ORIGINAL 16 FEBRUARY 2023

STAGE 2 ARCHAEOLOGICAL PROPERTY ASSESSMENT

Parkbridge Lifestyle Communities

Part of Lots 43, 44, 66, and 67 and Part of the Road Allowances Between Lots 67 and 68, 43 and 66 & 44 and 67 Not Travelled (Closed by By-law 1782, Inst. 122 (1950))
(Geographic Township of Thorold, former County of Welland),
Parts 1, 2, 3 & 4, Plan 59R-6514, City of Thorold, Regional Municipality of Niagara

(AMICK Corporate Project #2022-018/MCM File #P058-2238-2022)

SUBMITTED TO:

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EXECUTIVE SUMMARY

This report describes the results of the 2022 Stage 2 Archaeological Property Assessment of Parkbridge Lifestyle Communities, Part of Lots 43, 44, 66, and 67 and Part of the Road Allowances Between Lots 67 and 68, 43 and 66 & 44 and 67 Not Travelled (Closed by By-law 1782, Inst. 122 (1950) (Geographic Township of Thorold, former County of Welland), Parts 1, 2, 3 & 4, Plan 59R-6514, City of Thorold, Regional Municipality of Niagara conducted by AMICK Consultants Limited. This assessment was undertaken as a requirement under the Planning Act (RSO 1990) and was conducted under Professional Archaeologist License #P058 issued to Michael Henry by the Minister of Citizenship and Multiculturalism (MCM) for the Province of Ontario. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011) and the Ontario Heritage Act (RSO 1990a).

The entirety of the study area is approximately 28.6 hectares (ha) in area and includes within it mostly ploughable lands, small wooded areas. The study area is bounded on the north by farmland, on the east by farmland and a wooded area on the south by farmland and on the west by existing residential development. AMICK Consultants Limited was engaged by the proponent to undertake a Stage 2 Archaeological Property Assessment of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological fieldwork. Following the criteria outlined by MCM (MTCS 2011) for determining archaeological potential, portions of the study area were determined as having archaeological potential for both Pre-contact and Post-contact archaeological resources. Consequently, this report is being prepared in advance of the planning process for this property.

The entirety of the study area was subject to property inspection and photographic documentation concurrently with the Stage 2 Property Assessment which consisted of high intensity test pit methodology at a five-metre interval between individual test pits and high intensity pedestrian survey at an interval of 5 metres between individual transects on November 16th, 17th, 25th, and December 21st, 2022. All records, documentation, field notes, photographs, and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the MCM on behalf of the government and citizens of Ontario.

As a result of the Stage 2 Property Assessment of the study area, archaeological resources were encountered. Consequently, the following recommendations are made:

As a result of the property Assessment of the study area, sixteen (16) isolated artifacts were documented. Based on the analysis of artifacts, the following recommendations are made:

1. *The Cultural Heritage Value or Interest (CHVI) of the isolated findspots have been completely documented and they have been removed from the study area as a result of standard Stages 2 Property Assessment procedure. There is no remaining CHVI for these locations. No further archaeological assessment of the isolated findspots is warranted.*
2. *The proposed development may be considered clear of archaeological concerns.*

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

This report describes the results of the 2022 Stage 2 Archaeological Property Assessment of Parkbridge Lifestyle Communities, Part of Lots 43, 44, 66, and 67 and Part of the Road Allowances Between Lots 67 and 68, 43 and 66 & 44 and 67 Not Travelled (Closed by By-law 1782, Inst. 122 (1950) (Geographic Township of Thorold, former County of Welland), Parts 1, 2, 3 & 4, Plan 59R-6514, City of Thorold, Regional Municipality of Niagara conducted by AMICK Consultants Limited. This assessment was undertaken as a requirement under the Planning Act (RSO 1990) and was conducted under Professional Archaeologist License #P058 issued to Michael Henry by the Minister of Citizenship and Multiculturalism (MCM) for the Province of Ontario. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011) and the Ontario Heritage Act (RSO 1990a).

The entirety of the study area is approximately 28.6 hectares (ha) in area and includes within it mostly ploughable lands, small wooded areas. The study area is bounded on the north by farmland, on the east by farmland and a wooded area on the south by farmland and on the west by existing residential development. AMICK Consultants Limited was engaged by the proponent to undertake a Stage 2 Archaeological Property Assessment of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological fieldwork. Following the criteria outlined by MCM (MTCS 2011) for determining archaeological potential, portions of the study area were determined as having archaeological potential for both Pre-contact and Post-contact archaeological resources. Consequently, this report is being prepared in advance of the planning process for this property.

The entirety of the study area was subject to property inspection and photographic documentation concurrently with the Stage 2 Property Assessment which consisted of high intensity test pit methodology at a five-metre interval between individual test pits and high intensity pedestrian survey at an interval of 5 metres between individual transects on November 16th, 17th, 25th, and December 21st, 2022. All records, documentation, field notes, photographs, and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the MCM on behalf of the government and citizens of Ontario.

At the time of writing no proposed development map was available, however a Plan of Survey of the proposed development has been submitted together with this report to MCM for review and reproduced within this report as Map 4.

1.2 HISTORICAL CONTEXT

1.2.1 PRE-CONTACT LAND-USE OUTLINE

Table 1 illustrates the chronological development of cultures within southern Ontario prior to the arrival of European cultures to the area at the beginning of the 17th century. This general cultural outline is based on archaeological data and represents a synthesis and summary of research over a long period of time. It is necessarily generalizing and is not necessarily representative of the point of view of all researchers or stakeholders. It is offered here as a rough guideline and as a very broad outline to illustrate the relationships of broad cultural groups and time periods.

TABLE 1 PRE-CONTACT CULTURAL CHRONOLOGY FOR SOUTHERN ONTARIO

Years ago	Period	Southern Ontario
250	Terminal Woodland	Ontario and St. Lawrence Iroquois Cultures
1000 2000	Initial Woodland	Princess Point, Saugeen, Point Peninsula, and Meadowood Cultures
3000 4000 5000 6000	Archaic	Laurentian Culture
7000 8000 9000 10000 11000	Palaeo-Indian	Plano and Clovis Cultures
		(Wright 1972)

What follows is an outline of Aboriginal occupation in the area during the Pre-Contact Era from the earliest known period, about 9000 B.C. up to approximately 1650 AD.

1.2.1.1 PALEO-INDIAN PERIOD (APPROXIMATELY 9000-7500 B.C.)

North of Lake Ontario, evidence suggests that early occupation began around 9000 B.C. People probably began to move into this area as the glaciers retreated and glacial lake levels began to recede. The early occupation of the area probably occurred in conjunction with environmental conditions that would be comparable to modern Sub-Arctic conditions. Due to the great antiquity of these sites, and the relatively small populations likely involved, evidence of these early inhabitants is sparse and generally limited to tools produced from stone or to by-products of the manufacture of these implements.

1.2.1.2 ARCHAIC PERIOD (APPROXIMATELY 8000-1000 B.C.)

By about 8000 B.C. the gradual transition from a post glacial tundra-like environment to an essentially modern environment was largely complete. Prior to European clearance of the landscape for timber and cultivation, the area was characterized by forest. The Archaic Period is the longest and the most apparently stable of the cultural periods identified through

archaeology. The Archaic Period is divided into the Early, Middle and Late Sub-Periods, each represented by specific styles in projectile point manufacture. Many more sites of this period are found throughout Ontario, than of the Palaeo-Indian Period. This is probably a reflection of two factors: the longer period of time reflected in these sites, and a greater population density. The greater population was likely the result of a more diversified subsistence strategy carried out in an environment offering a greater variety of abundant resources (Smith 2002:58-59).

Current interpretations suggest that the Archaic Period populations followed a seasonal cycle of resource exploitation. Although similar in concept to the practices speculated for the big game hunters of the Palaeo-Indian Period, the Archaic populations utilized a much broader range of resources, particularly with respect to plants. It is suggested that in the spring and early summer, bands would gather at the mouths of rivers and at rapids to take advantage of fish spawning runs. Later in the summer and into the fall season, smaller groups would move to areas of wetlands to harvest nuts and wild rice. During the winter, they would break into yet smaller groups probably based on the nuclear family and perhaps some additional relatives to move into the interior for hunting. The result of such practices would be to create a distribution of sites across much of the landscape (Smith 2002: 59-60).

The material culture of this period is much more extensive than that of the Palaeo-Indians. Stylistic changes between Sub-Periods and cultural groups are apparent, although the overall quality in production of chipped lithic tools seems to decline. This period sees the introduction of ground stone technology in the form of celts (axes and adzes), manos and metates for grinding nuts and fibres, and decorative items like gorgets, pendants, birdstones, and bannerstones. Bone tools are also evident from this time period. Their presence may be a result of better preservation from these more recent sites rather than a lack of such items in earlier occupations. In addition, copper and exotic chert types appear during the period and are indicative of extensive trading (Smith 2002: 58-59).

1.2.1.3 WOODLAND PERIOD (APPROXIMATELY 1000 B.C.-1650 A.D.)

The primary difference in archaeological assemblages that differentiates the beginning of the Woodland Period from the Archaic Period is the introduction of ceramics to Ontario populations. This division is probably not a reflection of any substantive cultural changes, as the earliest sites of this period seem to be in all other respects a continuation of the Archaic mode of life with ceramics added as a novel technology. The seasonally based system of resource exploitation and associated population mobility persists for at least 1500 years into the Woodland Period (Smith 2002: 61-62).

The Early Woodland Sub-Period dates from about 1000-400 B.C. Many of the artifacts from this time are similar to the late Archaic and suggest a direct cultural continuity between these two temporal divisions. The introduction of pottery represents and entirely new technology that was probably acquired through contact with more southerly populations from which it likely originates (Smith 2002:62).

The Middle Woodland Sub-Period dates from about 400 B.C.-800 A.D. Within the region including the study area, a complex emerged at this time termed "Point Peninsula." Point Peninsula pottery reflects a greater sophistication in pottery manufacture compared with the earlier industry. The paste and temper of the new pottery is finer and new decorative techniques such as dentate and pseudo-scallop stamping appear. There is a noted Hopewellian influence in southern Ontario populations at this time. Hopewell influences from south of the Great Lakes include a widespread trade in exotic materials and the presence of distinct Hopewell style artifacts such as platform pipes, copper or silver panpipe covers and shark's teeth. The populations of the Middle Woodland participated in a trade network that extended well beyond the Great Lakes Region.

The Late Woodland Sub-Period dates from about 500-1650 A.D. The Late Woodland includes four separate phases: Princess Point, Early Ontario Iroquoian, Middle Ontario Iroquoian and Late Ontario Iroquoian.

The Princess Point phase dates to approximately 500-1000 A.D. Pottery of this phase is distinguished from earlier technology in that it is produced by the paddle method instead of coil and the decoration is characterized by the cord wrapped stick technique. Ceramic smoking pipes appear at this time in noticeable quantities. Princess Point sites cluster along major stream valleys and wetland areas. Maize cultivation is introduced by these people to Ontario. These people were not fully committed to horticulture and seemed to be experimenting with maize production. They generally adhere to the seasonal pattern of occupation practiced by earlier occupations, perhaps staying at certain locales repeatedly and for a larger portion of each year (Smith 2002: 65-66).

The Early Ontario Iroquoian stage dates to approximately 950-1050 A.D. This stage marks the beginning of a cultural development that led to the historically documented Ontario Iroquoian groups that were first contacted by Europeans during the early 1600s (Petun, Neutral, and Huron). At this stage formal semi-sedentary villages emerge. The Early stage of this cultural development is divided into two cultural groups in southern Ontario. The areas occupied by each being roughly divided by the Niagara Escarpment. To the west were located the Glen Meyer populations, and to the east were situated the Pickering people (Smith 2002: 67).

The Middle Ontario Iroquoian stage dates to approximately 1300-1400 A.D. This stage is divided into two sub-stages. The first is the Uren sub-stage lasting from approximately 1300-1350 A.D. The second of the two sub-stages is known as the Middleport sub-stage lasting from roughly 1350-1400 A.D. Villages tend to be larger throughout this stage than formerly (Smith 2002: 67).

The Late Ontario Iroquoian stage dates to approximately 1400-1650 A.D. During this time the cultural divisions identified by early European explorers are under development and the geographic distribution of these groups within southern Ontario begins to be defined.

1.2.2 Post-Contact Land Use Outline

The County of Welland was formed in 1851, and was named after the Welland River. It should be noted that Welland County was one of the first major settlements within Upper Canada (Wikipedia.org 2010). Many of its first settlers were Loyalists and moved to the area as a result of the American Revolution. Due to the presence of the Welland River and to Niagara Falls, this allowed the area to develop rapidly as the River offered easy transportation and energy production. The construction of the Welland Canal began in 1824, and would connect Lake Ontario to Lake Erie. The canal was at first a wooden structure and would later be replaced with stone (Welland.ca 2010). The counties of Lincoln and Welland were amalgamated in to the Regional Municipality of Niagara in 1970 (Wikipedia.org 2010).

The Township of Thorold came into existence in 1788 when surveyor Augustus Jones laid out the area in 100-acre lots to provide land for Loyalist refugees and disbanded soldiers following the American Revolutionary War. At the time, the township had no name; it was simply labeled Township No. 9. It wasn't until 1793, after the creation of Upper Canada with John Graves Simcoe as the first lieutenant-Governor, that the township was named Thorold after Sir John Thorold, an English baronet and Member of Parliament. The area was largely uninhabited when the first settlers arrived, the Neutral Indians having been wiped out by the Iroquois in 1650 (City of Thorold 2013).

The earliest communities emerged at Beaverdams, Decew Falls and St. Johns, but after the opening of the First Welland Canal in 1829 they were superseded by the new canal villages of Thorold, Allanburg and Port Robinson. Thorold, located on the brow of the Niagara Escarpment, soon became dominant and was incorporated as a Village in 1850 and as a Town in 1870. When the Regional Municipality of Niagara was formed in 1970, the Town of Thorold expanded to include the Township, and in 1975 the Town became the City of Thorold (City of Thorold 2013).

Map 2 is a facsimile segment from Tremaine's Map of the County of Welland (Tremaine 1862). Map 2 illustrates the location of the study area and environs as of 1862. The study area is shown to belong to Martin Upper and Andrew Upper. This map illustrates one settlement road depicted as within the Northern tip of study area spanning East to West. Recent maps no longer show the presence of this road. No structures are shown to be within the study area.

Map 3 is a facsimile segment of the Township of Thorold map reproduced from The Illustrated Historical Atlas of the Counties of Lincoln and Welland (H.R. Page 1876). Map 3 illustrates the location of the study area and environs as of 1876. The study area is shown to belong to Martin Upper and Andrew Upper; The previous settlement road depicted as within the Northern tip of the study area has disappeared.

A plan of survey of the study area is included within this report as Map 4. Current conditions encountered during the Stage 2 Assessment are illustrated in Maps 5 & 6.

1.2.3 SUMMARY OF HISTORICAL CONTEXT

The brief overview of readily available documentary evidence indicates that the study area is situated within an area that was close to historic transportation routes and in an area well populated during the nineteenth century and therefore has potential for sites relating to early Post-contact settlement in the region. However, it also appears that while the area was moving toward urban development by the fourth quarter of the 19th century, it was still predominantly rural in character and the likelihood of locating significant Post-contact archaeological deposits of cultural heritage value or interest (CHVI) on a very small parcel of the original township lot is not likely. Background research indicates the property has potential for significant archaeological resources of Native origins based on proximity to a natural source of potable water in the past.

1.3 ARCHAEOLOGICAL CONTEXT

The study area is bounded on the north by farmland, on the east by farmland and a woodlot, on the south by farmland and on the west by existing residential development.

he study area does not contain any areas of steep slope. The study area contains ploughable lands.

1.3.1 PHYSIOGRAPHIC REGION

The study area is situated within the Haldimand Clay Plain physiographic region. The Haldimand Clay Plain lies between the Niagara Escarpment and Lake Erie, and consists of an intermixture of stratified clay and till. The study area falls within an area of the plain where good silt loam is prime for orchards and vineyards of grapes, pears and apples (Chapman and Putnam 1984: 156-159).

1.3.2 SURFACE WATER

Three small unnamed watercourses enter from the western boundary and flow in an east-west orientation through the study area and are associated with a low-lying wet area situated just west of the centre of the property.

1.3.3 REGISTERED ARCHAEOLOGICAL SITES

The Archaeological Sites Database administered by the MCM indicates that there are forty-five (45) previously documented sites within 1 kilometre of the study area. However, it must be noted that this assumes the accuracy of information compiled from numerous researchers using different methodologies over many years. AMICK Consultants Limited assumes no responsibility for the accuracy of site descriptions, interpretations such as cultural affiliation, or location information derived from the Archaeological Sites Database administered by MCM. In addition, it must also be noted that a lack of formerly documented sites does not indicate that there are no sites present as the documentation of any archaeological site is contingent upon prior research having been conducted within the study area.

1.3.3.1 Pre-contact Registered Sites

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MCM. As a result, it was determined that thirty-one (31) archaeological sites relating directly to Pre-contact habitation/activity had been formally registered within the immediate vicinity of the study area. Two (2) of these sites (AgGt-271 & AgGt-176) are multi-component sites listed as both Pre-contact and Post-contact sites. All previously registered Pre-contact sites are briefly described below in Table 2:

Table 2 Pre-contact Sites within 1km

Borden #	Site Name	Time Period	Affinity	Site Type
AgGt-95		Archaic	Aboriginal	Scatter
AgGt-94		Archaic	Aboriginal	Scatter
AgGt-93		Archaic	Aboriginal	Othercamp/campsite
AgGt-72	Blackhorse Valve	Pre-Contact	Aboriginal	Findspot
AgGt-293		Pre-Contact	Aboriginal	Scatter
AgGt-292		Pre-Contact		Scatter
AgGt-278	Walker XXI	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Scatter
AgGt-276	Walker XX	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Scatter
AgGt-275	Walker XIX	Pre-Contact	Aboriginal	Scatter
AgGt-274	Walker XVIII	Pre-Contact	Aboriginal	Scatter
AgGt-273	Walker XV	Pre-Contact	Aboriginal	Camp/campsite
AgGt-272	Walker XIV	Pre-Contact	Aboriginal	Camp/campsite
AgGt-271	Walker XIII	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Scatter
AgGt-261	Joy	Woodland, Late	Aboriginal	Findspot
AgGt-260		Paleo-Indian, Late		Camp/campsite
AgGt-184	Walker VIII	Pre-Contact	Aboriginal	
AgGt-183	Walker VII	Archaic, Early	Aboriginal	
AgGt-182	Walker V	Pre-Contact	Aboriginal	
AgGt-181	Walker IV	Pre-Contact	Aboriginal	
AgGt-180	Walker III	Pre-Contact	Aboriginal	
AgGt-179	Walker I	Archaic, Late	Aboriginal	
AgGt-178	Walker IX	Pre-Contact	Aboriginal	Camp/campsite
AgGt-177	Walker VI	Pre-Contact	Aboriginal	
AgGt-176	Walker X	Archaic, Middle, Post-Contact,	Aboriginal, Euro-Canadian	Scatter

		Woodland, Early		
AgGt-175	Walker II	Pre-Contact	Aboriginal	Scatter
AgGs-430	Walker XVI	Pre-Contact	Aboriginal	Scatter
AgGs-429	Walker XXIII	Archaic, Early	Aboriginal	Findspot
AgGs-428	Walker XVII	Post-Contact	Aboriginal	Scatter
AgGs-427	Walker XII	Post-Contact, Pre-Contact	Aboriginal, Euro-Canadian	Other Refuse, Scatter
AgGs-348	AgGs-348-P40	Pre-Contact	Aboriginal	
AgGs-347	AgGs-347-P15-P24	Archaic, Late, Paleo-Indian, Late		

Two of the above noted archaeological sites [AgGt-261 & AgGt-260] are situated within 300 metres of the study area. Therefore, they demonstrate archaeological potential for further archaeological resources related to Pre-contact activity and occupation with respect to the archaeological assessment of the proposed undertaking.

1.3.3.2 Post-contact Registered Sites

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MCM. As a result, it was determined that eight (8) archaeological sites relating directly to Post-contact habitation/activity had been formally registered within the immediate vicinity of the study area. Two (2) of these sites (AgGt-271 & AgGt-176) are multi-component sites listed as both Pre-contact and Post-contact sites. All previously registered Post-contact sites are briefly described below in Table 3:

Table 3 Post-contact Sites within 1km

Borden #	**Site Name**	**Time Period**	**Affinity**	**Site Type**
AgGt-271	Walker XIII	Post-Contact, Pre Contact	Aboriginal, Euro-Canadian	Scatter
AgGt-176	Walker X	Archaic, Middle, Post-Contact, Woodland, Early	Aboriginal, Euro-Canadian	Scatter
AgGt-139	Glen Gordon 1	Post-Contact, Woodland, Late		Unkown, Habitation
AgGt-133	K Smith	Post-Contact	Euro-Canadian	Homestead
AgGt-132	B. Williams	Post-Contact	Euro-Canadian	Homestead
AgGt-131	Robert Spencer	Post-Contact	Euro-Canadian	Homestead
AgGt-130	T Brown	Post-Contact	Euro-Canadian	Homestead
AgGs-411	Walker XI	Post-Contact	Euro-Canadian	Homestead

None of the above noted archaeological sites are situated within 300 metres of the study area. Therefore, they demonstrate no archaeological potential for further archaeological resources related to Post-contact activity and occupation with respect to the archaeological assessment of the proposed undertaking.

1.3.3.3 Registered Sites of Unknown Cultural Affiliation

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MCM. As a result, it was determined that eight (8) archaeological sites of unknown cultural affiliation have been formally registered within the immediate vicinity of the study area. All previously registered sites of unknown cultural affiliation are briefly described below in Table 4:

Table 4 Registered Sites of Unknown Cultural Affiliation within 1km

Borden #	Site Name	Time Period	Affinity	Site Type
AgGt-142	Glen Gordon 4	Other		Otherscatter
AgGt-141	Glen Gordon 3	Other		Otherscatter
AgGt-140	Glen Gordon 2	Other		Otherscatter
AgGt-138		Other		Otherfindspot
AgGt-137		Other		Otherfindspot
AgGt-136		Other		Otherfindspot
AgGt-135		Other		Otherfindspot
AgGt-134		Other		Otherfindspot

Two of the above noted archaeological sites [AgGt-138 & AgGt-137 are situated within 300 metres of the study area. Therefore, they demonstrate archaeological potential for further archaeological resources related to human activity and occupation with respect to the archaeological assessment of the proposed undertaking.

1.3.4 Previous Archaeological Assessments

Background research shows that three (3) previous studies have taken place within 50m of the study area. For further information see:

AMICK Consultants Limited. (2006). *Report on the 2005-2006 Stage 1-3 Archaeological Assessment of the Proposed Draft Plan Subdivision, Part of Lots 68-70 & 90-92, Town of Thorold, Regional Municipality of Niagara.* Report on file with Ontario Ministry of Citizenship and Multiculturalism, Toronto, Ontario. (AMICK File # 11054/MCM File #P058-077-2006).

A.M. Archaeological Associates. (2018). *The Stage 1 and 2 Archaeological Assessment of Part of Lot 67 Uppers Lane, including Part of Road Allowance Between Lots 67 and 68, City of Thorold, R.M. Niagara.* Report on file with Ontario Ministry of Citizenship and Multiculturalism, Toronto, Ontario. (MCM File #P035-0277-2018).

Stantec. (2022). *Stage 1 Archaeological Assessment: Rolling Meadows Due Diligence Part of Lots 43, 44, 66 and 67, Former Township of Thorold, former County of Welland, now City of Thorold, Regional Municipality of Niagara, Ontario.* Report on file with Ontario Ministry of Citizenship and Multiculturalism, Toronto, Ontario. (Stantec File # 160623065/MCM File # P1148-0042-2022)

1.3.4.1 AMICK CONSULTANTS LIMITED (2006)

In 2006, AMICK Consultants Limited completed Stage 1-3 archaeological assessment of a proposed draft plan of subdivision in part of Lots 68-70, and 90-92 in the Town of Thorold, Regional Municipality of Niagara on behalf of Rolling Meadows under the project direction of Michael Henry (Project Information Form [PIF] No. P058-077). This archaeological assessment did not survey or comment on the archaeological potential of the current study area. This assessment identified 13 archaeological sites, none of which are located within 70 m of the current study area.

(AMICK Consultants Ltd. 2006)

1.3.4.2 A.M. ARCHAEOLOGICAL ASSOCIATES (2018)

A.M. Archaeological Associates (2018) completed a Stage 1-2 archaeological of part of Lot 67 Uppers Lane, including part of the road allowance between Lots 67 and 68 in the City of Thorold, Regional Municipality of Niagara on behalf of Farz Holdings Inc. care-of LARKIN+ Land Use Planners under the project direction of Andrew Murray (PIF No. P035-0277-2018). This archaeological assessment did not survey or comment on the archaeological potential of the current study area. This assessment identified seven archaeological sites. One of these sites (site AgGt-261) is located within 70 m of the current study area. Site AgGt-261 consisted of a single Levanna-type projectile point which dates to the Late Woodland period. This site was recommended as not requiring any further work.

(A.M. Archaeological Associates. 2018)

1.3.4.3 STANTEC (2022)

Stantec Consulting Ltd. (Stantec) was retained by Parkbridge to undertake a Stage 1 archaeological assessment in support of their due diligence review of the Rolling Meadows property (the study area) in the City of Thorold, Ontario. The property is being considered f or purchase for future development. This Stage 1 archaeological assessment is being completed as part of Parkbridges's real estate due diligence. The Stage 1 archaeological assessment was conducted under Project Information Form (PIF) number P1148-0042-2022 issued to Heather Kerr, MA, by the Ministry of Tourism, Culture and Sport (MTCS).

The Stage 1 archaeological assessment determined that the entire study area retains potential for the identification and recovery of archaeological resources. No property inspection was completed as part of this Stage 1 archaeological assessment.

In accordance with Section 1.3 and Section 7.7.4 of the MTCS' 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Stage 2 archaeological assessment is recommended for the entire study area. Full and detailed recommendations are provided in the body of the report.

(Stantec. 2022)

1.3.4.2 Previous Regional Archaeological Potential Modelling

The study area is situated within an area (Niagara Region) that is in the process of creating an Archaeological Management Plan. In 2021, the Region of Niagara produced the Niagara Region Archaeological Management Plan: Phase 5 Report Draft (ASI 2021). The study involved creating areas of archaeological potential for both Pre-contact and Historical archaeological sites. Table 5 describes the modelling criteria by which the Niagara Region archaeological potential modelling for Pre-contact archaeological sites was calculated, while Table 6 describes the modelling criteria for Historical archaeological sites.

Table 5 Pre-Contact Archaeological Site Potential Modelling Criteria

Environmental or Cultural Feature	Buffer Distance (metres)	Buffer Qualifier
Rivers and streams	250	• from top of bank for former; from centreline for latter
Lakes and ponds	250	• exterior buffer from current limits
Wetlands	250	• including pre-settlement wetlands
Registered Indigenous archaeological sites	100 250	• Camps and other small settlements • Villages

TABLE 6 HISTORICAL ARCHAEOLOGICAL SITE POTENTIAL MODELLING CRITERIA

Environmental or Cultural Feature	Buffer Distance (metres)	Buffer Qualifier
Historical settlement centres	polygon as mapped	• no buffer, override integrity
Domestic sites	100	• none
Breweries and distilleries	100	• none
Hotels/taverns	100	• none
Historical schools and churches	100	• none
Historic mills, forges, extraction industries	100	• none
Early settlement roads	100	• both sides
Early railways	50	• both sides
Cemeteries	10 100	• Registered cemeteries with known limits. 10 m beyond limits of cemetery • Suspected cemetery or pioneer cemetery. 100m around point
Registered historical archaeological sites	100	• none

1.3.5 HISTORIC PLAQUES

There are no relevant plaques associated with the study area, which would suggest an activity or occupation within, or near, the study area that may indicate potential for associated archaeological resources of significant CHVI.

1.3.6 SUMMARY OF ARCHAEOLOGICAL CONTEXT

The study area contains mostly ploughable lands, small wooded areas, and a large woodlot. The study area is bounded on the north by farmland, on the east by farmland and a woodlot, on the south by farmland and on the west by existing residential development. The study area does not contain any areas of steep slope. The study area contains ploughable lands.

Current conditions within the study area indicate that areas of the property may have no or low archaeological potential and do not require Stage 2 Property Assessment or should be excluded from Stage 2 Property Assessment. This area includes a low-lying wet area situated just west of the centre of the property. A significant proportion of the study area does exhibit archaeological potential and therefore a Stage 2 Property Assessment is required.

Background research also indicates that the study area is situated in the Haldimand Clay Plain physiographic region, which is characterized by an intermixture of stratified clay and till and where good silt loam is prime for orchards and vineyards of grapes, pears and apples

A total of forty-five (45) previously registered archaeological sites have been documented within 1km of the study area. Of these, thirty-one (31) are Pre-contact, eight (8) are Post-contact and eight (8) are of unknown cultural affiliation. Four (4) of these sites (AgGt-261, AgGt-260, AgGt-138, and AgGt-137) are located within 300m of the study area and, therefore, do demonstrate archaeological potential for further archaeological resources related to Pre-Contact activity and occupation with respect to the archaeological assessment of the current study area.

The study area is situated in the Niagara Region which is in the process of creating an Archaeological Management Plan. There are no relevant plaques associated with the study area.

The study area has potential for archaeological resources of Native origins based on proximity to previously registered archaeological sites of Pre-contact origins and proximity to a source of potable water that was also used as a means of waterborne trade and communication. Background research also suggests potential for archaeological resources of Post-contact origins based on proximity to previously registered archaeological sites of Post-contact origins**,** proximity to a historic roadway, and proximity to areas of documented historic settlement.

2.0 FIELD WORK METHODS AND WEATHER CONDITIONS

2.1 INTRODUCTION

A property inspection was carried out in compliance with Standards and Guidelines for Consultant Archaeologists (MTC 2011) to document the existing conditions of the study area to facilitate the Stage 2 Property Assessment. All areas of the study area were visually inspected and select features were photographed as a representative sample of each area defined within Maps 5 & 6. Observations made of conditions within the study area at the time of the inspection were used to inform the requirement for Stage 2 Property Assessment for portions of the study area as well as to aid in the determination of appropriate Stage 2 Property Assessment strategies. The locations from which photographs were taken and the directions toward which the camera was aimed for each photograph are illustrated in Maps 5 & 6 of this report.

The Stage 2 Assessment of the study area was carried out on November 16th, 17th, 25th, and December 21st, 2022 and consisted of high intensity test pit methodology at a five-metre interval between individual test pits, and by high intensity pedestrian survey at an interval of 5 metres between individual transects which was conducted in compliance with the Standards and Guidelines for Consultant Archaeologists, section 2.1.1: Pedestrian Survey/2.1.2: Test Pit Survey (MTC 2011). Weather conditions were appropriate for the necessary fieldwork required to complete the Stage 2 Property Assessment and to create the documentation appropriate to this study.

2.2 PEDESTRIAN SURVEY

Approximately 26.6 ha of the study area was subjected to pedestrian survey at 5m transect intervals. All actively or recently cultivated agricultural land within the study area was recently ploughed deep enough to provide total topsoil exposure but not deeper than previous ploughing and was weathered by a heavy rainfall. In addition, approximately 80% of the ploughed field surface was exposed and visible per Section 2.1.1, Standards 1-6 (MTC 2011). All work was photo-documented.

While conducting the pedestrian survey, archaeological resources were identified and survey transects were reduced to 1m intervals over a minimum of a 20m radius around individual finds. All artifacts found on the surface were marked with numbered flags. The artifacts were collected and bagged according to the numbered location where each was found. Every find location was individually recorded using GPS with an accuracy of 5 metres or less. All formal artifact types and diagnostic categories were collected, as well as a representative sample of non-diagnostic artifacts. Based on professional judgement, a balance between gathering enough artifacts to document the archaeological site and to leave enough in place to relocate the site was achieved per Section 2.1.1, Standards 7-9 (MTC 2011). As a result of the completion of the CSPs on all archaeological locations, this component of Stage 3 Site-specific Assessment has been completed and is not required for subsequent investigations of these sites.

2.3 TEST PIT SURVEY

Approximately 1.6 ha of the study area was wooded and was subjected to test pit survey at 5m intervals per Section 2.1.2, Standard 1 (MTC 2011).

All test pits were excavated within 1m of all built structures, were at least 30cm in diameter and were excavated into the first 5cm of subsoil to examine stratigraphy, cultural features and evidence of fill. All soils were screen through mesh no greater than 6mm and all test pits were backfilled. All work was photo documented.

During the 5m test pit survey, no archaeological resources were encountered.

3.0 RECORD OF FINDS

3.1 INTRODUCTION

As a result of the Stage 2 Assessment of the study area, twelve (12) Pre-contact isolated findspots and four (4) Post-contact isolated findspots were identified. A description of each isolated findspot is provided in Section 3.2 below.

3.2 ISOLATED FINDS

The Pre-contact catalogue of this report details artifact categories, material, provenience, measurements and heat alteration where applicable. The following sources were consulted, Cherts of Southern Ontario (Eley & von Bitter 1989), The Basics of Biface Knapping in the Eastern Fluted Point Tradition, a Manual for Flintknappers and Lithic Analysts. (Callahan, Errett 1979), SW Ontario Point Chronology, (Kewa, 1980), The Production of Stone Tools, (Museum of Indian Archaeology n.d.), A Typology and Nomenclature for the New York Projectile Points (Ritchie, 1961), Lithic Identification and Analysis (SCARF 2013), The Archaeology of Southern Ontario to A. D. 1650 (Ellis & Ferris 1990), Ceramic Types in Ontario (Latta, 1983) and the Ontario Iroquois Tradition (Wright, 1973) and the library of AMICK Consultants Limited.

Isolated Find 1

Isolated Find 1 (CAT# 5) consists of an Ancaster chert graver/side scraper. This is an artifact that retains a platform and bulb of percussion and an erailleur scar on the proximal end of ventral face. There are larger horizontal flake scars along one lateral edge of ventral face. Retouching is present along the opposite lateral edge on the dorsal face on either side of the pointed protrusion. The graver exhibits a creamy grey colour.

Isolated Find 2

Isolated Find 2 (CAT# 15) consists of an Onondaga chert thinning flake. This is an artifact that retains a platform but is missing the bulb of percussion. Flaking scars are present on its dorsal face. The flake exhibits a dark grey and tan colour.

Isolated Find 3

Isolated Find 3 (CAT# 13) consists of an Onondaga chert scraper. This is an artifact that retains a platform but is missing a bulb of percussion. Flaking scars are present on its dorsal face. The scraper exhibits a dark grey and tan colour.

Isolated Find 4

Isolated Find 4 (CAT# 11) consists of an Onondaga chert tertiary flake. This is an artifact that has a snap fracture present on the proximal end of flake. It is missing a platform and a bulb of percussion and there is minor retouching present along one lateral edge of dorsal face. The flake exhibits a dark grey colour.

Isolated Find 5

Isolated Find 5 (CAT# 16) consists of an Onondaga chert tertiary flake. This is an artifact that retains a platform and a bulb of percussion. The flake exhibits a dark grey and tan colour.

Isolated Find 6

Isolated Find 6 (CAT# 4) consists of an Onondaga chert tertiary flake. This is an artifact that is missing a platform and a bulb of percussion. Flaking scars are present on its dorsal face. The flake exhibits a medium grey colour.

Isolated Find 7

Isolated Find 7 (CAT# 3) consists of a piece of Onondaga chert shatter. This piece of shatter exhibits a dark grey colour.

Isolated Find 8

Isolated Find 8 (CAT# 8) consists of an Onondaga chert blade fragment. This is an artifact where both lateral edges of dorsal face exhibit retouch. Flaking scars are present on both faces. The blade fragment exhibits a dark grey colour.

Isolated Find 9

Isolated Find 9 (CAT# 14) consists of a refined white earthenware base sherd. This is an artifact that is brown, transfer printed, and functioned as tableware. The date range is 1818 - 1869.

Isolated Find 10

Isolated Find 10 (CAT# 6) consists of a stoneware body sherd. This is an artifact that has salt glazed blue exterior decoration, an Albany slipped interior, and functioned for food preparation and consumption.

Isolated Find 11

Isolated Find 11 (CAT# 1) consists of a refined white earthenware rim sherd. This is an artifact that is red, underglaze painted and functioned as tableware. The date range is 1820 - present.

Isolated Find 12

Isolated Find 12 (CAT# 12) consists of an Onondaga chert scraper. This is an artifact that retains a platform and a bulb of percussion. The distal end of dorsal face exhibits cortex and

small flaking scars are present on the proximal end of the dorsal face. Retouching is present along the distal end of the dorsal face and along one lateral edge. The scraper exhibits a light grey colour.

Isolated Find 14

Isolated Find 14 (CAT# 9) consists of a refined white earthenware rim sherd. This is an artifact that is cobalt blue scalloped impressed edgeware and functioned as tableware. The date range is 1840 - 1870.

Isolated Find 15

Isolated Find 15 (CAT# 7) consists of an Onondaga chert Adder Orchard projectile point. This is an artifact that is plano-convex in cross-section, has a excurvate blade with the widest part of point just above the upward angled shoulders. The stem is slightly contracting and the end of the base has been snapped off. Broad percussion flake scars are present on both faces with pressure flaking being present along the lateral blade edges. The Adder Orchard projectile point measures 57.5 mm in length, 39.5 mm in width, and 11 mm in thickness.

Isolated Find 16

Isolated Find 16 (CAT# 10) consists of a piece of Onondaga chert shatter. This piece of shatter exhibits a medium grey colour.

Isolated Find 17

Isolated Find 17 (CAT# 2) consists of an Onondaga chert tertiary flake. This is an artifact that retains a platform but is missing bulb of percussion. Flake scars are present on the dorsal face.

TABLE 1 PRE-CONTACT ARTIFACT COUNTS AND TYPES

DESCRIPTION	FREQUENCY	PERCENTAGE
Blade Fragment - Tertiary	1	8%
Graver/Side Scraper - Tertiary	1	8%
Lithic Debitage - Tertiary	4	33%
Lithic Debitage - Thinning	1	8%
Lithic Debitage - Shatter	2	17%
Projectile Point - Adder Orchard	1	8%
Scraper - Secondary	2	17%
Total	**12**	**100%**

TABLE 2 HISTORICAL ARTIFACT COUNTS AND TYPES

DESCRIPTION	FREQUENCY	PERCENTAGE
Ceramic - Refined White Earthenware	3	75%
Ceramic - Stoneware	1	25%
Total	**4**	**100%**

The collection of artifacts from this assessment is packaged in a single banker's box and housed at the Exeter office of AMICK Consultants Limited until such time as an appropriate permanent location, as approved by MCM, is located and appropriate arrangements for the transfer of the collection and associated responsibilities for the material is made.

The documentation produced during the field investigation conducted in support of this report includes: one sketch map, one page of photo log, one page of field notes, and 24 digital photographs.

4.0 ANALYSIS AND CONCLUSIONS

4.1 STAGE 2 ANALYSIS AND CONCLUSIONS

During the Stage 2 archaeological assessment of the study area, twelve (12) Pre-contact and four (4) Post-contact isolated findspots were identified. One findspot (CAT#7) is an Adder Orchard Projectile Point which dates to the Late Archaic Period (2,500-1,000BC). However, none of the isolated findspots constitute an archaeological site. Additionally, the isolated findspots are not likely to provide any further information and, therefore, they have no further CHVI.

5.0 RECOMMENDATIONS

5.1 STAGE 2 RECOMMENDATIONS

As a result of the property Assessment of the study area, sixteen (16) isolated artifacts were documented. Based on the analysis of artifacts, the following recommendations are made:

3. *The Cultural Heritage Value or Interest (CHVI) of the isolated findspots have been completely documented and they have been removed from the study area as a result of standard Stages 2 Property Assessment procedure. There is no remaining CHVI for these locations. No further archaeological assessment of the isolated findspots is warranted.*

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

While not part of the archaeological record, this report must include the following standard advisory statements for the benefit of the proponent and the approval authority in the land use planning and development process:

a. *This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c. 0.18. The report is reviewed to ensure that it complies with the standards and guidelines 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 project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, 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.*

b. *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 Archaeological Reports referred to in Section 65.1 of the Ontario Heritage Act.*

c. *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 archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.*

d. *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 Ontario Ministry of Consumer Services.*

e. *Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.*

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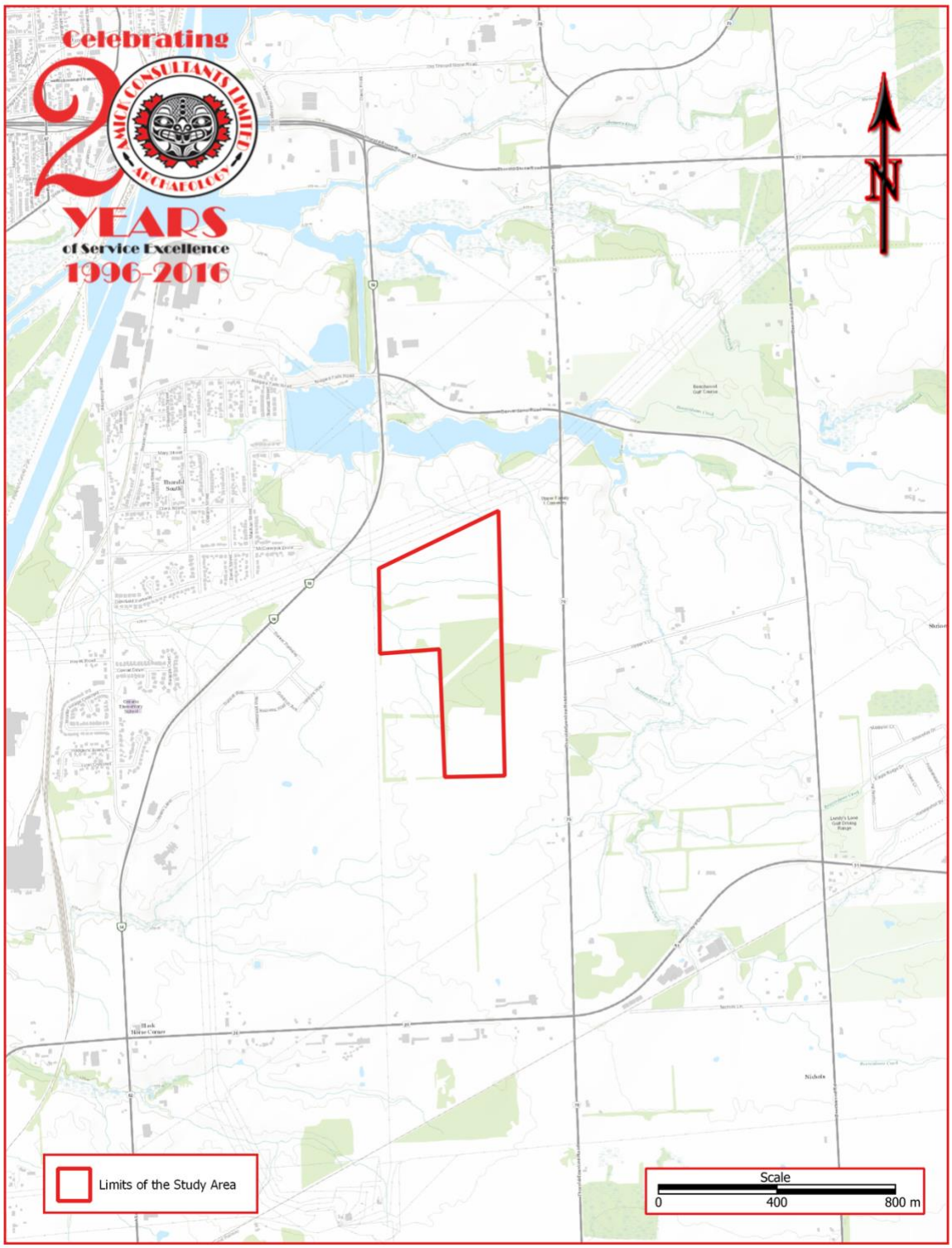
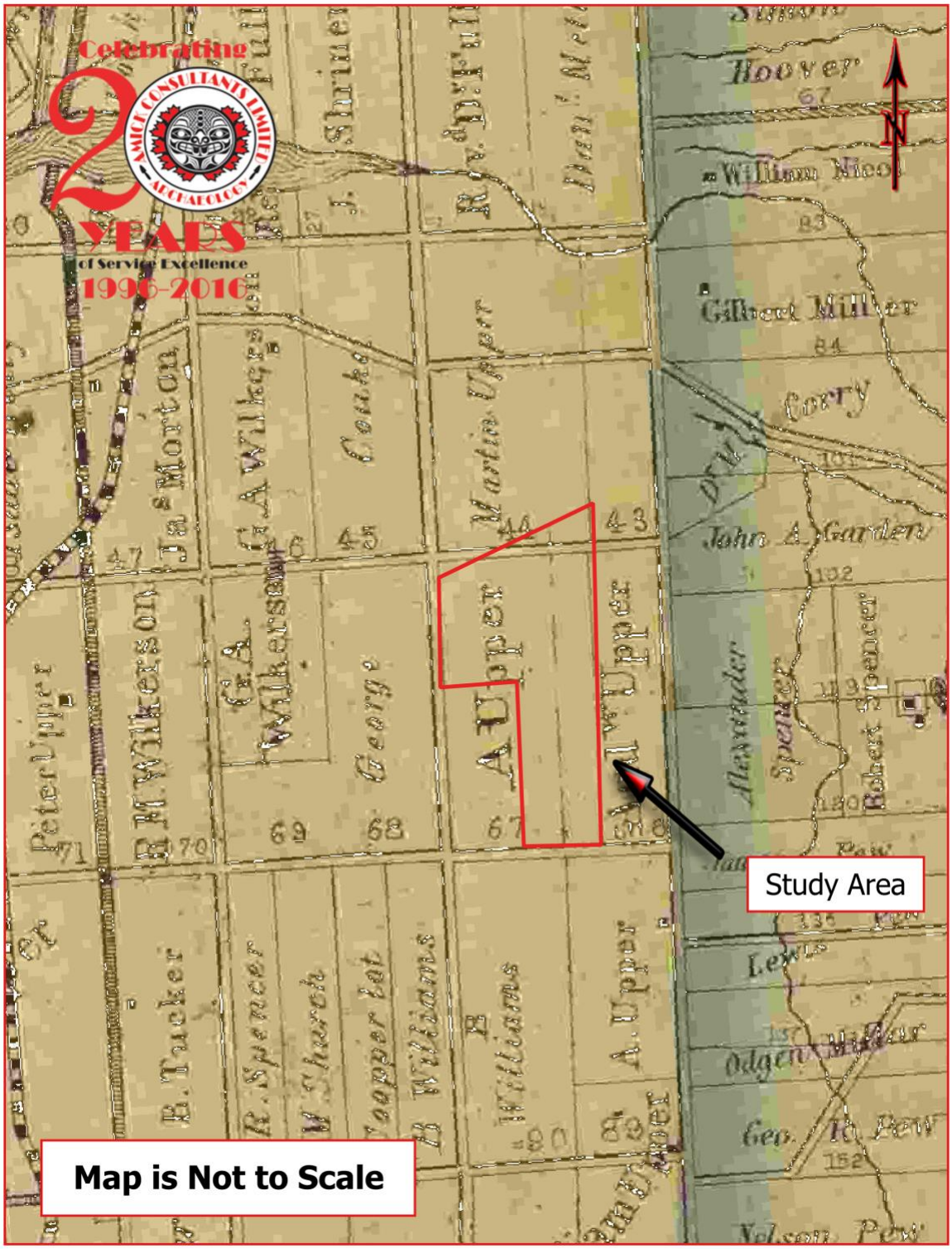
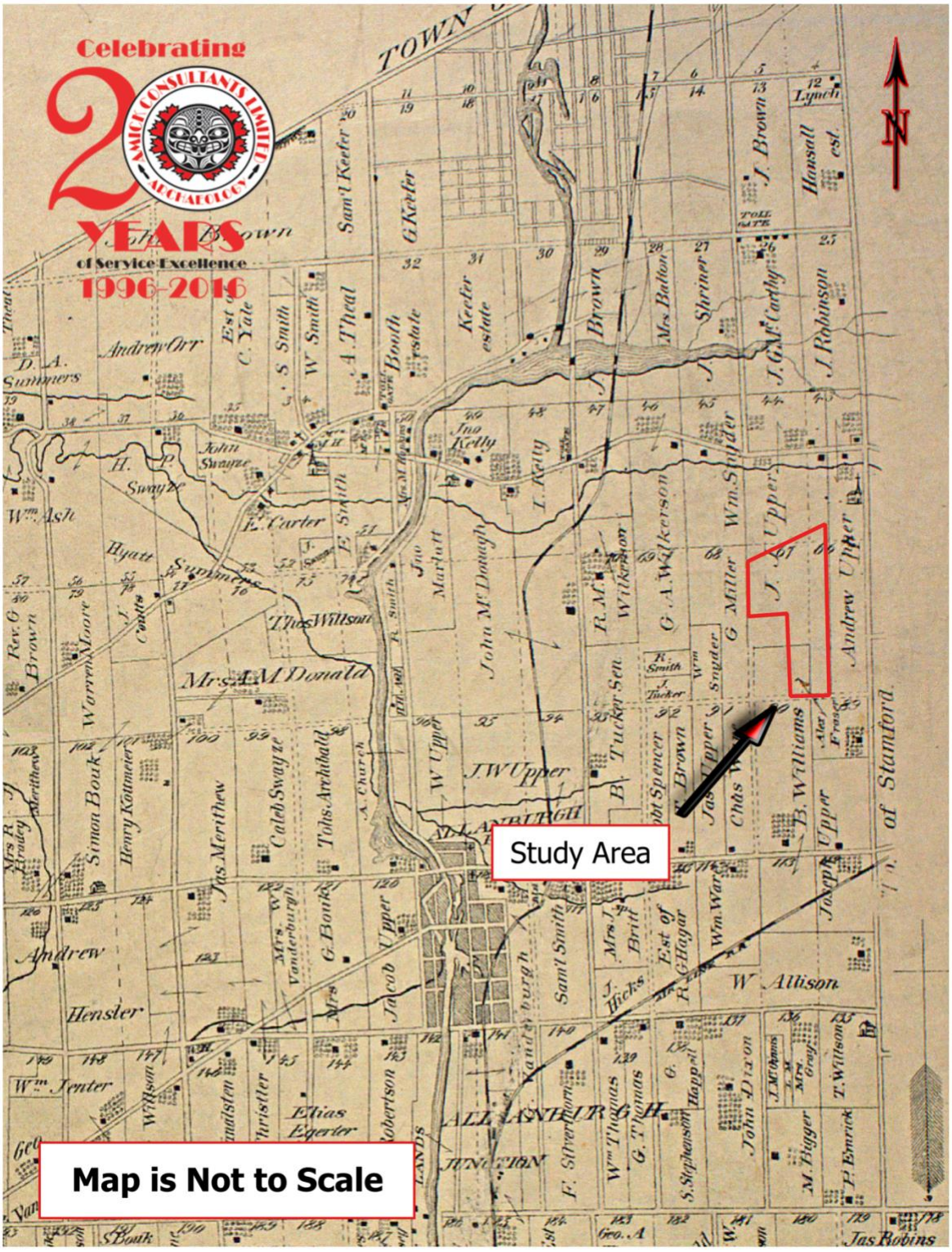
MAPS



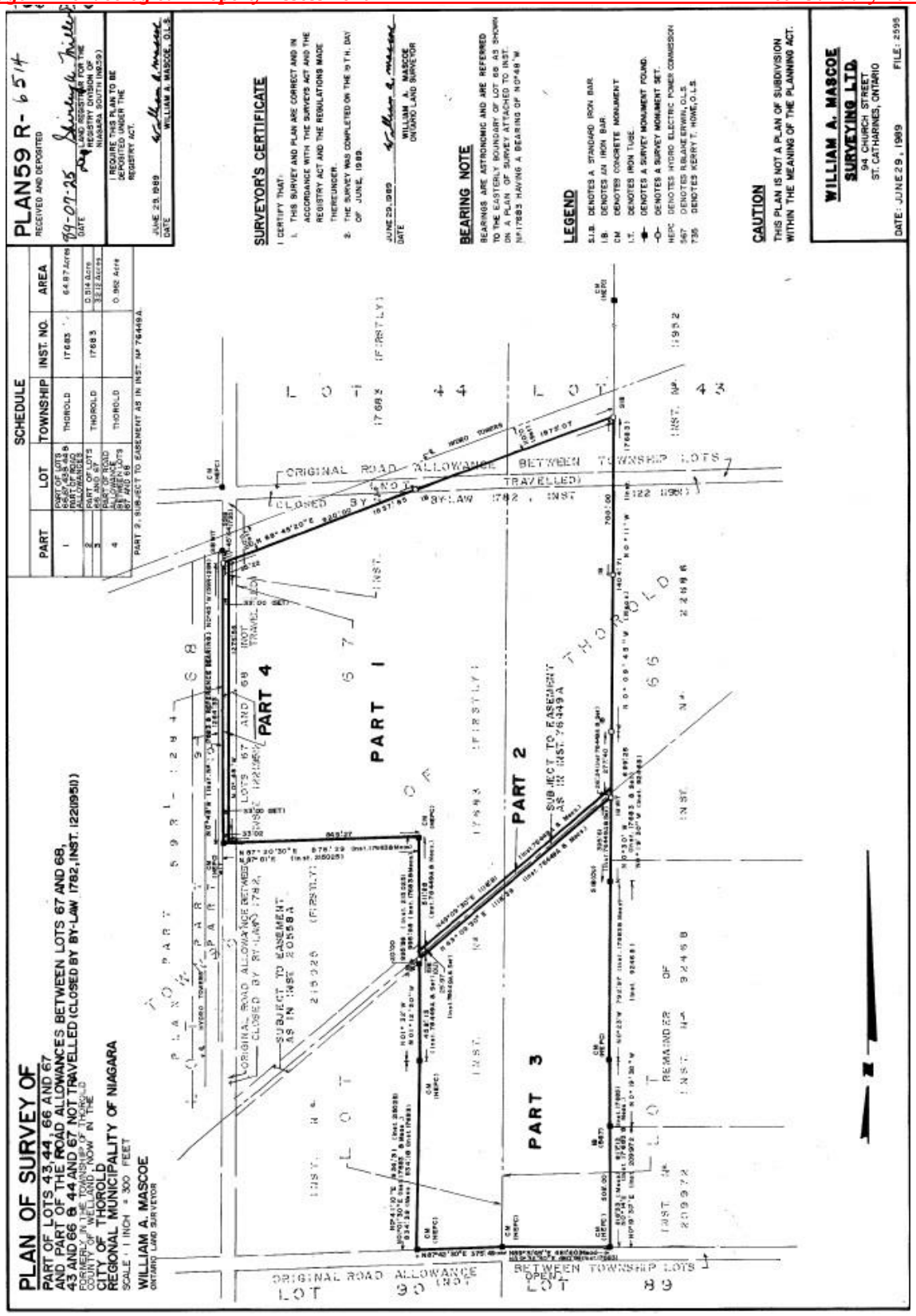
MAP 1 LOCATION OF THE STUDY AREA (ESRI 2019)



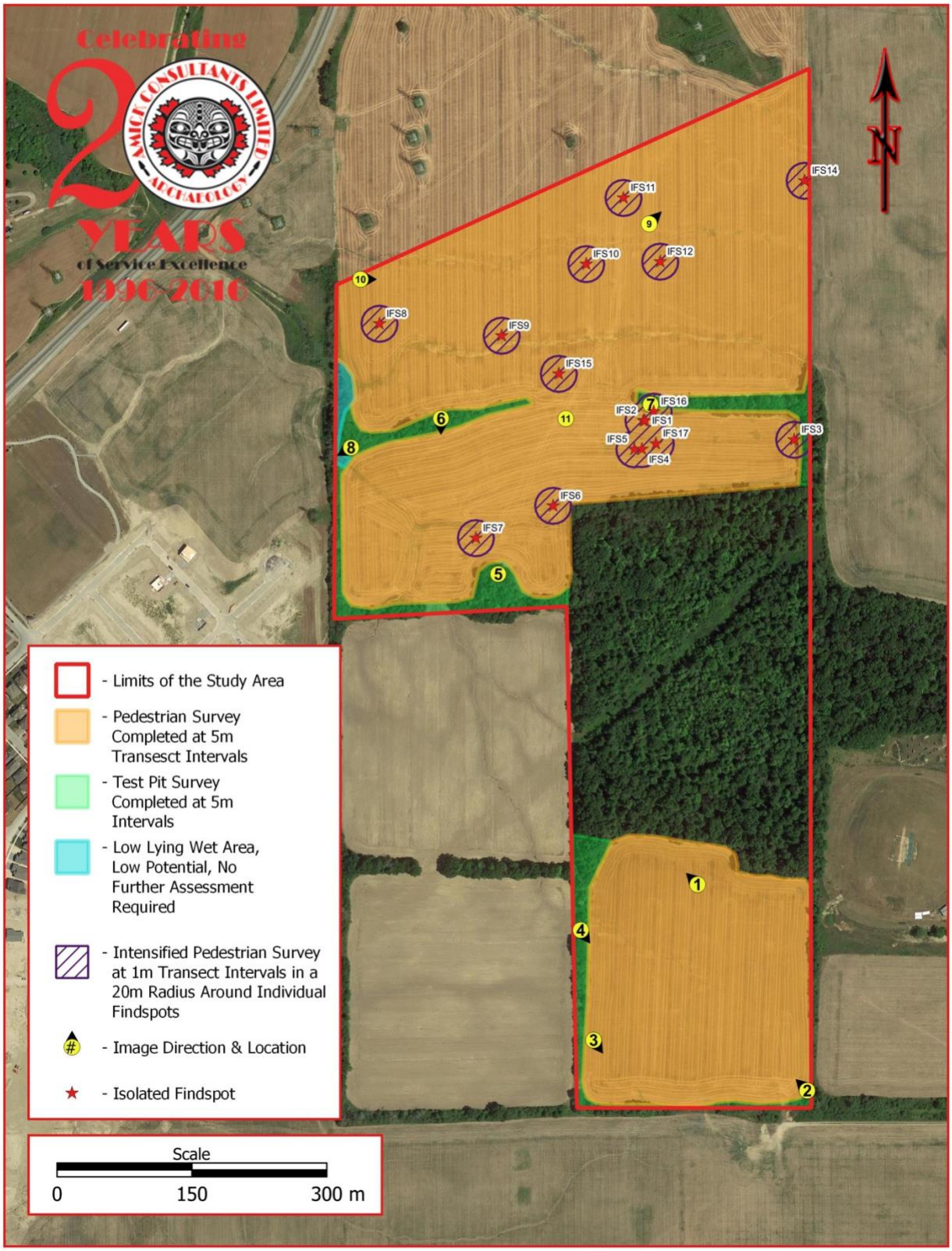
MAP 2 FACSIMILE SEGMENT OF TREMAINE'S MAP OF THE COUNTIES OF LINCOLN AND WELLAND (TREMAINE 1862)



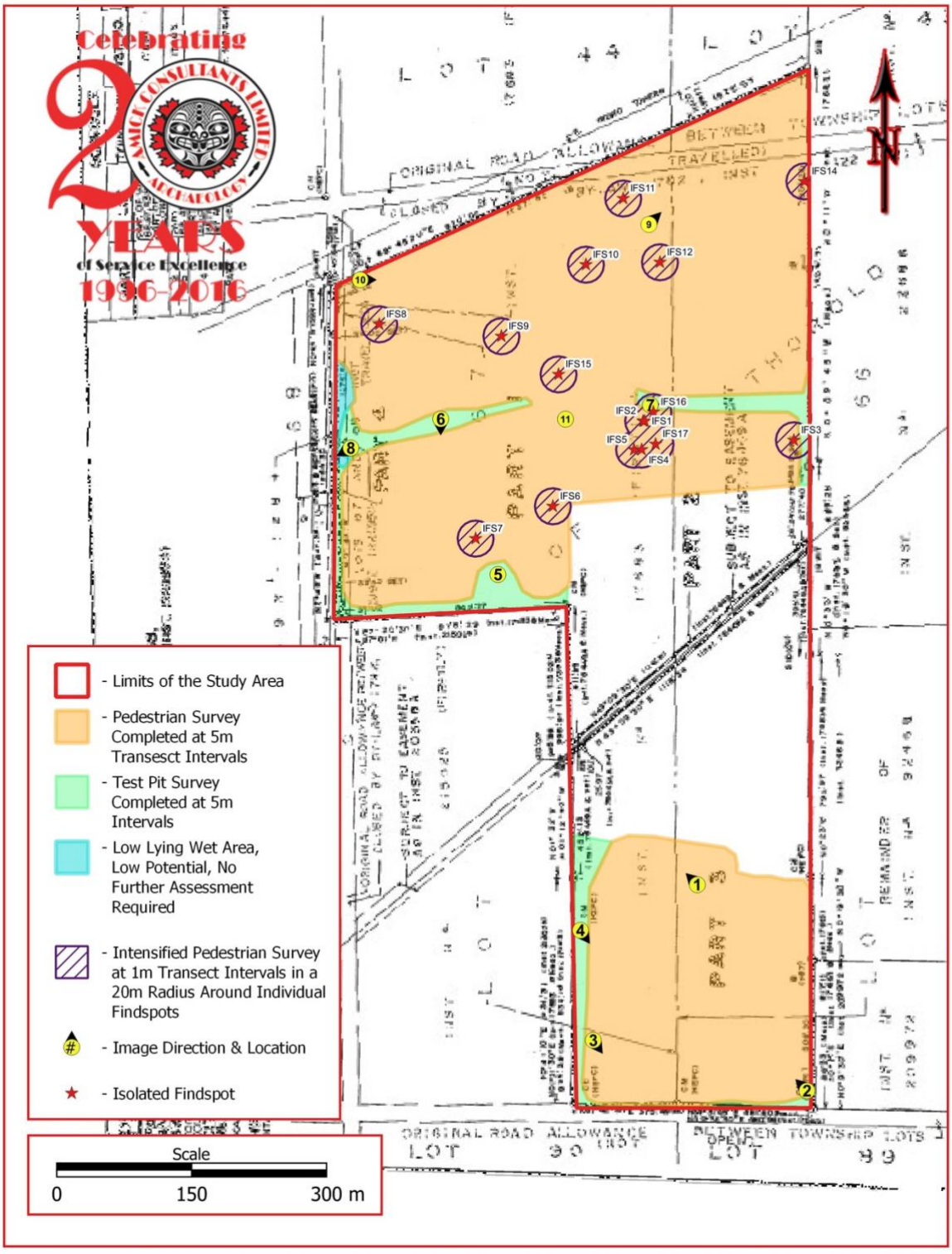
MAP 3 FACSIMILE SEGMENT OF THE ILLUSTRATED HISTORICAL ATLAS OF THE COUNTIES OF LINCOLN AND WELLAND (H.R. PAGE & CO 1876)



MAP 4 SITE PLAN (WILLIAM A. MASCOE SURVEYING LTD. 1989)



MAP 5 AERIAL PHOTO OF THE STUDY AREA (GOOGLE EARTH 2016)



MAP 6 DETAILED PLAN OF THE STUDY AREA

IMAGES

IMAGE 1 OVERVIEW OF FIELD CONDITIONS

IMAGE 2 OVERVIEW OF SOUTHERN PLOUGHED FIELD

IMAGE 3 CREW AT WORK CONDUCTING PEDESTRIAN SURVEY AT 5M INTERVALS

IMAGE 4 CREW AT WORK TEST PITTING AT 5M INTERVALS

IMAGE 5 COMPLETED TEST PIT

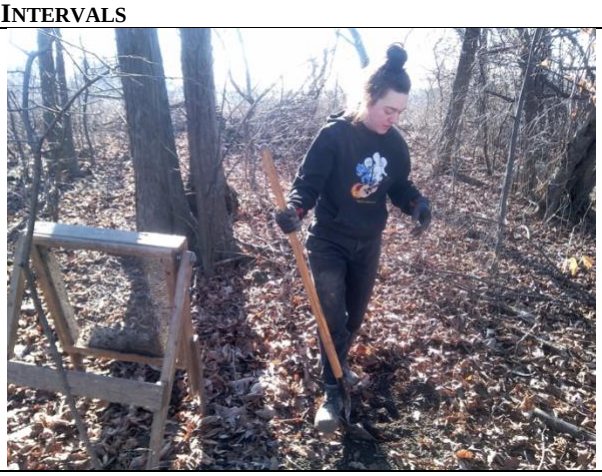


IMAGE 6 CREW AT WORK TEST PITTING AT 5M INTERVALS

IMAGE 7 COMPLETED TEST PIT

IMAGE 8 LOW LYING WET AREA

IMAGE 9 OVERVIEW OF FIELD CONDITIONS

IMAGE 10 OVERVIEW OF FIELD CONDITIONS

IMAGE 11 PEDESTRIAN SURVEY SURFACE CONDITIONS

IMAGE 12

IMAGE 12 HISTORIC ISOLATED FINDS; LEFT TO RIGHT: CAT#6, CAT#14, CAT#1, CAT#9

IMAGE 13 SAMPLE OF PRE-CONTACT ISOLATED FINDS; TOP TO BOTTOM: CAT#12, CAT#4 CAT#13, CAT#5, CAT#8, CAT#7

APPENDIX A: ARTIFACT CATALOGUE

CAT #	Provenience #	Layer	Description	Material	Type	Burnt	L (mm)	W (mm)	Th (mm)	Comments	Qty
2	FS17	N/A	Lithic Debitage	Onondaga Chert - Medium Gray and Tan	Tertiary Flake	N				Retains platform but missing bulb of percussion; flake scars on dorsal face	1
3	FS7	N/A	Lithic Debitage	Onondaga Chert - Medium Gray	Shatter	N					1
4	FS6	N/A	Lithic Debitage	Onondaga Chert - Dark Gray	Tertiary Flake	N				Missing platform and bulb of percusion; flake scars on dorsal face	1
5	FS1	N/A	Graver/Side Scraper	Ancaster Chert - Creamy Gray	Tertiary Flake	N				Retains platform and bulb of percussion; errailure scar on proximal end of ventral face; larger,	1

										horizontal flake scars along one lateral edge of ventral face; retouch present along opposite lateral edge on dorsal face on either side of a pointed protrusion	
7	FS15	N/A	Projectile Point	Onondaga Chert - Dark Gray	Adder Orchard (Late Archaic Period - 2,500-1,000 BC)	N				Plano-convex cross - section; excurvate blade with widest part of point just above the upward angled shoulders; stem is slightly contracting and the end of the base has been snapped off;	1

										broad percussion flake scars on both faces with pressure flaking present along the lateral blade edges	
8	FS8	N/A	Blade Fragment	Onondaga Chert - Dark Gray	Tertiary Flake	N				both lateral edges of dorsal face exhibit retouch; flake scars on both faces	1
10	FS16	N/A	Lithic Debitage	Onondaga Chert - Medium Gray	Shatter	N					1
11	FS4	N/A	Lithic Debitage	Onondaga Chert - Dark Gray	Tertiary Flake	N				Snap fracture present on proximal end of flake; missing platform and bulb of percussion;	1

										minor retouch present along one lateral edge of dorsal face	
12	FS12	N/A	Scraper	Onondaga Chert - Light Gray	Secondary Flake	N				Retains platform and bulb of percussion; distal end of dorsal face exhibits cortex; small flake scars on proximal end of dorsal face; retouch present along distal end of dorsal face and along one lateral edge	1
13	FS3	N/A	Scraper	Onondaga Chert - Dark Gray and Tan	Secondary Flake	N				Retains platform and bulb of percussion; cortex present at proximal end of flake;	1

										retouch present along one lateral edge of dorsal face and along the distal end of dorsal face	
15	FS2	N/A	Lithic Debitage	Onondaga Chert - Dark Gray and Tan	Thinning Flake	N				Retains platform but missing bulb of percussion; flake scar on dorsal face	1
16	FS5	N/A	Lithic Debitage	Onondaga Chert - Dark Gray and Tan	Tertiary Flake	N				Retains platform and bulb of percussion	1

Cat. No.	Find No.	Material	Class	Type	Attribute	Form	Function	Qty.	Date Range
1	FS11	Ceramic	Refined White Earthenware	Undrglaze Painted	Red	Rim Sherd	Tableware	1	1820-Present
6	FS10	Ceramic	Stoneware	Salt Glazed Exterior, Albany Slipped Interior	Blue Exterior Decration	Body Sherd	Food Preparation & Consumption	1	
9	FS14	Ceramic	Refined White Earthenware	Scalloped Impressed Edgeware	Cobalt Blue	Rim Sherd	Tableware	1	1840-1870
14	FS9	Ceramic	Refined White Earthenware	Transfer Printed	Brown	Base Sherd	Tableware	1	1818-1869

APPENDIX B: DATABLE PRE-CONTACT ARTIFACT TYPE DESCRIPTIONS

The following descriptions serve as a general description of tool types or pottery styles and represents a comprehensive, but not exhaustive, reference guide for identifiable objects and is not limited to finds specific to a particular project or site assemblage.

Pottery

Rim Sherds and Fragmentary Rim Sherds

The presence of diagnostic artifacts such as decorated pottery fragments known as castellations, rim sherds and fragmentary rim sherds assist in the determination of the temporal and cultural affiliation of sites.

For the purposes of this discussion, a rim sherd must possess sufficient portions of the interior, lip, rim, exterior, and neck portions of the original vessel. An artifact possessing some but not all of the above mentioned attributes is considered a fragmentary rim sherd.

Fragmentary Sherds

Fragmentary sherds are those pieces which are smaller than a 25 cent piece, are missing either the interior or exterior and are undecorated.

Lithics

Lithic Debitage

Debitage or chipping detritus, is the remaining waste material as a result of the tool manufacturing process. The category is further divided into primary, secondary, tertiary, and (biface) thinning flakes. Primary flakes exhibit cortex on the dorsal face and cortex; secondary flakes exhibit cortex on approximately half of the dorsal face but have no cortex on the platform; tertiary flakes exhibit little to no cortex; thinning flakes are relatively flat, have broad, shallow flake scars, the proximal end of the flake often retains the edge of the biface and, if the platform is retained, it often exhibits a low angle and evidence of crushing or grinding. If a flake is missing the proximal, or distal ends it is described as fragmentary; if a piece of debitage is recovered without a distinct ventral or dorsal surface, it is described as shatter.

Retouched/Utilized Flakes

A retouched flake exhibits unifacial or bifacial reworking often as a means of creating or maintaining a working edge. Retouched flakes often exhibit small flake scars. A utilized flake is unifacially reduced and generally considered to be expedient. Polishing, rounding, and microchipping fractures are all indicators of use and can be accurately identified using at least 100X magnification.

Shatter

Shatter is also categorized as debitage. Shatter consists of waste fragments that are angular and blocky and do not show the typical characteristics of a reduction flake (i.e., absence of bulb of percussion, striking platforms, or dorsal flake scars).

Projectile Points/Point Fragments/Point Preforms

A projectile point is an object that was hafted to weapon that was capable of being thrown or projected, such as a spear, dart, or arrow, or perhaps used as a knife.

A projectile point preform is often an ovate or triangular shaped rock that has been flaked on both sides using percussion and pressure flaking techniques. A projectile point fragment is often an ovate or triangular shaped rock that has been flaked on both sides using percussion and pressure flaking techniques and conforms to the general size and shape of a projectile point but has been fractured and discarded. This type of artifact was likely in the early stages of becoming some form of tool before it was discarded by the flintknapper; or was fractured in use; or reworked until exhaustion.

Formal Tool Types

Bifaces

The term biface here is used to describe an artifact that was subject to flake reduction on both surfaces but cannot be assigned to a formal tool category.

Scrapers

A scraper is a unifacial tool of varying in shape, size, and location of the working edge(s). Scrapers are typically formed by chipping the end of a flake of stone in order to create one sharp side and to keep the rest of the sides dull to facilitate grasping it. Most scrapers are either circle or blade-like in shape. The working edges of scrapers tend to be convex, and many have trimmed and dulled lateral edges to facilitate hafting. Scrapers are thought to have been used for hide-working and wood-working.

Spokeshave

A spokeshave is a unifacial tool of varying in shape, size, and location of the working edge(s). Similar to scrapers, spokeshaves exhibit a pronounced concave working edge thought to have been used to shape spear or arrow shafts or bows.

Drills

A drill is an elongated tool used for making holes and perforations. When made of stone, drills are frequently a bifacially worked tool of equal width and thickness and often t-shaped

to facilitate hafting; however, examples of thin t-shaped drills have been encountered. Drills could sometimes be repurposed tips of exhausted bifaces.

Perforators/Gravers

Perforators, gravers, piercers, borers and awls are formal tools that exhibit fine unifacial or bifacial retouching in order to accentuate a fine, triangular point. These tools serve a variety of purposes that involve piercing, incising, or engraving materials. Perforators, gravers, piercers, borers and awls are formal tools that exhibit fine unifacial or bifacial retouching in order to accentuate a fine, triangular point. These tools serve a variety of purposes that involve piercing, incising, or engraving materials.

Informal Tool Types

Cores

Cores are the initial nodes of material that are subject to the reduction process in order to manufacture tools using either the waste flakes struck off the core or the core itself. An exhausted core is node which no longer produces desirable flakes and was discarded by the flint knapper.

Fire bow drill base

A bow drill base is an object of stone or wood that was used to hold the base of the drill shaft and tinder to create an ember used to start a fire. The downward pressure and rotation of the drill shaft against the stone creates heat, which eventually creates powdered charcoal and ignites forming a small ember. Bow drill bases exhibit horizontal striations within small, circular boreholes.

Ground Stone Tools

Adzes, Axes, and Celts

An adze is an elongated ground stone tool with one sharpened edge typically used as a wood-working tool. An adze differs from an axe or celt in a couple of typological and ethnographically documented ways. Typologically, adzes are bifacial tools with a pronounced asymmetry and a plano-convex cross-section; axes are generally symmetrical bifacial tools with biconvex cross-sections. Ethnographically, axes are used for hewing trees and the ground stone tool head is set in the handle so the working edge is parallel to the handle. In contrast, adzes are used for shaping wood and the ground stone tool head is set in the handle so the working edge is perpendicular to the handle. The difference between celts and axes is that celts are ungrooved.

Hammerstone

A hammerstone is a hard, stone cobble used to remove lithic flake from cores during lithic tool reduction. Hammerstones can also be used to grind, crush, and polish tool edges; to process minerals such as iron ore; or in food-processing (nuts, marrow extraction).

Abraders

Abraders are a multi-functional tool type that can be used for sharpening, shaping, grinding, polishing, or smoothing organic and inorganic materials. Abraders are usually made of granular, relatively soft stone, such as sandstone, and can range in size from large and flat to hand-sized stones. They are typified by abrasion marks or worn grooves along the surface of the stone in U- or V-shapes, the width of which can imply what materials the abrader was used to manipulate. Abraders will often exhibit a polished edge.

Faunal Tools

Modified Bone Fragments

Modified bone fragments are those pieces which are not formal artifact types but exhibit evidence of cultural modification.

Bone Awls

Bone awls are perforating tools, manufactured primarily from long bones and tapered to a point at one end.

APPENDIX C: DATABLE POST-CONTACT ARTIFACT TYPE DESCRIPTIONS

The descriptions offered below are confined to datable historic artifacts typically recovered during field investigations. Although other materials are often found, they do not necessarily lend themselves to dating archaeological assemblages and are therefore not included in the following discussion. Additionally, the following represents a comprehensive reference guide for datable objects and is not limited to finds specific to a particular project or site assemblage.

Creamware

Cream coloured earthenware was developed during the early 18th Century in England. It's development is attributed to Thomas Astbury of Shelton England during the reign of George I (Hughes n.d.: 104). George I reigned from 1714-1727 (Neumann 1967: 360). In the early period the lead glaze of this ware was applied in powdered form known as smithum or galena. Creamware achieved widespread production and general popularity as tableware by about 1750 as a result of Thomas Frye's development of a new process of applying the glaze in liquid form. This allowed for consistent and even application of decorative finishes and was quickly copied by other potters (Hughes n.d.: 105). Almost universal popularity was achieved by this ware when Josiah Wedgwood (founder of the renowned Wedgwood potteries) presented a creamware caudle and breakfast set of 73 pieces to Queen Charlotte as a gift to celebrate the birth of the Prince of Wales in 1762. It is said that the Queen was so impressed by this ware that she ordered a table service of the same ware but modified the design to her own taste. The resulting pattern became known as "Queen's Ware". When this set was delivered, George III saw it and likewise placed an order for an additional set altered to suit his own tastes. This further modification became known as the "Royal Pattern". As a result of these regal commissions, creamware achieved immense popularity (Hughes n.d.: 108).

By the late 1790s Creamware became the cheapest tableware in production. This was due to a number of factors, but it was mainly due to the introduction of pearlware which was whiter and more closely resembled oriental porcelain. This new ware quickly displaced Creamware as the most popular of the tableware produced during the late 18th and early 19th Centuries. By 1830 truly white (refined white earthenware) tableware was available. Creamware, known from about 1790 as "CC Ware", had changed as well. Officially "CC Ware" remained in production throughout the 19th Century but it became indistinguishable from refined white earthenware by about 1830.

Plain Creamware

Plain creamware was in production throughout the production history of the ware; however it is uncommon prior to 1790.

Pearlware

Pearlware was the next stage after creamware in the quest for a white ceramic body. For many years the development of pearlware was attributed to Josiah Wedgwood, who, after many experiments introduced a ceramic which he termed "pearl white" in 1779 (Hume 1982: 128; Sussman 1977: 105). Recently, a reconsideration of the evidence seems to suggest that pearlware, termed "china glaze", may have been in production sometime in the 1760s and certainly by 1775 (for a detailed discussion see Miller 1987).

Pearlware is essentially a variation of creamware. The body of the ware is essentially the same with slightly higher flint content, but the real difference is in the glaze. Cobalt was added to the glaze of this ceramic as a bluing agent to make the off-white colour of the glaze appear whiter. This ceramic was called "pearl white and "china glaze" amongst other things, but is now more commonly identified as pearlware.

Plain Pearlware

Plain undecorated pearlware fragments can be dated within the general production range of the ware itself, 1770 – 1830.

Polychrome Hand Painted Pearlware

Polychrome painted pearlware is simply pearlware which has been hand painted with more than one colour. There has been some attempt to differentiate polychrome painted wares based upon visibly identifiable distinctions in the particular hues employed. It has been suggested that from 1795 – 1815 colours were done in soft pastel hues, and thence onward colours were of bright blues, greens, and pinkish reds (Humes 1982: 129). Others have suggested that underglaze pinks and reds were not seen on datable pieces prior to 1820 and that this is also true of certain shades of purple and green (Sussman and Moyle 1988: 1). While this is generally the case and can aid in the further refinement of dates applied to collections of hand painted wares, the unfamiliar should remain leery. These distinctions result from the use of chromium oxide as a constituent element of pigments beginning sometime around 1820. One must bear in mind that the particular colouring oxides used are only one of several factors which can have great effect on the final appearance of any ceramic product.

Many factors can affect the final colouration of the ware such as: the specific proportion of each of the elements used in both the underglaze pigment and the glaze itself; the constituent elements of, and colour of the vessel body; and the internal conditions of the kiln during the firing process (the purity of the atmosphere and the temperature being chief among these). With respect to the use of chromium oxide in particular, the specific ingredients of a glaze recipe and variations in the temperature used in firing will yield dramatically different results. Chromium oxide will produce the colours of red, pink, yellow, brown, green and blue-green (Rhodes 1983: 209). Each of these colours can also be produced using other oxides which have a longer history of use in ceramic production. The essential difference is in the specific hues which chromium oxide produces in each of these colours which cannot be precisely duplicated by other means.

Relief Moulded Pearlware

This decorative technique is most commonly identified with ironstone. Raised designs on the vessels were incorporated into the moulding of the objects themselves. Many of the early patterns produced in this medium persist to the present day. Many ceramics manufactured prior to the introduction of ironstone, such as pearlware, incorporated the use of embossed designs, but this form of decoration had never been so closely identified with a particular ceramic as it became with ironstone.

Slip Decorated Pearlware

This type of decoration is made by applying slip in patterns to the exterior surface of vessels. This type of decoration was used on ceramics both before and after the production of pearlware and is therefore not useful in refining a date from that of general pearlware production.

Transfer Printed Pearlware

Transfer printing was a method for transferring pictures to the surface of ceramic vessels which was developed during the late 18th Century. The use of colours other than cobalt blue for transfer printing was not attempted on any large scale until after 1828. The reason for this was that cobalt blue oxide was the only colouring agent which remained stable during the firing when used in conjunction with the transfer printing process. In 1828 a process was patented which allowed for the use of other colours. Immediately after this development colours such as red, brown, green, black and light blue were used on a popular level. Coloured transfers were popular in England by 1830 and had achieved similar appeal in North America by the early 1830s (Collard 1984: 117-118).

Shell Edge Decorated Pearlware

Shell edge came into production on creamware during the 1770s. It remained a status item of the middle and upper classes until the close of the century. Following the War of 1812, transfer printed wares began to rise very quickly in popularity and edged wares quickly became the cheapest of the decorated wares in the 19th Century. Edged wares remained in production on refined white earthenware long after pearlware ceased to be produced as a table ware around 1830 (Miller 1990: 115).

Refined Red Earthenware

Similar to refined white earthenware, refined red earthenware (RRE) is a semi-vitreous refined earthenware with a red clay paste rather than a white clay paste (Ricardi, 2020: 103). Fired at temperatures of 1100-1200° C, RRE is often clear, lead-glazed, hard and compact; it is only slightly porous and the compaction texture may be visible (Groover, 2003: 231-233).

Refined White Earthenware

The various forms of refined white earthenware which came into production during the 1820s remained in production for an extended period of time and do not lend themselves well to dating unless one has the advantage of makers' marks. In the case of this site there is not one example of refined white earthenware which has a maker's mark. This is not surprising since the ceramics from this ware category recovered from this site represent the cheapest types produced. The cheapest goods were often not marked since it was not considered worth the time and material.

Refined white earthenware (or RWE) was one of the most popular mid-nineteenth century ceramic wared in Ontario. Decorated motifs identified include: factory-slipped annular ware and banded (ca. 1830-1920), scalloped blue edgeware (ca. 1830-1850), flow blue (ca. 1840-1860), hand-painted late palette (ca. 1830-1870s), Rockingham (ca. 1855-1890s), spongeware (ca. 1840-1870), blue (1820 to present), black (ca. 1830-1840s), brown (ca. 1830-1860; 1880s) green and red/pink transferprint (1830-1850). Spongeware motifs were common between ca. 1840-1870, while transferprint ranges in date from ca. 1820 to the present.

The highest frequency of decoration noted are the various transferprints (n=369). Annularware or banded cermics are the next highest in frequency (n=62), followed by late palette hand painted (n=50), blue floware (n=34), spongeware (n=14) and scalloped edgeware (n=9).

Plain Refined White Earthenware

Lacking any definitive attributes, these sherds have been assigned a date of post 1825.

Polychrome Hand Painted Refined White Earthenware

Polychrome painted refined white earthenware is simply refined white earthenware which has been hand painted with more than one colour. There have been some attempts to differentiate polychrome painted wares based upon visibly identifiable distinctions in the particular hues employed. It has been suggested that from 1795 – 1815 colours were done in soft pastel hues, and from thence onward colours were of bright blues, greens, and pinkish reds (Humes 1982: 129). Others have suggested that underglaze pinks and reds were not seen on datable pieces prior to 1820 and that this is also true of certain shades of purple and green (Sussman and Moyle 1988: 1). While this is generally the case and can aid in the further refinement of dates applied to collections of hand painted wares, the unfamiliar should remain leery. These distinctions result from the use of chromium oxide as a constituent element of pigments beginning sometime around 1820. One must bear in mind that the particular colouring oxides used are only one of several factors which can have great effect on the final appearance of any ceramic product.

Many factors can affect the final colouration of the ware such as: the specific proportion of each of the elements used in both the underglaze pigment and the glaze itself; the constituent elements of, and colour of the vessel body; and the internal conditions of the kiln during the firing process (the purity of the atmosphere and the temperature being chief

among these). With respect to the use of chromium oxide in particular, the specific ingredients of a glaze recipe and variations in the temperature used in firing will yield dramatically different results. Chromium oxide will produce the colours of red, pink, yellow, brown, green and blue-green (Rhodes 1983: 209). Each of these colours can also be produced using other oxides which have a longer history of use in ceramic production. The essential difference is in the specific hues which chromium oxide produces in each of these colours which cannot be precisely duplicated by other means.

Slip Decorated Refined White Earthenware

This type of ceramic is decorated by applying slip in patterns to the exterior surface of the vessels.

Sponge Decorated Refined White Earthenware

This decorative style is produced by applying pigment to the surface of vessels using sponges. This type of decoration enjoyed tremendous popularity during the middle of the 19th Century. Blue was the first colour used for this purpose and was most prevalent during the 1840s. Sponged wares were shipped to North America in quantity as cheap decorative kitchen and toiletry articles by mainly Scottish potteries until about 1890 (Collard 1984: 144-145).

Transfer Printed Refined White Earthenware

Transfer printing was a method for transferring pictures to the surface of ceramic vessels which was developed during the late 18th Century. The use of colours other than cobalt blue for transfer printing was not attempted on any large scale until after 1828. The reason for this was that cobalt blue oxide was the only colouring agent which remained stable during the firing when used in conjunction with the transfer printing process. In 1828 a process was patented which allowed for the use of other colours. Immediately after this development colours such as red, brown, green, black and light blue were used on a popular level. Coloured transfers were popular in England by 1830 and had achieved similar appeal in North America by the early 1830s (Collard 1984: 117-118).

Ironstone

Ironstone is partially vitrified white earthenware. Plain ironstone was first produced in the 1840s and featured no decorative elements apart from ribs, scrolls, or panels which were an intrinsic part of the vessel design. Various designs in relief moulded decoration were patterned from 1848 onward. One pattern, known generally as the "wheat" Pattern has remained in production in various styles from 1848 up to the present day (Sussman 1985: 7). Ironstone is first mentioned on Ontario store records in 1847 (Kenyon 1988: 25). This ware gained popularity throughout the second half of the nineteenth century until by the 1880s it far outsold other ceramic types (Kenyon 1988: 20).

Ironstone was manufactured specifically for the North American market. In general, those potteries which produced this ceramic did so to the exclusion of all others (Sussman 1985: 8). During its early history, throughout the 1850s and early 1860s, ironstone was evidently as expensive as the costly transfer printed wares (Sussman 1985: 9). This ware was being advertised in London (Ontario) newspapers by the early 1860s and by the 1870s was one of the most popular ceramics available on the market (Kenyon n.d.: 11). By 1897 it was the cheapest ceramic sold by the T. Eaton Company. Prices charged for either plain or relief decorated ironstone were the same (Sussman 1985: 9).

Plain Ironstone

These pieces are not precisely datable and were most likely produced some time after 1840. Ironstone and a number of related vitrified and semi-vitrified wares were produced in great quantities during the second half of the 19th Century and into the 20th Century. These ceramics were a continuation of the development techniques and styles employed in the production of other earlier contemporary wares.

Relief Moulded Ironstone

The most common decorative technique identified with ironstone is relief moulding. Raised designs on the vessels were incorporated into the moulding of the objects themselves. Many of the early patterns produced in this medium persist to the present day. Many ceramics manufactured prior to the introduction of ironstone incorporated the use of embossed designs, but this form of decoration had never been so closely identified with a particular ceramic as it became with ironstone.

Slip Decorated Ironstone

This type of ceramic is decorated by applying slip in patterns to the exterior surface of the vessels.

Sponge Decorated Ironstone

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Transfer Printed Ironstone

Transfer printing was a method for transferring pictures to the surface of ceramic vessels which was developed during the late 18th Century. The use of colours other than cobalt blue for transfer printing was not attempted on any large scale until after 1828. The reason for this was that cobalt blue oxide was the only colouring agent which remained stable

during the firing when used in conjunction with the transfer printing process. In 1828 a process was patented which allowed for the use of other colours. Immediately after this development colours such as red, brown, green, black and light blue were used on a popular level. Coloured transfers were popular in England by 1830 and had achieved similar appeal in North America by the early 1830s (Collard 1984: 117-118). The decorative technique of transfer printing on ironstone has no affect on the general date range of this type of ware as it was applied to ironstone throughout the history of the production of this ceramic type.

Soft Paste Porcelain

Porcelain was first produced in Europe at Meissen by the firm "Royal Saxon Porcelain Manufacture" in 1710, although it had been developed by Johann Friedrich Bottger two years previously in 1708 (Savage 1954:125). This development reflects the high regard Europeans had held for porcelain imported from China and Japan. Loved for their beauty and durability, European ceramic producers lost considerable revenue to this import and were determined to discover a means of duplicating the ware. In England the discovery of a formula for porcelain production was not achieved until probably 1743 when the "Chelsea" works went into production. A patent for soft paste porcelain was made the following year in the joint names of Edward Heylyn and Thomas Frye (Savage 1954: 210). Throughout the early period of European production these wares tended to be heavily ornamented with thick overglaze polychrome enamels and as processes were refined the decorative techniques of underglaze painting and transfer patterns were used extensively. These decoration techniques predominated well into the 19th Century. It was not until the late 19th Century, and particularly, the 20th Century that porcelain became accessible as a standard household ware. By this time its decorative characteristics were substantially debased, with plain porcelain becoming increasingly common.

Soft paste porcelain is the lowest grade of this ware, and is different from the more costly hard paste porcelain in a number of ways. First, soft paste porcelain generally exhibits a greyish cast, whereas hard paste porcelain or true porcelain is white. When broken soft paste porcelain has a granular paste in appearance and a glassy glaze which is visibly distinct from the body. Hard paste is entirely glassy in cross section and it is very difficult to assess where the body ends and the glaze begins. High firing in this case ensures a more complete fusion of body and glaze which accounts for the difference in appearance of these two wares.

Plain Soft Paste Porcelain

Lacking any other diagnostic datable attributes, plain sherds of this ware cannot be more precisely dated beyond the general date range of this type of ceramic.

Semi-Porcelains:

A total of 36 semi-porcelain ceramic fragments was recovered during the assessment. Semi-porcelain was known outside of Canada as a hard-paste porcelain produced in England and continental Europe during the late nineteenth and twentieth centuries. The clay is fired to a hard-paste consistency so that it has a fine-grained, dense, and hard body. It is extremely

white in colour and the clear glaze has a high firing point which creates a glassy appearance. Semi-porcelain can be produced in moulded forms or have sprig moulding attached, as well as have transfer print and hand-painted motifs. In the twentieth century, semi-porcelain was exclusively decorated with overglaze decalcomania patterns and liquid gold embellishment (DAACS 2013).

DAACS (2013). Digital Archaeological Archive of Comparative Slavery Cataloging Manual: Ceramics. October 2003, updated October 2013.

Stoneware

Stoneware is a class of ceramic which belongs under the larger heading of vitrified wares. Stoneware is manufactured from different clays that that used to make earthenware. This is because the objects in this medium are fired at much higher temperatures such that the clay is brought nearly to its melting point thereby causing the body to fuse together. It renders the body of the finished product much harder and therefore more durable. It has the added effect of rendering the paste of the fired ware wholly or partially water impermeable. Stoneware has been used to produce a wide variety of goods from the most elaborate and expensive to the most robust and utilitarian of the potter's craft.

Salt Glazed Stoneware

Salt glazed stoneware was first made in England during the latter years of the 16th Century. This particular variety of stoneware is relatively cheap and easy to produce as it requires only one firing to harden the vessel and to apply the glaze. The name "salt glaze" derives from the process by which this product is manufactured. At the appropriate time during the firing of the vessels, salt is shoveled into the kiln. The heat of the kiln causes the salt to separate into its constituent elements of sodium and chloride. The chloride gas escapes through the vent holes of the kiln and the sodium bonds with the silica present in the clay of the vessels to form a glass over the surface of the vessel. The manufacture of utilitarian wares of this type has been popular from the time of its development until well into the 20th Century. Salt glazed vessels rose to prominence as larger more efficient potteries were established in North America which could produce these high firing durable products at low cost. The industrial production of utilitarian stoneware goods displaced the localized red earthenware industry in the closing decades of the 19th Century.

Bristol Glazed Stoneware

Invented by William Powell of Bristol, Bristol glaze stoneware was manufactured from circa 1835 to the mid-20th century. Initially used as an alternative to salt and lead glazes to produce a smooth, white surface on stoneware pastes, Bristol glaze became popular in North America in the 20th century (Greer 1981:265). Bristol Glaze is a feldspathic glaze-slip using zinc oxide, that requires only a single firing. It is sometimes called "double glazed ware" because the two-toned effect required dipping each vessel in the glaze two times (Noël Hume 2001:324).

Yellow Ware

Yellow ware was generally used for kitchen crockery and utility bowls. Yellow ware which is decorated with coloured horizontal bands is often referred to as "banded ware". This is the most readily recognizable of the yellowware products which became popular after 1840. Undecorated plain yellow ware is termed "common yellow" and dates from about 1830 onward. Yellow ware did not pass out of common usage in Canada until the 1930s (Lueger 1981: 141).

Coarse Red Earthenware

Coarse red earthenware refers to a class of ceramic which was used largely for general purpose utilitarian kitchen and household wares. It is very difficult to date with precision as this form of vessel manufacture was pursued in the main by small cottage industries supplying what was normally a local market. As a result, they appear in highly variant forms based upon the clays, glazes, and techniques of each potter. They are common on historic sites from the beginning of settlement in North America until 1900. Two of the earliest potteries to be established in Ontario both began production in 1849. Many other potteries were soon established which provided domestic and utilitarian wares to primarily local consumers.

Coarse Yellow Earthenware

Coarse yellow earthenware (CYE) refers to coarse earthenware fabricated and decorated in the same way, but the mineral composition of the clay produced a yellow paste rather than a red one.

Slip Lined Coarse Red Earthenware

This type of ceramic is decorated by applying slip in patterns to the exterior surface of the vessels.

Clay Pipes/White Ball Clay

White clay pipes were being mass-produced in Scotland, England, Canada, Germany and France by the 19th century. These pipes stems were typically marked along the stem with the maker and city of manufacture. These marks do not provide a specific date but provide the manufacturing date ranges of production (Walker 1970). As white clay pipes have a long use history they are very difficult to date with precision and are typically not used for dating a site.

Bottle Glass

Machine Made Bottle Glass

In the late 19th Century a trend started toward the manufacture of bottles with semi-automatic and fully automatic machines. Machine made bottles are hollowware containers

shaped using air pressure supplied by a machine, both automatic and semi-automatic machines produce bottle with similar characteristics. The first workable semi-automatic machines were patented in 1881 in the United States and in 1886 in England, in the next few decades machine made containers become increasingly popular as they are cheaper to produce with continually refined techniques; by the early 20th Century hand blown bottle are becoming uncommon.

Undiagnostic Bottle Glass

These pieces are likely from two-piece moulded vessels or from vessels produced using two-or-more vertical body moulds with separate bases. However these pieces were too small or did not have any diagnostic traits needed to identify the technology used in there manufacture.

Contact Moulded Bottle Glass

Contact moulding is a process by which full-sized objects or portions of objects are formed in a mould using air pressure from a mouth or machine. Hot glass is introduced into a mould, that may or may not have had a design, and expanded by air pressure until it fills the mould, at which point the object or partial object is removed. This technique was used during Roman times extensively for containers. It was reintroduced in the 17th Century but did not come into wide use in containers until the 18th Century (Jones and Sullivan 1989: 23-24).

Pressed Glass Tableware

During the press moulding manufacturing process hot glass is dripped into a mould which might consist of any number of pieces. The only limitation to the process is that the plunger must be able to enter and exit the mould without the necessity of it being opened. For decorated pieces, a design is embossed on the on the interior surface of the mould. The glass takes the form of the mould on its outer surface while the plunger shapes the inner surface. Once the object is removed from the mould it may be fire polished to restore the brilliance of the glass which has been lost due to contact with the mould (Jones and Sullivan 1989: 33)

Press moulding has been used on a small scale in England since the late 17th Century. At this time it was employed in the production of small solid objects such as imitation precious stones, glass seals, watch faces, etc. By the 1780s decanter stoppers and feet for vessels were being made using this technique. During the 1820s the technique was further developed in the United States and applied to the manufacture of complete vessels. By the early 1830s mass production of pressed table wares was underway in the New England states. Early pressed glass was manufactured primarily out of lead glass. William Leighton developed a lime glass in 1864 which resembled lead glass, but was one third cheaper. Non-lead glass becomes common on Canadian sites from about 1870 onward (Jones and Sullivan 1989: 34-35)

Nails

Cut Nails

Around 1800, machines for cutting nails began to be used. At first these were simple machines resembling a table with a guillotine-like knife at one end. Strips of metal which were as broad as the resulting nails were to be long were fed against the blade. The strip of metal was shifted from side-to-side following each cut. This produced the tapered shank of the nail. Nails made by this method remained square in cross section and still required heads to be fashioned by hand. Around 1820 improved machines were developed for the manufacture of cut nails which included mechanical headers (Rempel 1980: 369). In general terms, cut nails dominated the construction industry from roughly 1825 to 1890 when they were displaced by wire nails.

Forged Nails

Towards the end of the 18th Century all nails were made by the blacksmith out of nail stock. Nail stock was typically produced by a special mill on location at the iron works. Wrought iron strips were fed into the mill which cut it into sections which were square in cross-section. The resulting nail stock was cut into the required length by the smith, then heated, tapered and headed. These nails were not displaced by cut nails until around 1825 in developed areas. In more remote areas forged nails remained in use quite longer. This was especially the case with larger spikes which were often required to meet very particular specifications and not required in quantity (Rempel 1980: 367). Blacksmiths continued to fill the void between accessibility to commercial products and the needs of their clients into the first three decades of the twentieth century. Forged nails most likely date to the first half of the 19th Century although it is possible that they were produced at a later date.

Bullets

In 1823 Captain Norton of the British Army introduced devised a bullet shaped like a cylinder with a hollow concave base and a pointed tip. This became the basis for the modern bullet and the mathematical term for the shape is a “right-truncated cylindro-ogival”. Twenty-five years later, the bullet was matched to a workable paper cartridge by Captain C. E. Minie of France and the “minny ball” was born. The earliest self-igniting metal cartridge followed soon after the union of these two pieces. In 1842 Dreyse’s needle gun was patented. The needle gun cartridge had a projecting pin from the base of the cartridge that was struck by the flat hammer of the firearm. This development included the innovation of the expansive gas cartridge. This important development allows a brass cartridge to expand under pressure once ignited. This at once releases the bullet and forms an air tight pressure seal in the breach of the weapon and results in higher pressure behind the fired cartridge leading to higher velocity and longer distance of travel. The drawbacks to this cartridge design were that they were easily damaged and ignited if mishandled or dropped and they tended to corrode around the protruding pin in storage or moist environments making them unserviceable. The solution to this problem took two forms: the rimfire cartridge and the centrefire cartridge. In a rim fire cartridge the fulminate for ignition of the main charge is in a narrow band around the crimped edge of the cartridge. This design works well but only for small caliber low velocity rounds. The modern .22 cartridge is an example of this method. The centrefire cartridge was developed during the 1850s. In this configuration a percussion

cap is seated in the centre of the base of the round. By 1870 this form of cartridge was used for nearly all high velocity rounds and after 1870 for nearly every caliber of small arms ammunition (Held 1959: 183-184).

Bakelite

Bakelite is an early form of brittle plastic made from formaldehyde and phenol, used chiefly for electrical equipment. It was developed in 1907 and patented in New York state in 1909 (American Chemical Society, 1993: 1).