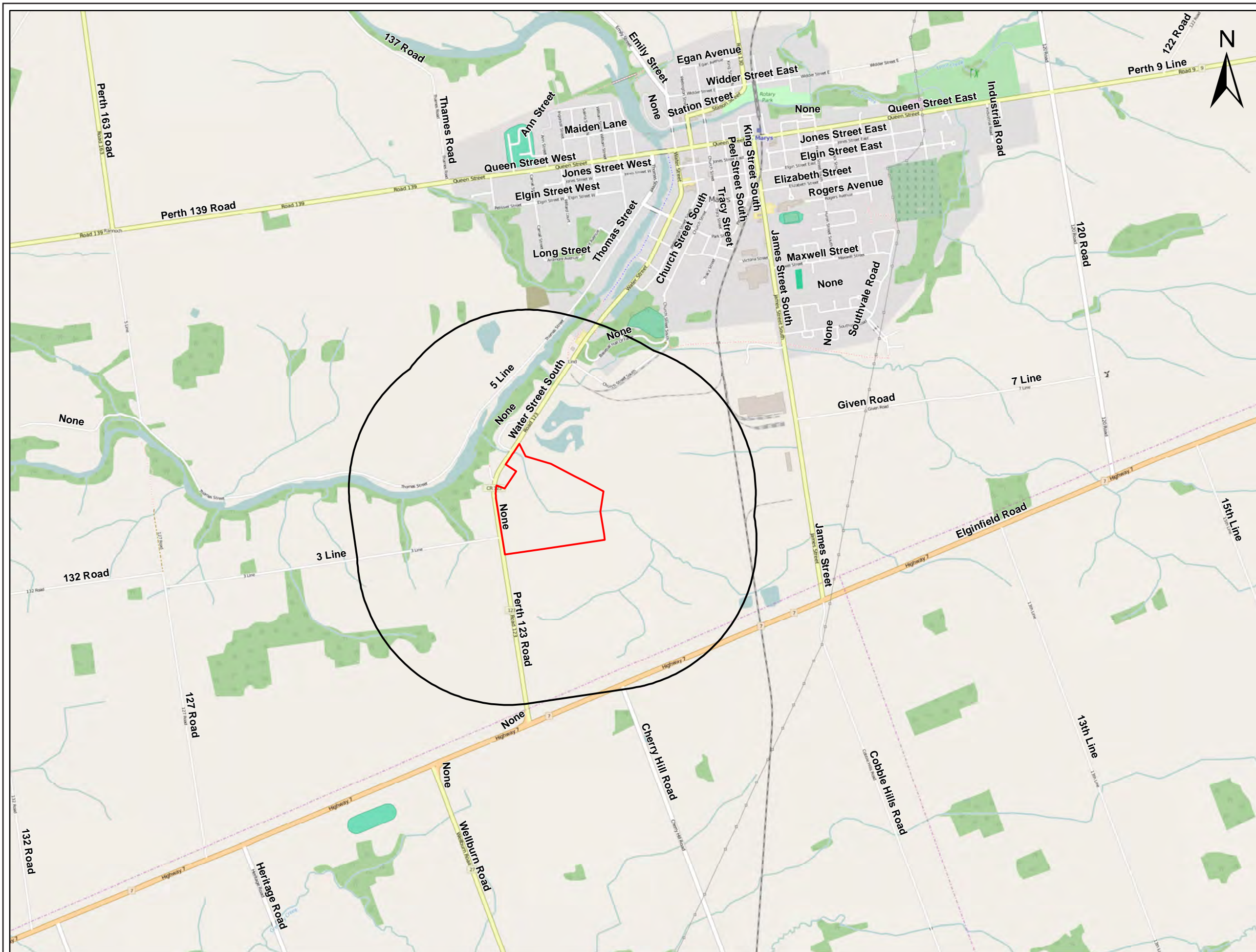


- Pearce, R.J.
1984 Mapping Middleport: A Case Study in Societal Archaeology. Unpublished Ph.D. dissertation, Department of Anthropology, McGill University, Montreal, P.Q.
- Rogers, E.S.
1978 Southeastern Ojibwa. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 760-771.
- Spence, M.W., R.H. Pihl and C. Murphy
1990 Cultural Complexes of the Early and Middle Woodland Periods. In: *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. Occasional Publications 5. London Chapter, Ontario Archaeological Society, London, pp. 125-170.
- Stone, L.M. and D. Chaput
1978 History of the Upper Great Lakes. In: *Handbook of North American Indians*, Volume 15: Northeast. Edited by B.G. Trigger. Washington: Smithsonian Institute, pp. 602-609.
- Williamson, R.F.
1990 The Early Iroquoian Period of Southern Ontario. In: *The Archaeology of Southern Ontario to A.D. 1650*. Edited by: C.J. Ellis and N. Ferris. Occasional Publication of the London Chapter, OAS Number 5. London: Ontario Archaeological Society Inc., pp. 291-320.



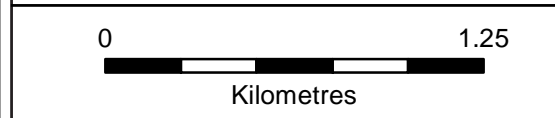
7.0 MAPS





- On-Site Study Area
- Study Area Vicinity

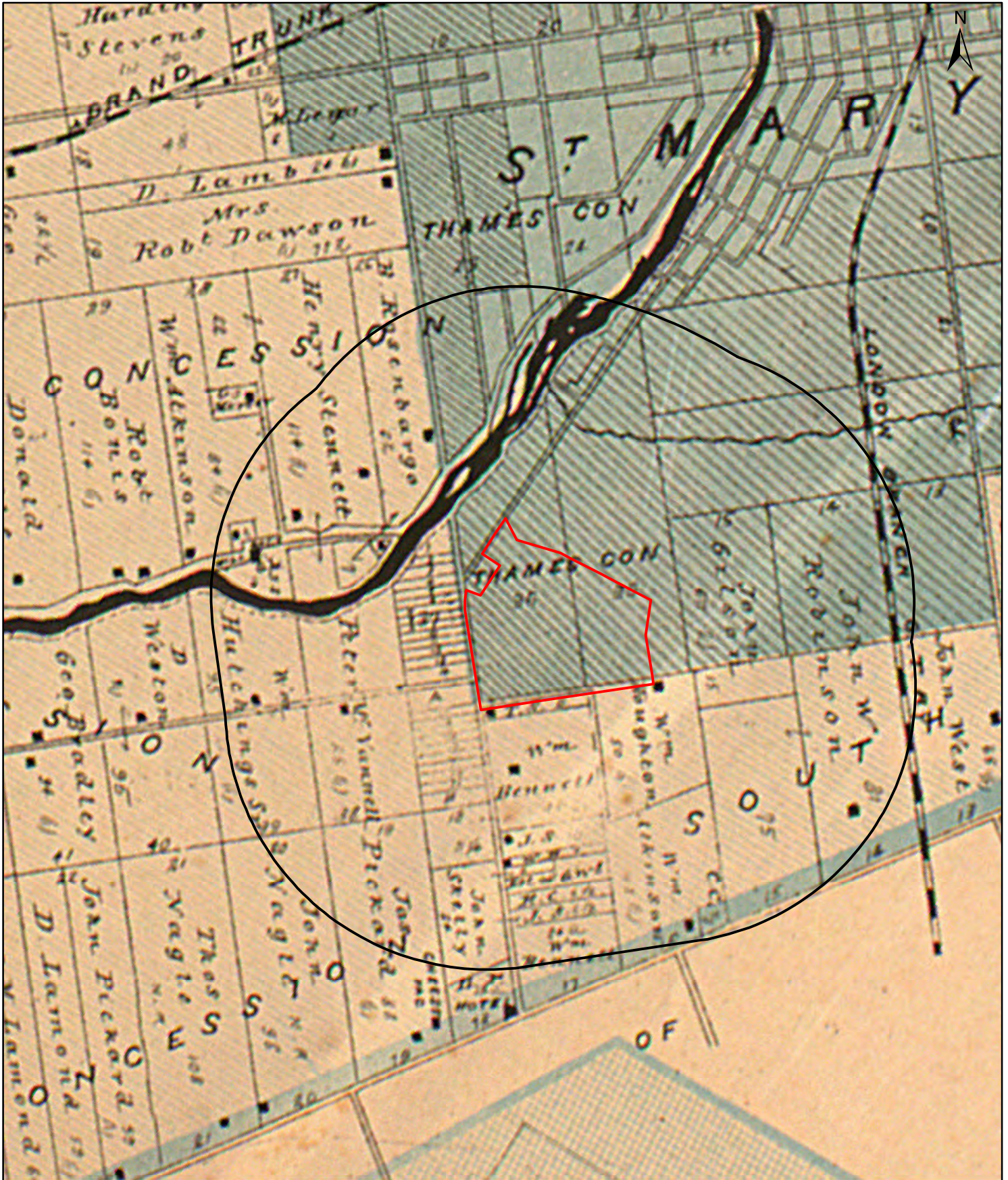
BASE: Service Layer Credits: (c) OpenStreetMap and contributors, Creative Commons-Share Alike License (CC-BY-SA)



ASI PROJECT NO.: 15TS-085 DRAWN BY: JF
 DATE: 11/27/2015 FILE: 15EA085_fig1



Figure 1: Future Solid Waste Disposal Needs Study Area Location







 <p>Archaeological & Cultural Heritage Services 528 Bathurst Street Toronto, ONTARIO M5S 2P9 416-966-1069 F416-966-9723 asiheritage.ca</p>	<p> On-Site Study Area</p> <p> Study Area Vicinity</p>	<p>Datum and Projection NAD 83 UTM Zone 17T</p>	<p>0 500  Metres</p>
	<p>ASI PROJECT NO.: 15EA-085 DRAWN BY: JF DATE: 11/27/2015 FILE: 15EA085_fig2_hist</p>		

Figure 2: Future Solid Waste Disposal Needs Study Area overlaid on 1879 map of Township of Blanshard

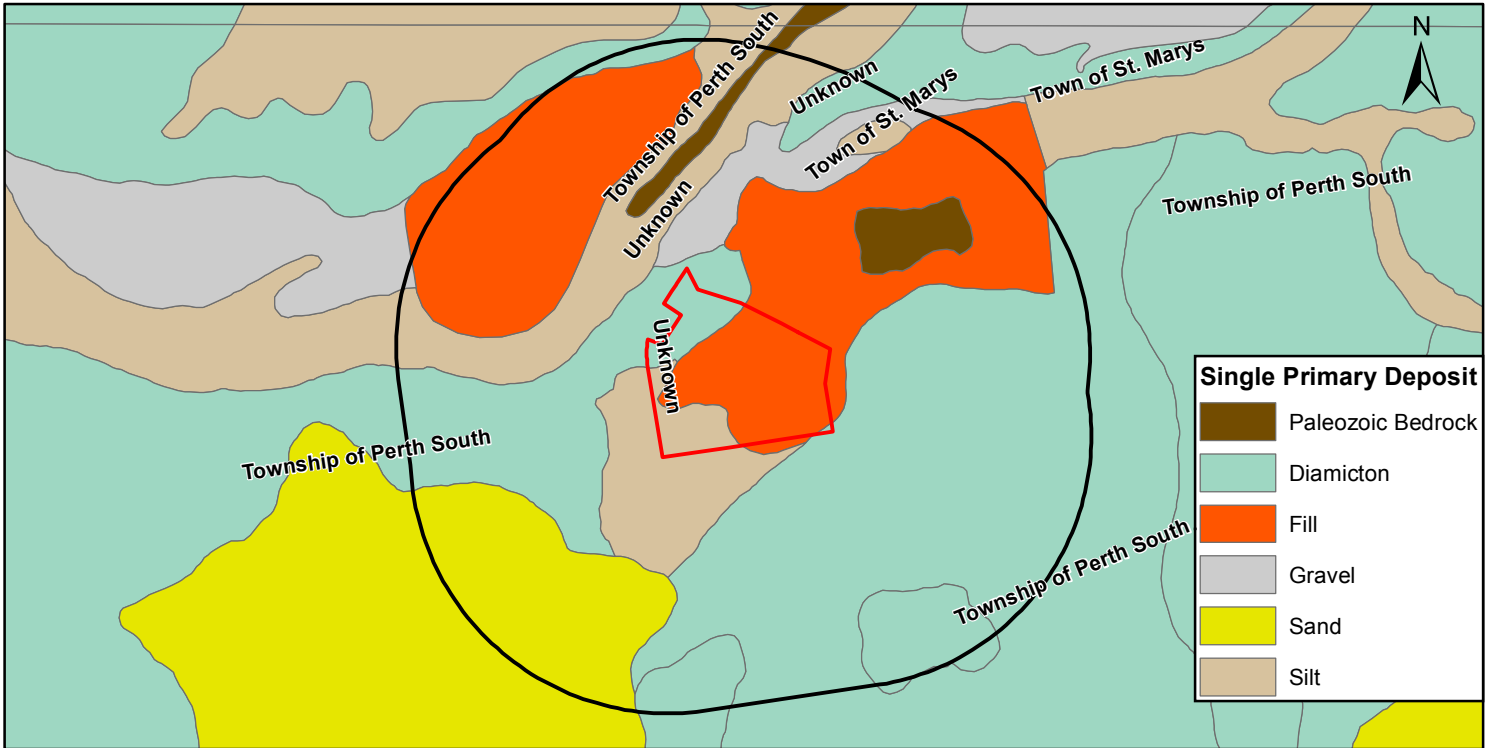
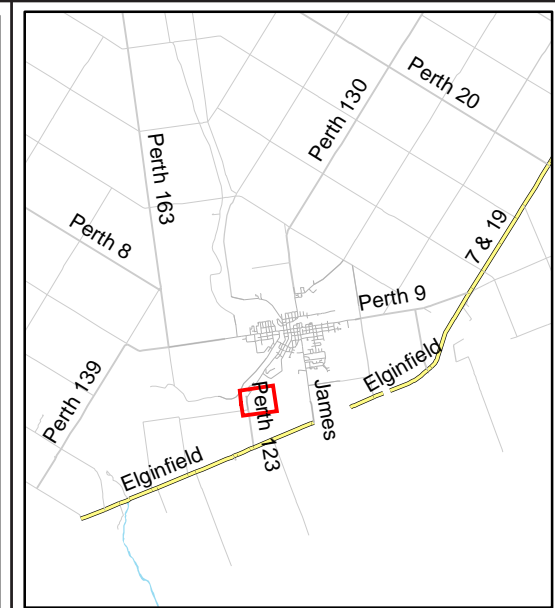
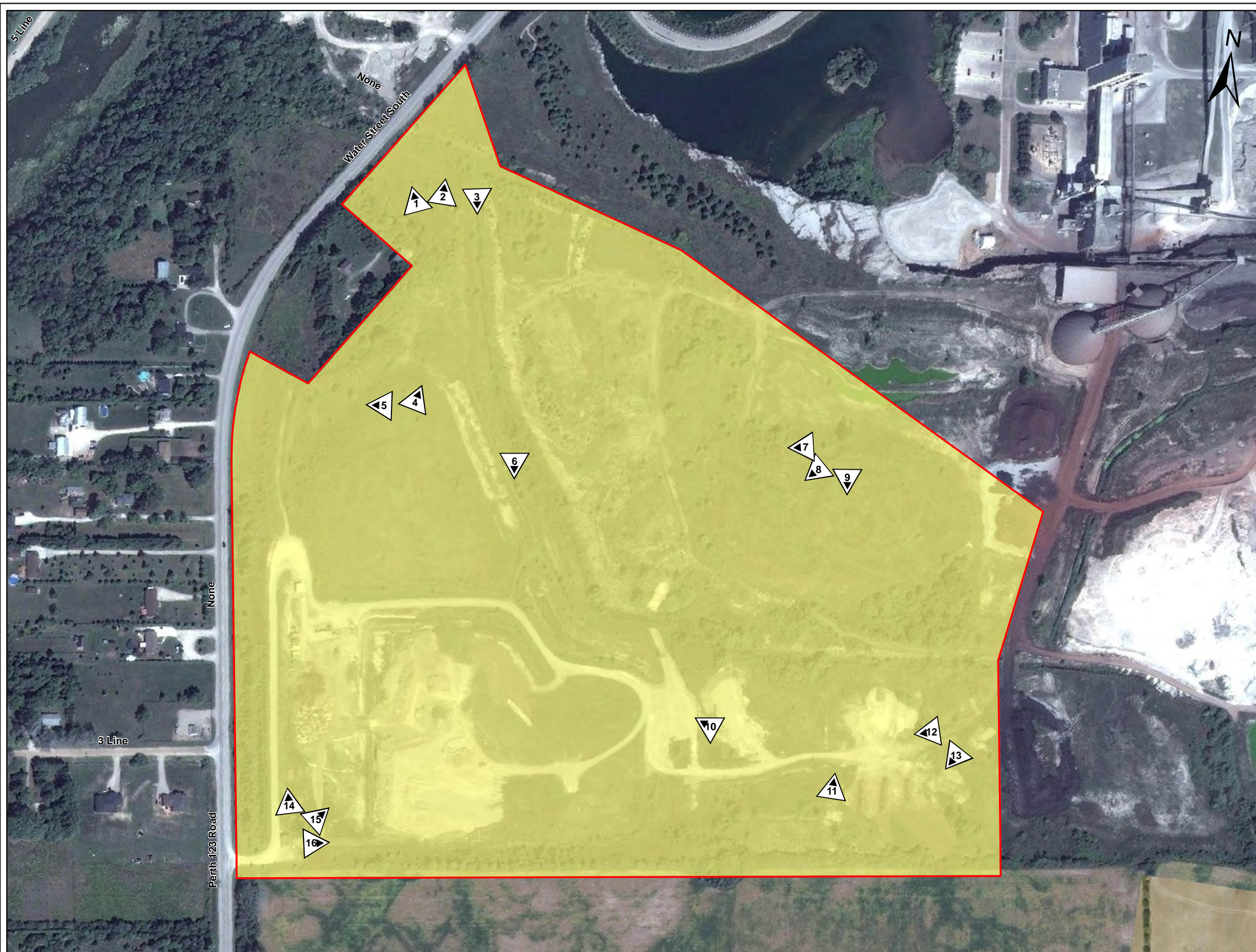


Figure 3: Future Solid Waste Disposal Needs Study Area Surficial Geology



Figure 4: Future Solid Waste Disposal Needs Study Area Soil Drainage



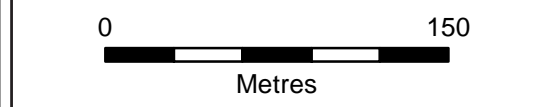
On-Site Study Area

Photo

Stage 1 Results

No Potential - Disturbed

BASE: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



ASI PROJECT NO.: 15TS-085
 DATE: 11/27/2015
 DRAWN BY: JF
 FILE: 15EA085_fig5_stage1

Archaeological & Cultural Heritage Services
 528 Bathurst Street Toronto, ONTARIO M5S 2P9
 416-966-1069 | F416-966-9723 | asiheritage.ca

Figure 5: Future Solid Waste Disposal Needs Study Area Property Inspection Results

8.0 IMAGES





Plate 1: Northwest view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 2: North view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 3: South view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 4: Northeast view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 5: West view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 6: South view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 7: West view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 8: Southwest view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 9: South view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 10: Northwest view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 11: NNE view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 12: West view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 13: Southwest view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 14: North view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 15: Northeast view of on-site study area. Study area is graded and disturbed with no archaeological potential.



Plate 16: East view of on-site study area. Study area is graded and disturbed with no archaeological potential.

APPENDIX A: DETAILED SOIL DESCRIPTIONS

Bottom Lands are low lying soils along water courses. These soils have been recently deposited and continue to be deposited by seasonal floods. The soil consists of successive layers of silt, sand and clay intermixed with organic matter with little horizon differentiation. Natural vegetation consists mainly of ash, elm and willow (Hoffman and Richards 1952: 45).

Donnybrook sandy loam is an “eskeroid” soil with poor horizon definition. The soil has variable stoniness, with good drainage and exists on irregular steeply sloping topography. Natural vegetation consists mainly of sugar maple and beech. Donnybrook sandy loam has been documented to possess the following profile (Hoffman and Richards 1952: 42-43):

Horizon	Colour	Texture/structure	Profile depth
A ₁	Dark brown (10YR 4/3)	Sandy loam; fine crumb structure; very friable consistency; few to frequent stones	0-10 cm
A ₂₁	Yellow brown (10YR 5/6)	Sand; weak platy structure; very friable consistency; gravelly	10-51 cm
A ₂₂	Pale brown (10YR 6/3)	Sand and gravel; very weak platy structure; very friable consistency	51-58 cm
B	Dark brown (10YR 4/3)	Sandy loam; gravelly; weak nuciform structure; friable consistency; frequent stones	58-89 cm
C	Very pale brown (10YR 7/3)	Poorly sorted sand and gravel; single grain structure; loose consistency; frequent stones; calcareous	89+ cm

Huron clay loam is derived from “unassorted” till parent material with angular stones throughout the profile. The soil exists on smooth moderately sloping topography and is moderately prone to erosion. The soil has good drainage with a high surface runoff and moderate internal drainage. Natural vegetation consists of soft maple-elm forest. Huron clay loam has been documented to possess the following profile (Hoffman and Richards 1952:27-28):

Horizon	Colour	Texture/structure	Profile depth
A ₁	Very dark brown (10YR 2/2)	Clay loam; granular structure; friable consistency; few stones	0-10 cm
A ₂	Light yellowish brown (10YR 6/4)	Clay loam; weak platy structure; friable consistency; usually stonefree	10-25 cm
B	Dark brown (10YR 4/3)	Clay; coarse blocky structure; hard consistency; slightly stony	25-54 cm
C	Pale brown (10YR 6/3)	Clay till; fragmental structure; hard consistency; few to frequent stones; calcareous	54+ cm

Parkhill loam is a poorly drained soil that exists on smooth, very gently sloping topography. The lower horizons have poor differentiation. In some areas lacustrine material is intermixed with the glacial till. Natural vegetation consists of elm, ash and cedar. Parkhill loam has been documented to possess the following profile (Hoffman and Richards 1952:35-36):



Horizon	Colour	Texture/structure	Profile depth
A ₁	Very dark brown (10YR 3/1)	Loam; fine granular structure; friable consistency	0-15 cm
G	Grey (10YR 5/1)	Loam; mottled; medium nuciform structure; hard consistency; few stones	15-36 cm
C	Grey (10YR 7/2)	Loam till; mottled; medium nuciform structure; hard consistency; moderately stony; gritty; calcareous	36+ cm

