



ORIGINAL REPORT

Stage 1 Archaeological Assessment

*VCNA Alternative Low Carbon Fuels Project, St Marys Cement Plant,
585 Water Street South, Part of Lot 22, Concession 17,
Former Geographic Township of Blanshard,
Now Town of St. Marys, Perth County, Ontario*

PIF No.: P468-0086-2021

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Executive Summary

The Executive Summary highlights key points from the report only, for complete information and findings as well as limitations, the reader should examine the complete report.

Golder Associates Ltd., a member of WSP (Golder) was contracted by St Marys Cement (SMC), a company of Votorantim Cimentos North America (VCNA) (the Client) to conduct a Stage 1 Archaeological Assessment for a 0.32 hectare (ha) area within the existing St Marys Cement (SMC) Plant in St. Marys, Ontario prior to the construction of a proposed new storage facility as part of the Alternative Low Carbon Fuels (ALCFs) project. The Study Area is located at 585 Water Street South, within part of Lot 22, Concession 17, former Geographic Township of Blanshard, now Town of St. Marys, Perth County, Ontario (Map 1 and Map 2). The SMC Plant in St. Marys was constructed in 1912. At the time of construction archaeological assessments were not required as part of the approval process as they currently are under the *Aggregate Resources Act* (ARA). As such, a Stage 1 Archaeological Assessment of the Study Area was requested by the Client as part of their due diligence process prior to construction.

The Study Area is characterized primarily by manicured lawn that slopes down to a gravel lane in its south end. It is surrounded by paved and gravel lanes that are situated east and south of existing plant buildings.

Based on the criteria identified by the *Ministry of Heritage, Sport, Tourism and Culture Industries* (MHSTCI) for assessing archaeological potential and compared to the historical and archaeological context of the Study Area, the Study Area was initially determined to have archaeological potential for pre- and post-contact Indigenous sites as well as historical Euro-Canadian sites based on the original soils in the area, the proximity of an unnamed tributary of the North Thames River within 200 m, and the documented historical settlement of Blanshard Township in the mid-19th century. However, further background research and a property inspection completed on December 17, 2021 revealed that the entire Study Area has been subject to extensive below-grade land disturbance associated with previous quarrying during the 20th century. As a result, it was concluded that any archaeological potential that may have existed within the Study Area prior to the construction of the SMC plant in 1912 has since been removed.

Given the combined results of the background study and property inspection, it is concluded that due to complete and intensive previous disturbances, there is low to no potential for archaeological resources within the limits of the Study Area and as such, no further archaeological work is recommended.

The MHSTCI is requested to review and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.

Study Limitations

Golder has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

This report has been prepared for the specific site, design, objective, developments, and purpose described to Golder by Votorantim Cimentos, St Marys Cement (the Client). The factual data, interpretations, and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

The information, recommendations, and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without Golder's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the Client, Golder may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by other is prohibited and is without responsibility to Golder. The report, all plans, data, drawing and other documents as well as electronic media prepared by Golder are considered its professional work product and shall remain the copyright property of Golder, who authorizes only the Client and Approved User to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report or any portion thereof to any other part without the express written permission of Golder. The Client acknowledges that electronic media is susceptible to unauthorized modification, deterioration, and incompatibility and therefore the Client cannot rely upon the electronic media versions of Golder's report of other work products.

Unless otherwise stated, the suggestions, recommendations, and opinions given in this report are intended only for the guidance of the Client in the design of the specific project.

Special risks occur whenever archaeological investigation are applied to identify subsurface conditions and even a comprehensive investigation, sampling, and testing program may fail to detect all or certain archaeological resources. The sampling strategies incorporated in this study, if any, comply with those identified in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists*.

Acknowledgments

We respectfully acknowledge that the Study Area is located in the traditional territory of the Anishnabek, Haudenosaunee (Iroquois), Ojibway/Chippewa peoples. This territory is covered by the Upper Canada Treaties.

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1.0 PROJECT CONTEXT

1.1 Development Context

Golder Associates Ltd., a member of WSP (Golder) was contracted by St Marys Cement (SMC), a company of Votorantim Cimentos North America (VCNA) (the Client) to conduct a Stage 1 Archaeological Assessment for a 0.32 hectare (ha) area within the existing St Marys Cement (SMC) Plant in St. Marys, Ontario prior to the construction of a proposed new storage facility as part of the Alternative Low Carbon Fuels (ALCFs) project. The Study Area is located at 585 Water Street South, within part of Lot 22, Concession 17, former Geographic Township of Blanshard, now Town of St. Marys, Perth County, Ontario (Map 1 and Map 2). The SMC plant in St. Marys was constructed in 1912. At the time of construction archaeological assessments were not required as part of the approval process as they currently are under the *Aggregate Resources Act* (ARA). As such, a Stage 1 Archaeological Assessment of the Study Area was requested by SMC as part of their due diligence process prior to construction.

The Study Area is characterized primarily by manicured lawn that slopes down to a gravel lane in its south end. It is surrounded by paved and gravel lanes that are situated east and south of existing plant buildings.

The Stage 1 Archaeological Assessment was conducted under the professional archaeological consultant license P468 issued to Rhiannon Fisher of Golder (P468-0086-2021). Permission to access the Study Area and conduct archaeological activities was granted by Kara Terpstra (SMC) and Ruben Plaza (VCNA).

1.2 Objectives

The objectives of a Stage 1 Archaeological Assessment, as outlined by the 2011 *Standards and Guidelines for Consultant Archaeologists* published by the *Ministry of Heritage, Sport, Tourism and Culture Industries* (MHSTCI) (2011), are as follows:

- To provide information about the Study Area's geography, history, previous archaeological fieldwork and current land condition.
- To evaluate in detail the Study Area's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property.
- To recommend appropriate strategies for Stage 2 archaeological survey, if required.

To meet these objectives, on December 17, 2021, Golder archaeologist, Rebecca Parry conducted:

- A property inspection of the Study Area to gain firsthand knowledge of its geography, topography and current condition and to evaluate and map archaeological potential.

1.3 Historical Context

The general cultural history of southern Ontario based on Ellis and Ferris (1990), spanning the entire pre-contact period is summarised in Table 1.

Table 1: Overview of cultural chronology of southern Ontario.

Period		Time Range (circa)	Characteristics
Paleo	Early	9000 - 8400 BC	Gainey, Barnes, and Crowfield traditions; small bands; mobile hunters and gatherers; utilization of seasonal resources and large territories; fluted projectiles
	Late	8400 - 8000 BC	Holcombe, Hi-Lo, and Lanceolate biface traditions; continuing mobility; campsite/way-station sites; smaller territories are utilized; non-fluted projectiles
Archaic	Early	8000 - 6000 BC	Side-notched, Corner-notched, and Bifurcate Base traditions; growing diversity of stone tool types; heavy woodworking tools appear (e.g., ground stone axes and chisels)
	Middle	6000 - 2500 BC	Stemmed (e.g., Kirk, Stanly/Neville), Brewerton side- and corner-notched traditions; reliance on local resources; populations increasing; more ritual activities; fully ground and polished tools; net-sinkers common; earliest copper tools
	Late	2000 - 950 BC	Narrow Point, Broad Point, and Small Point traditions; less mobility; use of fish-weirs; more formal cemeteries appear; stone pipes emerge; long-distance trade (marine shells and galena)
Woodland	Early	950 - 400 BC	Meadowood tradition; cord-roughened ceramics emerge; Meadowood cache blades and side-notched points; bands of up to 35 people
	Middle	400 BC - AD 500	Saugeen tradition; stamped ceramics appear; Saugeen projectile points; cobble spall scrapers; seasonal settlements and resource utilization; post holes, hearths, middens, cemeteries, and rectangular structures identified
	Transitional	AD 550 - 900	Princess Point tradition; cord roughening, impressed lines and punctate designs on pottery; adoption of maize horticulture at the western end of Lake Ontario; oval houses and 'incipient' longhouses; first palisades; villages with 75 people
	early Late	AD 900 - 1300	Early - Glen Meyer tradition; settled village-life based on agriculture; small villages (0.4 ha) with 75–200 people and 4–5 longhouses; semi-permanent settlements
	middle Late	AD 1300 - 1400	Middle - Uren and Middleport traditions; classic longhouses emerge; larger villages (1.2 ha) with up to 600 people; more permanent settlements (30 years)
	late Late	AD 1400 - 1600	Late - Larger villages (1.7 ha); Examples up to 5 ha with 2,500 people; extensive croplands; also, hamlets, cabins, camps and cemeteries; potential tribal units; fur trade begins ca. 1580; European trade goods appear

1.3.1 Paleo Period

The first human occupation of southwestern Ontario, known as the Paleo Period, begins just after the end of the Wisconsin Glacial Period. During this time there was a complex series of ice retreats and advances that played a large role in shaping the local topography. Southwestern Ontario was finally ice free by about 12,500 years ago, but the first evidence of human settlement dates to about 11,000 years ago when this area was inhabited by Indigenous groups that had been living south of the Great Lakes.

Our current understanding of Early Paleo settlement patterns suggests that small bands consisting of up to 25 to 35 individuals followed a pattern of seasonal mobility extending over large territories (Ellis and Deller 1990:54). Sites from this time are exceedingly rare, in part because population densities are thought to have been very low, with all southwestern Ontario being occupied by perhaps only 100 to 200 people (Ellis and Deller 1990:54).

Many Early Paleo sites are located in elevated locations on well-drained loamy soils, and many have been found on former beach ridges associated with post-glacial Lake Algonquin that had previously occupied the Lake Huron/Georgian Bay basin. Given their placement in elevated locations, which were likely conducive to the interception of migratory mammals such as caribou, it has been suggested that these sites may represent communal hunting camps. Although most Early Paleo sites are relatively small, there are a few large sites, such as one located close to Parkhill, Ontario, which covered as much as 6 ha (Ellis and Deller 1990:51). However, it appears that these larger sites were formed when the same general locations were occupied for short periods of time over the course of many years.

There are also smaller Early Paleo camps scattered throughout the interior of southwestern Ontario, usually situated adjacent to wetlands.

The Late Paleo Period (8400 - 8000 BC) has been less well researched than the Early Paleo, and as a result it is poorly understood. By this time, the environment of southwestern Ontario was coming to be dominated by closed coniferous forests with some minor deciduous elements. It seems that many of the large game species that had been hunted in the early part of the Paleo Period had either moved further north or became extinct.

During the Late Paleo Period people continued to cover large territories as they moved about in response to seasonal resource fluctuations. On a province-wide basis Late Paleo projectile points are far more common than Early Paleo materials, suggesting a relative increase in population.

The end of the Paleo Period was heralded by numerous technological and cultural innovations that appeared throughout the Archaic Period. These innovations may be best explained in relation to the dynamic nature of the post-glacial environment and region-wide population increases.

1.3.2 Archaic Period

During the Early Archaic Period (8000 - 6000 BC), the jack and red pine forests that characterized the Late Paleo environment were replaced by forests dominated by white pine with some associated deciduous trees (Ellis, Kenyon and Spence 1990:68-69). Notable technological changes during this period include the appearance of side- and corner-notched projectile points not found during the previous Paleo times, and the introduction of ground stone tools such as celts and axes, which suggest woodworking was increasing in importance. In addition to the introduction of new tools, there may have been some reduction in the degree of seasonal movement of groups, although it is still suspected that population densities were quite low, and band territories large.

During the Middle Archaic Period (6000 - 2500 BC) the trend towards more diverse toolkits continued, as the presence of net-sinkers and fish weirs suggest that fishing was becoming an important aspect of the subsistence economy. It was also at this time that "bannerstones" were first manufactured. Bannerstones are carefully crafted ground stone devices that may have served as a counterbalance for "atlatls" or spear-throwers.

Another characteristic of the Middle Archaic is an increased reliance on local, often poor-quality chert resources for the manufacturing of projectile points. It seems that during earlier periods, when groups occupied large territories, it was possible for them to visit a primary outcrop of high-quality chert at least once during their seasonal round. However, during the Middle Archaic, groups inhabited smaller territories that often did not encompass a source of high-quality raw material. In these instances, it appears that lower quality materials which had been deposited by the glaciers in the local till and river gravels were utilized more regularly.

The apparent reduction in territory size may be linked to gradual region-wide population growth which led to the infilling of the landscape and a reorganization of subsistence practices as more people became more reliant on resources from smaller areas. It may also have been the impetus for the development of long-distance trading as shown by the increased presence of exotic materials and items during the later part of the Middle Archaic Period. For example, tools manufactured from natural sources of copper found in areas northwest of Lake Superior were being widely traded across the northeast (Ellis, Kenyon and Spence 1990:66).

During the Late Archaic (2500 - 950 BC) the trend towards decreased territory size and a broadening subsistence base continued. Late Archaic sites are far more numerous than either Early or Middle Archaic sites, and it seems that the local population had expanded. It is during the Late Archaic that the more formal cemeteries appear. The appearance of cemeteries during the Late Archaic has been interpreted as a response to increased population densities and competition between local groups for access to resources. It is argued that cemeteries would have provided strong symbolic claims over a local territory and its resources. These cemeteries are often located on heights of well-drained sandy/gravel soils adjacent to major watercourses such as the Thames River.

This suggestion of increased territoriality is also consistent with the regionalized variation present in Late Archaic projectile point styles. It was during the Late Archaic that distinct local styles of projectile points appear. Also, during the Late Archaic the trade networks which had been established during the Middle Archaic continued to flourish. Native copper from northern Ontario and marine shell artifacts from as far away as the Mid-Atlantic coast are frequently encountered as grave goods. Other artifacts such as polished stone pipes and banded slate gorgets also appear on Late Archaic sites. One of the more unusual and interesting of the Late Archaic artifacts is the "birdstone". Birdstones are small, bird-like effigies usually manufactured from green banded slate. While the function of these artifacts is presently poorly understood, they are especially common in the London area.

1.3.3 Woodland Period

The Early Woodland Period (950 - 400 BC) is distinguished from the Late Archaic Period primarily by the addition of ceramic technology. While the introduction of pottery provides a useful demarcation point for archaeologists, it may have made less difference in the lives of the Early Woodland peoples. The first pots were thick walled and friable. It has been suggested that they were used in the processing of nut oils by boiling crushed nut fragments in water and skimming off the oil (Spence, Pihl and Murphy 1990:137). These vessels were not easily portable, and individual pots must not have sustained a long use life. There have also been numerous Early Woodland sites located at which no pottery was found, suggesting that these early vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

Other than the introduction of ceramic technology, the life ways of Early Woodland peoples show a great deal of continuity with the preceding Late Archaic Period. For instance, birdstones continue to be manufactured, although the Early Woodland varieties have "pop-eyes" which protrude from the sides of their heads. Likewise, the thin, well-made projectile points which were produced during the terminal part of the Archaic Period continue in use. However, the Early Woodland variants were side-notched rather than corner-notched, giving them a slightly altered and distinctive appearance.

The trade networks which were established in the Middle and Late Archaic also continued to function, although there does not appear to have been as much traffic in marine shell during the Early Woodland Period. During the last 200 years of the Early Woodland Period, projectile points manufactured from high quality raw materials from the American Midwest begin to appear on sites west of the London area.

In terms of settlement and subsistence patterns, the Middle Woodland (400 BC - AD 900) provides a major point of departure from the Archaic and Early Woodland Periods. While Middle Woodland peoples still relied on hunting and gathering to meet their subsistence requirements, fish became an even more important part of their diet. This is especially true in the nearby London area, where some Middle Woodland sites have produced literally thousands of bones from spring spawning species such as walleye and sucker. In addition, Middle Woodland peoples relied much more extensively on ceramic technology. Middle Woodland vessels are often garishly decorated with hastily impressed designs covering the entire exterior surface and upper portion of the vessel interior. Consequently, even very small fragments of Middle Woodland vessels are easily identifiable.

It is also at the beginning of the Middle Woodland Period that rich, densely occupied sites appear on the valley floor of major rivers. While the valley floors of floodplains had been utilized by earlier peoples, Middle Woodland sites are significantly different in that the same location was repeatedly occupied over several hundred years. Because this is the case, rich deposits of artifacts often accumulated.

Unlike earlier seasonally utilized locations, these Middle Woodland sites appear to have functioned as base camps, occupied off and on over the course of the year. There are also numerous small upland Middle Woodland sites, many of which can be interpreted as special purpose camps from which localized resource patches were exploited. This shift towards a greater degree of sedentism continues the trend witnessed from at least Middle Archaic times and provides a prelude to the developments that follow during the Late Woodland Period.

The Late Woodland Period began with a shift in settlement and subsistence patterns involving an increasing reliance on corn horticulture (Fox 1990:185; Smith 1990; Williamson 1990:312). Corn may have been introduced into southwestern Ontario from the American Midwest as early as AD 600 or a few centuries before. Corn did not become a dietary staple, however, until at least three to four hundred years later, and then the cultivation of corn gradually spread into south-central and southeastern Ontario.

During the Transitional Woodland, particularly within the Princess Point Complex (circa AD 500-1050), a number of archaeological material changes have been noted: the appearance of triangular projectile point styles, first seen during this period begin with the Levanna form; cord-wrapped stick decorated ceramics using the paddle and anvil forming technique replace the mainly coil-manufactured and dentate stamped and pseudo-scallop shell impressed ceramics; and if not appearance, increasing use of maize (*Zea mays*) as a food source (e.g., Bursey 1995; Crawford et al. 1997; Ferris and Spence 1995:103; Martin 2004 [2007]; Ritchie 1971:31-32; Spence et al. 1990; Williamson 1990:299). Aside from projectile points, Princess Point Complex toolkits are predominantly characterized by informal or expedient flake tools and ground stone and bone artifacts are rare (Ferris and Spence 1995:103; Shen 2000).

The Late Woodland Period is widely accepted as the beginning of agricultural life ways in southern Ontario. Researchers have suggested that a warming trend during this time may have encouraged the spread of maize into this part of the province, providing a greater number of frost-free days (Stothers and Yarnell 1977). Further, shifts in the location of sites have also been identified with an emphasis on riverine, lacustrine, and wetland occupations set against a more diffuse use of the landscape during the Middle Woodland (Dieterman 2001). These locations may have provided nutrient-rich soil for agriculture, while growing sedentism is seen as a departure from Middle Woodland hunting and gathering and may reflect growing investment in care of garden plots of maize (Smith 1997:15).

The first agricultural villages in southwestern Ontario date to the 10th century AD. Unlike the riverine base camps of the Middle Woodland Period, these sites are located in the uplands, on well-drained sandy soils. Categorized as “early Late Woodland” (AD 900 - 1300), many archaeologists believe that it is possible to trace a direct line from the Iroquoian groups which inhabited southwestern Ontario at the time of first European contact, to these early villagers.

Village sites dating between AD 900 and 1300, share many attributes with the historically reported Iroquoian sites, including the presence of longhouses and sometimes palisades. However, these early longhouses were actually not all that large, averaging only 12.4 m in length (Dodd et al 1990:349; Williamson 1990:304-305). It is also quite common to find the outlines of overlapping house structures, suggesting that these villages were occupied long enough to necessitate re-building. The Jesuits reported that the Huron moved their villages once every 10 - 15 years, when the nearby soils had been depleted by farming and conveniently collected firewood grew scarce (Pearce 2010). It seems likely that early Late Woodland peoples occupied their villages for considerably longer, as they relied less heavily on corn than did later groups, and their villages were much smaller, placing less demand on nearby resources.

Judging by the presence of carbonized corn kernels and cob fragments recovered from sub-floor storage pits, agriculture was becoming a vital part of the early Late Woodland economy. However, it had not reached the level of importance it would in the later (middle to late) Late Woodland Periods. There is ample evidence to suggest that more traditional resources continued to be exploited and comprised a large part of the subsistence economy. Seasonally occupied special purpose sites relating to deer procurement, nut collection, and fishing activities, have all been identified. While beans are known to have been cultivated later in the Late Woodland Period, they have yet to be identified on early Late Woodland sites.

The middle Late Woodland (AD 1300 - 1400) witnessed several interesting developments in terms of settlement patterns and artifact assemblages. Changes in ceramic styles have been carefully documented, allowing the placement of sites in the first or second half of this 100-year period. Moreover, villages, which averaged approximately 0.6 ha in extent during the early Late Woodland, now consistently range between one and two hectares.

House lengths also change dramatically, more than doubling to an average of 30 m, while houses of up to 45 m have been documented. This radical increase in longhouse length has been variously interpreted. The simplest possibility is that increased house length is the result of a gradual, natural increase in population (Dodd et al 1990:323, 350, 357; Smith 1990). However, this does not account for the sudden shift in longhouse lengths around AD 1300. Other possible explanations involve changes in economic and socio-political organization (Dodd et al 1990:357). One suggestion is that during the middle Late Woodland small villages were amalgamating to form larger communities for mutual defense (Dodd et al 1990:357). If this was the case, the more successful military leaders may have been able to absorb some of the smaller family groups into their households, thereby requiring longer structures. This hypothesis draws support from the fact that some sites had up to seven rows of palisades, indicating at least an occasional need for strong defensive measures. There are, however, other middle Late Woodland villages which had no palisades present (Dodd et al 1990). More research is required to evaluate these competing interpretations.

The lay-out of houses within villages also changes dramatically by AD 1300. During the early Late Woodland, villages were haphazardly planned at best, with houses oriented in various directions. During the middle Late Woodland villages are organized into two or more discrete groups of tightly spaced, parallel aligned, longhouses. It has been suggested that this change in village organization may indicate the initial development of the clans which were a characteristic of the historically known Iroquoian peoples (Dodd et al 1990:358).

Initially at least, the late Late Woodland (AD 1400-1650) continues many of the trends which have been documented for the preceding century. For instance, between AD 1400 and 1450, house lengths continued to grow, reaching an average length of 62 m. One longhouse excavated on a site southwest of Kitchener stretched an incredible 123 m (Lennox and Fitzgerald 1990:444-445). After AD 1450, house lengths begin to decrease, with houses dating between AD 1500-1580 averaging only 30 m in length.

Why house lengths decrease after AD 1450 is poorly understood, although it is believed that the even shorter houses witnessed on historical period sites can be at least partially attributed to the population reductions associated with the introduction of European diseases such as smallpox (Lennox and Fitzgerald 1990:405, 410).

Village size also continued to expand throughout the late Late Woodland, with many of the larger villages showing signs of periodic expansions. The Middle Late Woodland Period and the first century of the late Late Woodland Period was a time of village amalgamation. One large village situated just north of Toronto has been shown to have expanded on no fewer than five occasions. These large villages were often heavily defended with numerous rows of wooden palisades, suggesting that defence may have been one of the rationales for smaller groups banding together. Late Late Woodland village expansion has been clearly documented at several sites throughout southwestern and south-central Ontario (Anderson 2009).

During the late 1600s and early 1700s, the French explorers and missionaries reported a large population of Iroquoian peoples clustered around the western end of Lake Ontario. The area which was later to become Perth County was known to have been occupied by ancestors of two different Late Woodland groups who evolved to become the historically known Neutral and Huron. For this reason the Late Woodland groups which occupied parts of south-central Ontario prior to the arrival of the French are often identified as "Prehistoric Neutral" and "Prehistoric Huron" (Lennox and Fitzgerald 1990; Smith 1990:283).

1.3.4 Post-Contact Indigenous Period

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking peoples, such as the Huron and closely related Petun, by the New York State Iroquois and the subsequent return of Algonkian-speaking groups from northern Ontario at the end of the 17th century and beginning of the 18th century (Schmalz 1991).

The nature of Indigenous settlement size, population distribution, and material culture shifted as settlers began to colonize the land. Despite this shift, "written accounts of material life and livelihood, the correlation of historically recovered villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to Iroquoian systems of ideology and thought" (Ferris 2009:114). As a result, Indigenous peoples of southern Ontario have left behind archaeologically significant resources that show continuity with past peoples, even if this connection has not been recorded in historical Euro-Canadian documentation.

Portions of southwestern Ontario were also occupied by Algonkian-speaking groups both before and after European contact. Generally, the pre-contact Indigenous presence in much of southern Ontario reflects occupation by northern Iroquoian speakers. During and following the Iroquois Wars of the mid-17th century and the dispersal of the Iroquoian-speaking Huron-Petun and Neutral, a considerable reduction in the extent of

territory occupied by Algonkian speakers occurred in southern Ontario. Beginning about 1690, northern Algonkian speakers from northern Ontario began to move southwards and southern Iroquoian speakers began to push southern Algonkian-speakers further west (Ferris 2009; Schmalz 1991).

1.3.5 Historical Euro-Canadian Period

Following the Toronto Purchase of 1787, today's southern Ontario was within the old Province of Quebec and divided into four political districts: Lunenburg, Mechlenburg, Nassau, and Hesse. These became part of the Province of Upper Canada in 1791, and renamed the Eastern, Midland, Home, and Western Districts, respectively. The Study Area is within the former Hesse District, then later the Western District, which originally included all lands in southwestern Ontario west of an arbitrary line running north from Long Point on Lake Erie to Georgian Bay. Each district was further subdivided into counties and townships, with the Study Area falling within Perth County and the former Township of Blanshard, respectively.

The region around the Study Area first enters the Canadian historical record as part of Treaty Number 27½, which was:

... an agreement made at Amherstburg in the Western District of the Province of Upper Canada on the 26th of April, 1825, between James Givens, Esquire, Superintendent of Indian Affairs, on behalf of His Majesty King George the Fourth and the Chiefs and Principal Men of the part of the Chippewa Nation of Indians, inhabiting and claiming the tract of land... Wawanosh Township in the County of Huron was named after Way-way-nosh the principal Chief of the Band making this Treaty.

Morris 1943:26-27

Treaty Number 27½ was subsequently confirmed on July 10th, 1827 as Treaty Number 29 with only a minor change in the legal description of the boundaries of the land surrendered (Morris 1943:27). Treaty No. 29 reads as follows:

"...commencing in the division line between the Home District and the District of London at one of the most northerly angles of the District of Gore, being at a distance of fifty-miles (on a course north forty-five degrees west) from the outlet of Burlington Bay on Lake Ontario; then on a course about north eighty-four degrees west ... seventy miles, more or less, to Lake Huron; then southerly along the shore of Lake Huron, crossing the mouth of the said river, and following the several turning and windings of the said lake along the water's edge to the river St. Clair; thence southerly down the said river with the stream until it intersects the north-west angle of the Shawnese Township (now the Township of Sombra)...thence east along the northern boundary of the said township to the north-east angle thereof, nine hundred and twenty-one degrees thirty minutes east along the eastern boundary line of the said Township of London to the purchase line in 1796; thence along the said purchase line (being the northern boundary of Oxford and Dorchester North) on a course north sixty-eight degrees thirty minutes east until it intersects the purchase line in 1792, at the Upper Forks of the River La Tranche or Thames, near the south-west angle of the Township of Blandford; thence northerly and westerly up and along the eastern edge of the said river against the stream until it intersects the third line on a south course from the outlet of Burlington Bay of the said purchase in 1792; then north along the said purchase line twenty-four miles more or less, until it intersect the northern boundary line of the said purchase..."

(INAC 2016)

The first European settlers arrived in the Perth County area in 1828, and after surveying the area for farmland, the Canada Company began selling tracts of agricultural land to settlers in 1832 (Perth County 2017). The Canada Company was established by John Galt in 1824 as a 'land and colonization company' in Upper Canada. The Company purchased 1 million ha, called the Huron Tract in what is now southwest Ontario, from the government to be surveyed, divided, and sold to settlers arriving from Europe (Baskerville 2006). By 1827 the townships had been laid out by the Canada Company and were filling with settlers through the 1840s and 1850s (Perth County 2017).

Perth County was created as several districts prior to 1850 by Malcome Cameron, who proposed creating a new district from the already existing Wellington and Huron areas (Rayburn 1997:268). Public agitation in 1847 over road building being concentrated in its northern portion, led to the breakup of Huron District and creation of the County of Perth, centered on the City of Stratford (Johnson and Johnson 1967:38-39).

1.3.5.1 Blanshard Township

The Township of Blanshard was in the south portion of the County of Perth, adjacent to the Huron, Oxford, and Middlesex Counties. It was named for Richard Blanshard, a director of the Canada Company (Rayburn 1997:35). Blanshard Township was one of the last townships to be settled in Perth County; but once settlers began arriving in 1841, it developed quickly, reaching a peak population of almost 4,000 people by 1871 (Johnson 1899, Brown 1982:26). The Township was known to have excellent agricultural land and to contain large reserves of granular favourable for extraction. It is interesting to note that because of its granular reserves, Blanshard was the only township in Perth County to be designated under the *Pits and Quarries Control Act*, indicating that its extractive reserves were significant enough to be identified and regulated by the province (Brown 1982:26). In 1998, Blanshard Township was amalgamated with the Township of Downie to create the Township of Perth South.

1.3.5.2 Town of St. Marys

The Town of St. Marys was on Huron Tract lands acquired by the Canada Company in 1827. In 1841 the Canada Company sold 337 acres to James and Thomas Ingersoll, which would become the downtown core (County of Perth Illustrated Historic Atlas 1982:14). A condition of the sale was that the Ingersolls build and operate a grist mill and sawmill, which they did at the corner of Queen Street and Water Street, close to the Water Street bridge (Wilson and Pfaff 1995; Lee 2004). The community was once called 'Little Falls' then renamed 'St. Marys' in the 1840s but is nicknamed 'Stone Town' for the abundance of limestone in the area (Votorantim Cimentos 2022).

Originally a part of Blanshard Township, the town separated in 1855 by a special Act of Parliament and established its own government (Johnston 1903). The town's fortunes increased dramatically in 1859 when the Grand Trunk Railway (GTR) was completed as far as Sarnia and had a branch connecting St. Marys to London.

Just five years later in 1864, St. Marys was incorporated as a town, and the following year had withdrawn from Perth County. Restructuring of Perth County in 1998 included St. Marys within its boundaries, although the Town is still considered a separate entity (County of Perth Official Plan 2017:2-5).

1.3.5.3 Lot 22, Concession 17, Blanshard Township

The Study Area for the present project fell within the southwest corner of Lot 22, Concession 17, Township of Blanshard, Perth County, Ontario.

According to the *Historical Atlas of the County of Perth* (Beldon & Co. 1879), Lot 22, Concession 17 does not have an owner listed in 1879 (Map 3). No structures are depicted on Lot 22, but a tributary of the Thames River runs east-west through the lot and the railway cuts north-south through its eastern end. No development is depicted as having occurred within the Study Area, or the surrounding area, at this point in time. Although not labelled in Map 3, the layout of transportation routes depicted on 1879 map matches the modern road system, with the historical precursor to Water Street South (Perth Road 123) represented.

The St. Marys Cement Company opened their first plant in 1912, in St. Marys, Ontario. The cement plant and quarry encompass the western two thirds of Lot 22, Concession 17, as well as extending into the surrounding lots and concessions to the north, west, and south. By 1938 the plant's production capacity had tripled due to the post-war construction boom, allowing for quarry expansions and investments in new machinery to meet the demand. To aid in this increasing demand, a plant in Bowmanville, Ontario was opened in 1969 and a new stone quarry was opened locally off Thomas Street on the west side of the Thames River, which connected to the main plant by a giant conveyor system. In 1977, the construction of an entirely new dry-process plant completely modernized the cement plant into its present-day configuration. The new dry-process plant was built in the previous quarry area, near the original plant buildings. In 1997 the St. Marys Cement Company was sold to Blue Circle America Inc., and, by 2001, one of the largest cement producers in the world, Votorantim Group, purchased St. Marys Cement. Despite the change from a local to multi-national scale, these two companies continued to value and support community initiatives in the Town of St. Marys (St. Marys Museum 2012).

A topographical map produced in 1973 illustrates the original cement plant site, with the Study Area situated in the active quarry area (Map 4; Department of Energy, Mines and Resources 1973). An aerial photography from 1954 further illustrates the Study Area within the quarry site throughout the mid- to late 20th century (Map 4).

Aerial imagery dating to 2000 depicts the contemporary configuration of the cement plant since 1977, with associated structures such as the kiln, mill, and storage facilities immediately surrounding the Study Area (Map 5). In this imagery the Study Area is shown to be a gravel laydown area at this time.

1.4 Archaeological Context

1.4.1 Existing Conditions

The Study Area is located within the St Marys Cement Plant at 585 Water Street South, on part of Lot 22, Concession 17, former Geographic Township of Blanshard, now Town of St. Marys, Perth County, Ontario (Map 1 and Map 2). It measures approximately 0.32 ha and is characterized by primarily manicured lawn that slopes down to a gravel lane at the south end. The Study Area is immediately surrounded by the cement plant and affiliated structures and features, such as the kiln to the west and the mill and storage facility to the north.

1.4.2 The Natural Environment

The Study Area is situated within the Stratford Till Plain physiographic region (Map 6 and Map 7), which is a:

"...broad clay plain of 1,370 square miles, extending from London in the south to Blyth and Listowel in the north with a projection toward Arthur and Grand Valley. It is an area of ground moraine interrupted by several terminal moraines. The moraines are more closely spaced in the southwestern portion of the region; consequently, that part resembles the Mount Elgin Ridges... Throughout the area the till is fairly uniform, being a brown calcareous silty clay whether on the ridges or the more level ground moraine. It is a product of the Huron ice lobe. Some of the silt and clay is calcareous rock flour, probably a good deal of it coming from previously deposited varved clays of the Lake Huron Basin."

Chapman and Putnam 1984:133

The localized topography of the Study Area has been severely modified from previous quarrying but surrounding areas outside the quarry pit sit at approximately 310 to 320 m above sea level (asl). The bedrock deposits in the vicinity date to the Middle Devonian Period and consist of the Dundee Formations (Hewitt 1972).

The Study Area lies within the Mixed-wood Plains ecozone of Ontario (Ecological Framework of Canada 2014). Although largely altered by recent human activity, this ecozone once supported a wide variety of deciduous trees, such as various species of ash, birch, chestnut, hickory, oak, and walnut, as well as a variety of birds and small to large land mammals, such as raccoon, red fox, white tailed deer, and black bear.

The soils of the Study Area consist of Huron clay loam, which is well-drained and commonly found in the southern part of Perth County. Huron clay loam once supported healthy stands of hardwood forest, but most of it has been cleared for agriculture of common row crops (Map 8; Hoffman and Richards 1952). This type of soil would have been acceptable for pre-contact Indigenous agricultural practices.

The closest potable water source is an unnamed tributary of the North Thames River, which flows approximately 200 m south of the Study Area. The tributary connects to the North Thames River approximately 830 m to the west of the Study Area. The Study Area sits within the Plover Mills sub-watershed, which encompasses 11,934 ha and makes up 3% of the Upper Thames River Watershed (UTRCA 2017).

1.4.3 Previous Archaeological Research

For an inventory of archaeological resources to be compiled, the registered archaeological site records kept by the MHSTCI were consulted. In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database maintained by the MHSTCI. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres (km) east to west and approximately 18.5 km north to south. Each Borden block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The Study Area is located within Borden block AhHh.

A search of the Ontario Archaeological Sites Database (OASD) indicated that there are no registered archaeological sites located within a 1 km radius of the Study Area (MHSTCI 2021).

To the best of our knowledge, no archaeological assessments have been conducted within 50 m of the current Study Area. Though one archaeological assessment has been completed on lands immediately adjacent to the SMC Plant and is referenced for its relative proximity to the Study Area and the cement plant.

In 2015 and 2016, Archaeological Services Inc. (ASI) completed a Stage 1 Archaeological Assessment for a waste disposal project on lands immediately southwest of the operational quarry, within Lots 35 and 36, Abutting River Thames. Even though the on-site Study Area was found to have archaeological potential for pre-contact Indigenous and historical Euro-Canadian sites, the property inspection found that the entire area was subject to deep and extensive land disturbance. As such, the area was recommended for no further work (ASI 2016).

1.5 Assessing Archaeological Potential

Archaeological potential is established by determining whether any features or characteristics indicating potential are located on or in the vicinity of a Study Area. Features and characteristics that indicate a higher potential for archaeological resources are defined within Section 1.3.1 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011:17-18) and include:

- Previously identified archaeological sites.
- Water sources:
 - Primary water sources (e.g., lakes, rivers, streams, creeks).
 - Secondary water sources (e.g., intermittent streams and creeks; springs; marshes; swamps).

- Features indicating past water sources (e.g., glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels, shorelines of drained lakes or marshes, and cobble beaches).
- Accessible or inaccessible shoreline (e.g., high bluffs, swamps or marsh fields by the edge of a lake, sandbars stretching into marsh).
- Elevated topography (eskers, drumlins, large knolls, plateaux).
- Pockets of well drained sandy soil, especially near areas of heavy soil or rocky ground.
- Distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases.
- Resource areas including:
 - Food or medicinal plants.
 - Scarce raw minerals (e.g., quartz, copper, ochre or outcrops of chert).
 - Early Euro-Canadian industry (fur trade, logging, prospecting, mining).
- Areas of early Euro-Canadian settlement including:
 - Early military or pioneer settlement (e.g., pioneer homesteads, isolated cabins, farmstead complexes).
 - Early wharf or dock complexes, pioneer churches and early cemeteries.
- Early historical transportation routes (e.g., trails, passes, roads, railways, portage routes).
- Property listed on a municipal register or designated under the *Ontario Heritage Act* or that is a federal, provincial or municipal historic landmark or site.
- Property that local histories or informants have identified with possible archaeological sites, historical events, activities or occupations.

Many of the above features of archaeological potential have a buffer assigned to them, extending the zone of archaeological potential beyond the physical feature. The following buffers are commonly accepted by the MHSTCI and specifically indicated in Section 1.4 of the *Standards and Guidelines for Consultant Archaeologists* (MHSTCI 2011:20-21).

- 300 m buffer: previously identified archaeological site; water sources; areas of early Euro-Canadian settlement; or locations identified through local knowledge or informants.
- 100 m buffer: early historical transportation route.

In the event no buffer is inherently present, potential is restricted to the physical limits or the feature: elevated topography, pockets of well-drained sandy soil, distinctive land formations, resources areas, listed or designated properties and landmark properties.

1.5.1 Potential for Pre-Contact Indigenous Archaeological Resources

Potential for pre-contact Indigenous archaeological sites is established by determining the likelihood that archaeological resources may be present on a Study Area. Archaeological potential criteria commonly used by the MHSTCI (2011) were applied to determine areas of archaeological potential within the Study Area. These variables include: distance to previously identified archaeological sites, distance to various types of water sources, drainage, soil type, glacial geomorphology, and the general topographic variability of the area.

Distance to modern or ancient water sources is an important determinant of past human settlement patterns and may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils, or topographic variability, may also indicate archaeological potential.

In archaeological potential modelling, a distance to water criterion of 300 m is generally employed for water sources, including lakeshores, rivers, creeks, and swamps. An unnamed tributary is located 200 m south of the Study Area, which flows from the North Thames River, located approximately 830 m west of the Study Area (Map 8). These water sources would have provided potable water, as well as plant and food resources, which would have supported past human settlement of the area.

Soil texture can be an important determinant of past settlement, usually in combination with other factors such as topography. The Study Area is situated within the “Stratford Till Plain” physiographic region, an area that is comprised of a broad clay plain varying between ground and terminal moraines (Map 6 and Map 7). The soils of the Study Area consist predominantly of Huron Clay Loam, which is well-drained (Hoffman and Richards 1952) (Map 8). This type of soil would have been acceptable for pre-contact Indigenous agricultural practices.

Based on the criteria outlined above, the Study Area was determined to have archaeological potential for pre-contact Indigenous sites as described in detail below.

1.5.2 Potential for Euro-Canadian Archaeological Resources

The criteria used by the MHSTCI to determine potential for historical archaeological sites include the presence of: 1) particular, resource-specific features that would have attracted past subsistence or extractive uses; 2) areas of initial, non-Indigenous settlement; 3) early historical transportation routes; and 4) properties designated under the Ontario Heritage Act (Government of Ontario 2011).

By the 1840s, the Town of St. Marys had an operational grist mill and sawmill close to the Water Street bridge (Wilson and Pfaff 1995; Lee 2004), and the community was nicknamed ‘Stone Town’ for the abundance of limestone resources in the area (Votorantim Cimentos 2022). Originally a part of Blanshard Township, the town separated in 1855 by a special Act of Parliament and established its own government (Johnston 1903). The town’s fortunes increased dramatically in 1859 when the Grand Trunk Railway (GTR) was completed as far as Sarnia and had a branch connecting St. Marys to London. Just five years later in 1864, St. Marys was incorporated as a town (County of Perth Official Plan 2017:2-5).

Based on the criteria outlined above the Study Area was determined to have archaeological potential for historical Euro-Canadian sites, as it was located in an area of Blanshard Township with historical settlement dating to the mid-19th century.

1.6 Archaeological Integrity

As stated in Section 1.3.2 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), archaeological potential can be determined to be removed either entirely or in part when background research and property inspection confirm extensive and deep land alterations that have severely damaged the integrity of any archaeological resources that may be present. Types of disturbance that remove archaeological potential may include: quarrying; major landscaping involving grading below topsoil; building footprints; and sewage and infrastructure development.

As discussed in Section 1.3.5.3 above, the Study Area has been impacted by quarrying during the 20th century. The area was surveyed and documented accordingly to confirm the presence and extent of disturbance (see Section 2.1 below).

2.0 FIELD METHODS

The Stage 1 property inspection of the Study Area was conducted on December 17, 2021, under archaeological consulting license P468 issued to Rhiannon Fisher of Golder by the MHSTCI (P468-0086-2021). Rebecca Parry (P1013), delegated licensed archaeologist for Golder, assumed responsibility of undertaking the archaeological fieldwork at the Study Area as per Section 12 of the MHSTCI's 2013 *Terms and Conditions for Archaeological Licences*, issued in accordance with clause 48(4)(d) of the *Ontario Heritage Act* (Government of Ontario 1990b). The Study Area was subject to a physical property inspection and documented through notes and photographs in order to determine archaeological potential as defined above in Section 1.5

The weather during the inspection was 2°C and mostly sunny. There was no precipitation and at no time were field conditions found to be detrimental to the identification of archaeological potential.

Image 1 to Image 8 illustrate conditions encountered during the property inspection; Map 9 illustrates the location and direction of the photographs.

As seen through Image 1 to Image 8 the Study Area is characterized primarily by manicured lawn, which slopes down to a gravel lane at its south end. The manicured lawn appears to be artificially built up and levelled with gravel fill, as seen in the sloped area and gravel lane (Image 7 and Image 8). The Study Area is immediately surrounded by paved and gravel lanes, as well as structures and features affiliated with the cement plant.

3.0 RECORD OF FINDS

The Stage 1 assessment was conducted employing the methods described in Section 2.0. Map 9 illustrates the areas inspected, while Image 1 to Image 8 show the field conditions. Table 3 provides an inventory of the documentary record generated in the field.

Table 2: Inventory of Documentary Record

Document Type	Current Location of Document	Additional Comments
Field Notes	Golder London Office	2 pages in original field book and saved on Golder server
Maps Provided by Client	Golder Mississauga Office	1 map saved on Golder server
Digital Photographs	Golder London Office	18 digital images saved on Golder server

4.0 ANALYSIS AND CONCLUSIONS

Based on the criteria identified by the MHSTCI for assessing archaeological potential and compared to the historical and archaeological context of the Study Area, the Study Area was initially determined to have archaeological potential for pre- and post-contact Indigenous sites as well as historical Euro-Canadian sites based on the original soils in the area, the proximity of an unnamed tributary of the North Thames River within 200 m and the documented historical settlement of Blanshard Township in the mid-19th century. However, further background research and a property inspection completed on December 17, 2021 revealed that the entire Study Area has been subject to extensive below-grade land disturbance associated with previous quarrying during the 20th century. As a result, it was concluded that any archaeological potential that may have existed within the Study Area prior to the construction of the SMC plant in 1912 has since been removed.

5.0 RECOMMENDATIONS

Given the combined results of the background study and property inspection, it is concluded that due to complete and intensive previous disturbances, there is low to no potential for archaeological resources within the limits of the Study Area and as such, no further archaeological work is recommended.

The MHSTCI is requested to review and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

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 (Government of Ontario 1990). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area 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 regards to alterations to archaeological sites by the proposed development.

It is an offence under Section 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alterations 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* (Government of Ontario 1990).

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990).

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner (Government of Ontario 2002). It is recommended that the Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

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Williamson, Ronald F.

1990 The Early Iroquoian Period of Southern Ontario. In: *The Archaeology of Southern Ontario to A.D. 1650*. Occasional Publication of the London Chapter, Ontario Archaeological Society, Number 5: 291-320.

8.0 IMAGES



Image 1: Study Area conditions, manicured lawn and gravel area; facing south.

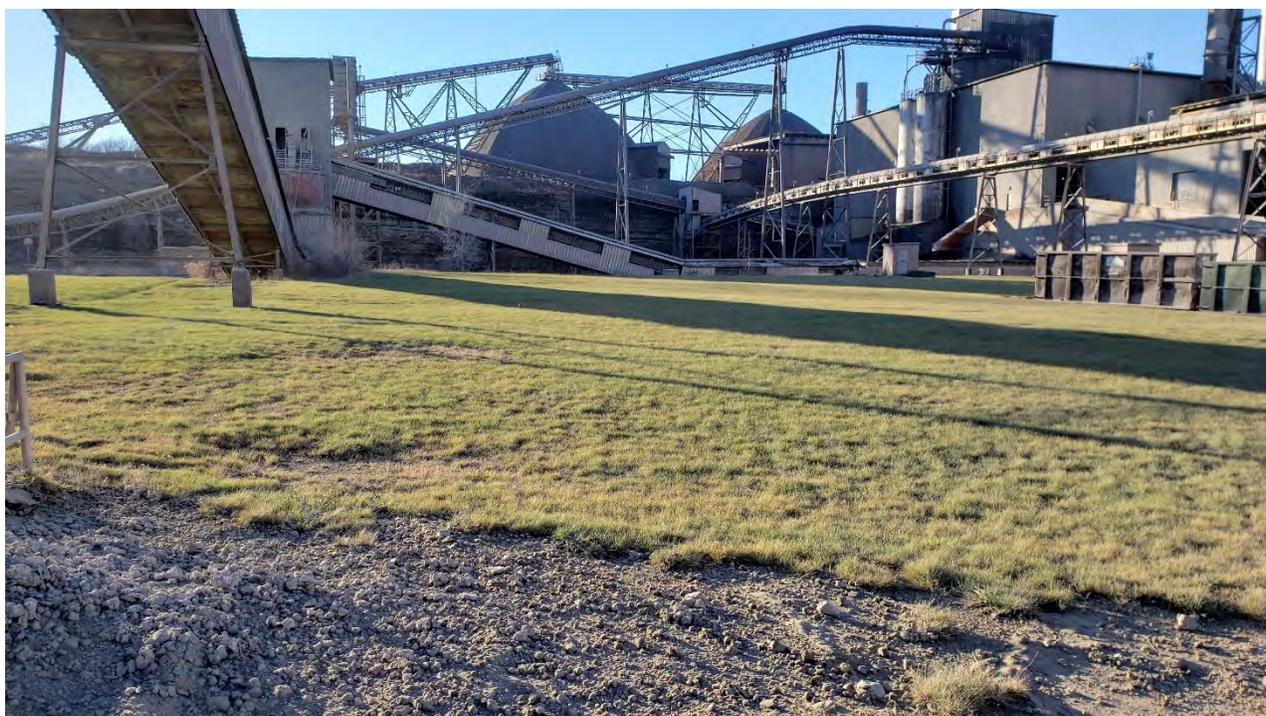


Image 2: Study Area conditions, manicured lawn and gravel area; facing south.



Image 3: Study Area conditions, manicured lawn; facing northwest.



Image 4: Study Area conditions, manicured lawn that appears built up; facing west.

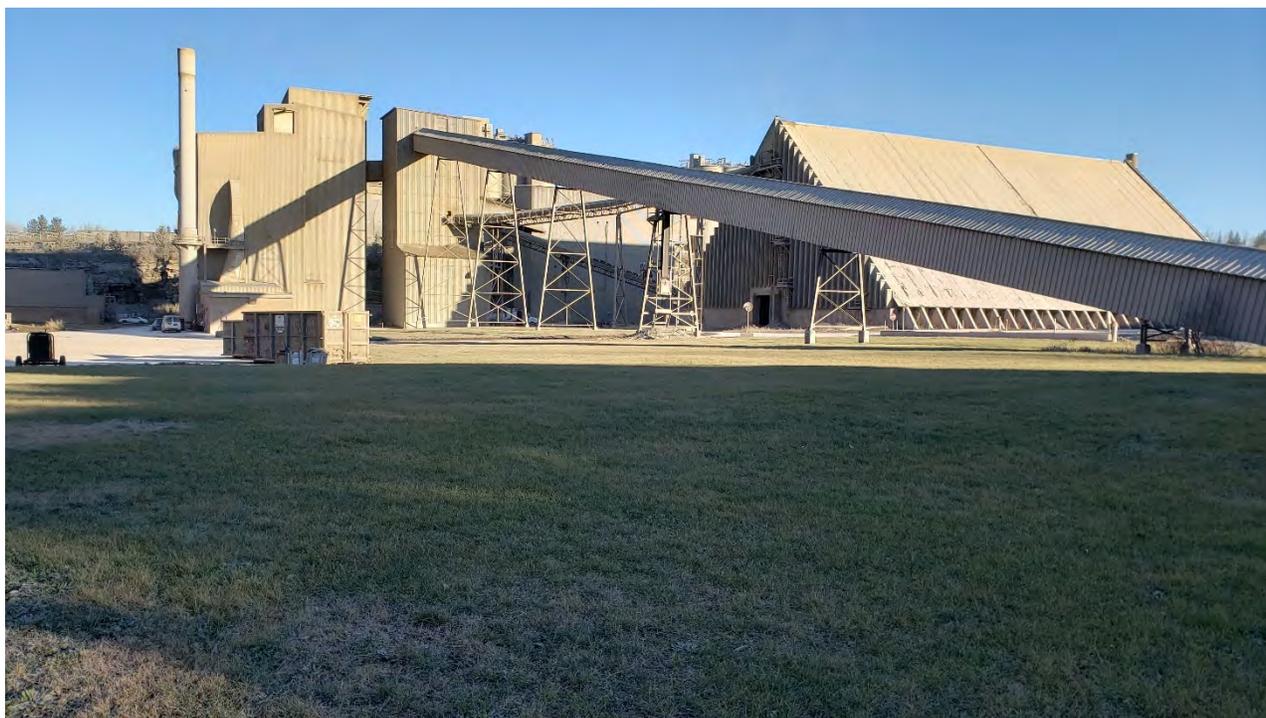


Image 5: Study Area conditions, manicured lawn with evident patches of gravel; facing northeast.

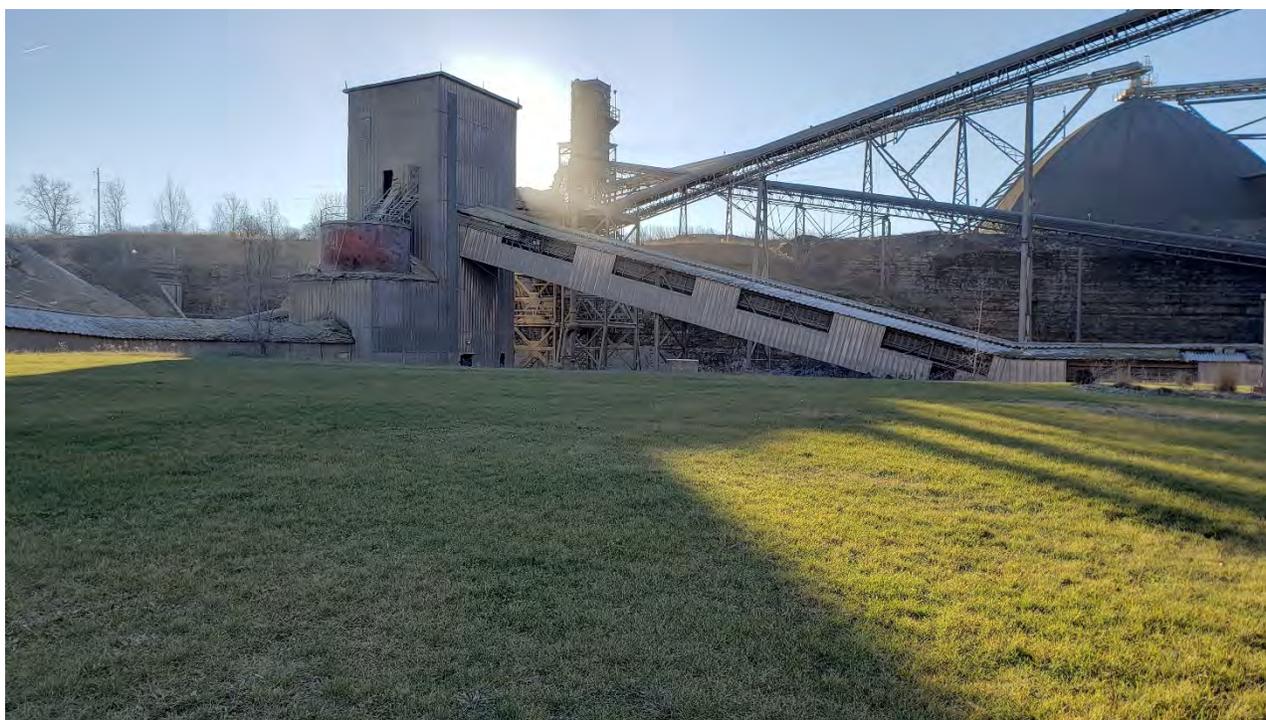


Image 6: Study Area conditions, manicured lawn; facing south.



Image 7: Study Area conditions, gravel slope down from manicured lawn to gravel lane; facing east.



Image 8: Study Area conditions, gravel slope down from manicured lawn to gravel lane; facing east-northeast.

9.0 MAPS



- LEGEND**
- CONTOUR
 - LOT BOUNDARY
 - ROADWAY
 - | RAILWAY
 - WATERCOURSE
 - STUDY AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
 1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2020
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CLIENT
 VOTORANTIM CIMENTOS, ST. MARYS CEMENT

PROJECT
 STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS

TITLE
 SITE PLAN

CONSULTANT	YYYY-MM-DD	2022-02-18
GOLDER MEMBER OF WSP	DESIGNED	---
	PREPARED	MG
	REVIEWED	MT
	APPROVED	RP

PROJECT NO.	CONTROL	REV.	MAP
21468526	0001	0	2

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 4787500
 4787600
 4787700
 4787800

28mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:



LEGEND
 STUDY AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
 1. 1879 MAP: ILLUSTRATED HISTORICAL ATLAS OF THE COUNTY OF PERTH ONT. H. BELDON & CO., TORONTO.
 2. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17N, VERTICAL DATUM: CGVD28



CLIENT
 VOTORANTIM CIMENTOS, ST. MARYS CEMENT

PROJECT
 STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS

TITLE
 1879 HISTORIC MAP

CONSULTANT	YYYY-MM-DD	2022-02-18
 GOLDER MEMBER OF WSP	DESIGNED	---
	PREPARED	MG
	REVIEWED	MT
	APPROVED	RP

PROJECT NO. 21468526 CONTROL 0001 REV. 0 MAP 3

1954



LEGEND

 STUDY AREA

NOTE(S)

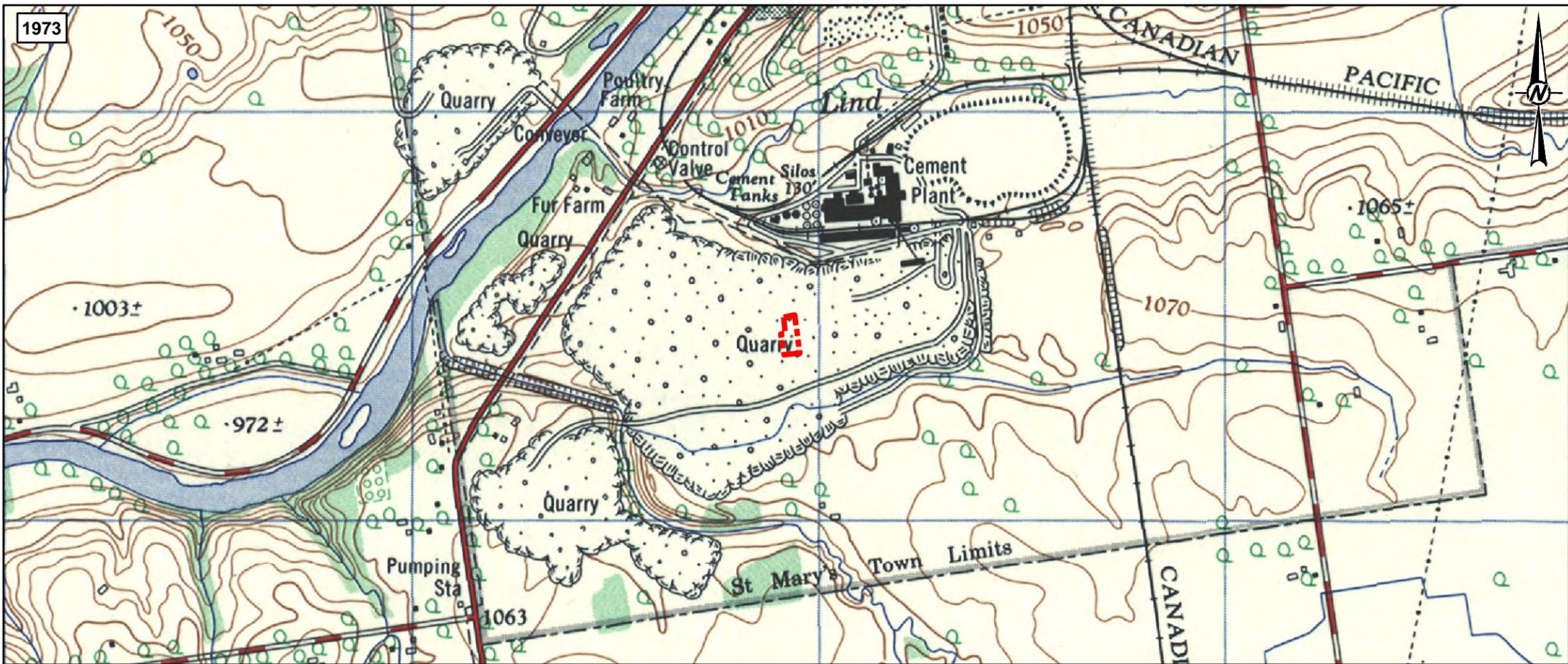
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

- 1. 1954 AIR PHOTOS OF SOUTHERN ONTARIO. MAP AND DATA LIBRARY, UNIVERSITY OF TORONTO LIBRARIES.
- 2. 1973 MAP FROM THE DEPARTMENT OF ENERGY, MINES AND RESOURCES: WELLBURN, ONTARIO, SHEET 40P/3G, OTTAWA.
- 3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17N, VERTICAL DATUM: CGVD28



1973



CLIENT
VOTORANTIM CIMENTOS, ST. MARYS CEMENT

PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT
VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS

TITLE
PRE-1977 TOPOGRAPHICAL MAP AND AERIAL PHOTOGRAPH
OF ST. MARYS CEMENT PLANT

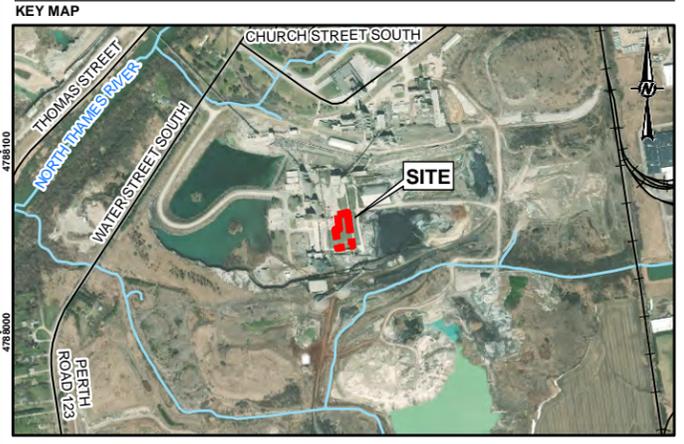
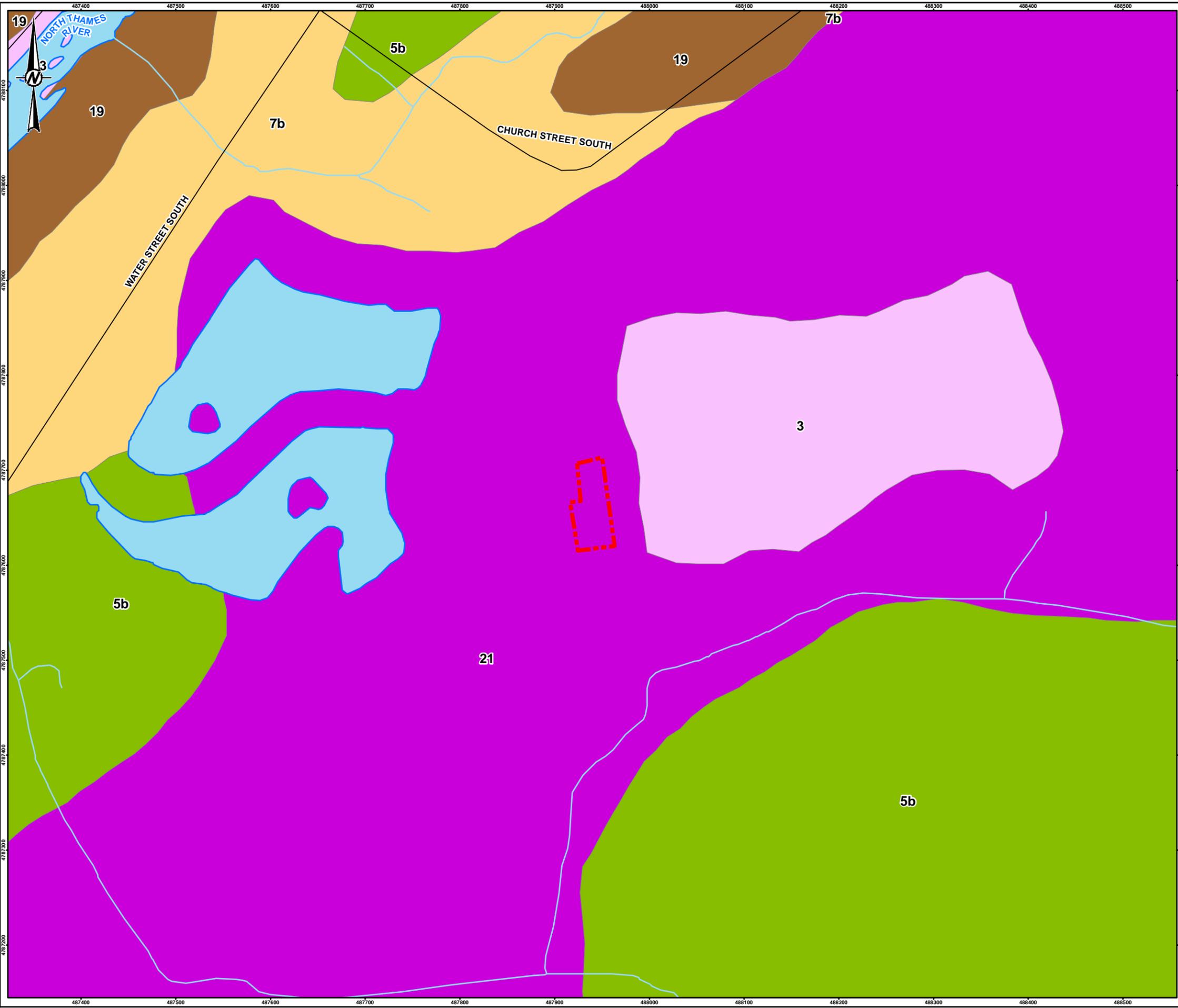
CONSULTANT	YYYY-MM-DD	2022-02-18
DESIGNED	---	
PREPARED	MG	
REVIEWED	MT	
APPROVED	RP	



PROJECT NO. 21468526	CONTROL 0001	REV. 0	MAP 4
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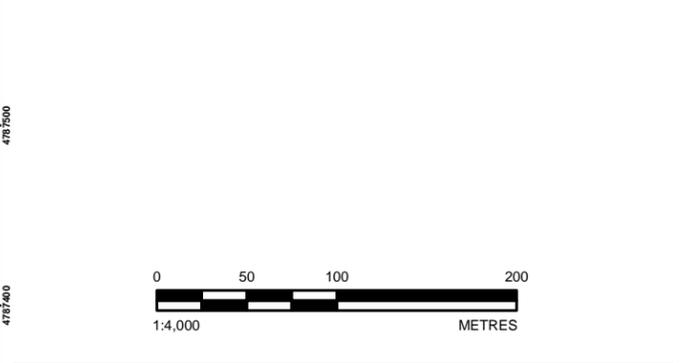


SCALE 1:20,000

- LEGEND**
- ROADWAY
 - RAILWAY
 - WATERCOURSE
 - WATERBODY
 - STUDY AREA
- OGS SURFICIAL GEOLOGY**
- 3: PALEOZOIC BEDROCK
 - 5B: STONE-POOR, CARBONATE-DERIVED SILTY TO SANDY TILL
 - 7B: GRAVELLY DEPOSITS
 - 19: MODERN ALLUVIAL DEPOSITS
 - 21: MAN-MADE DEPOSITS

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
1. ONTARIO GEOLOGICAL SURVEY 2010. SURFICIAL GEOLOGY OF SOUTHERN ONTARIO; ONTARIO GEOLOGICAL SURVEY, MISCELLANEOUS RELEASE--DATA 128-REV
 2. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEEN'S PRINTER 2020
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CLIENT
VOTORANTIM CIMENTOS, ST. MARYS CEMENT

PROJECT
**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS**

TITLE
SURFICIAL GEOLOGY MAP

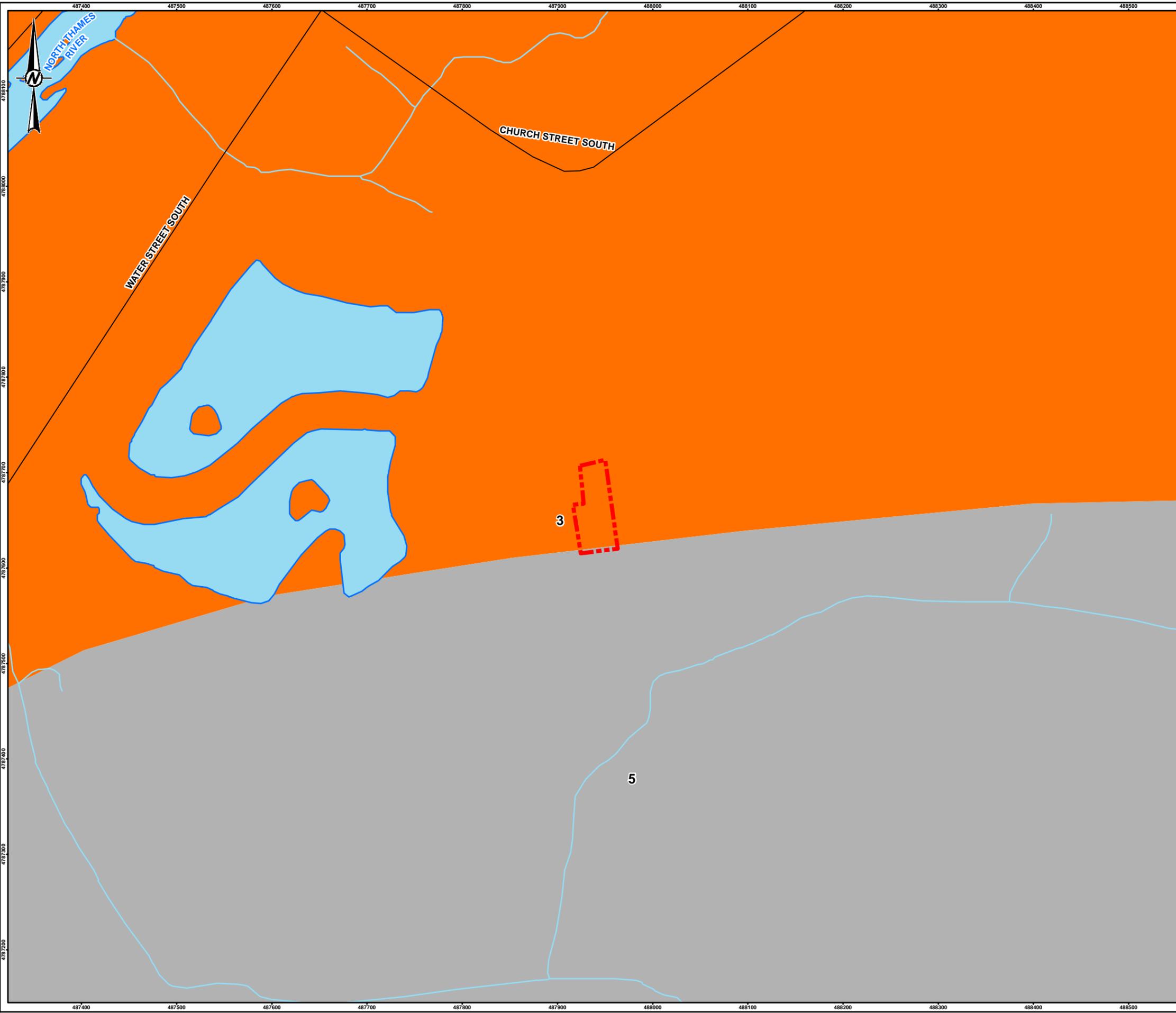
CONSULTANT	YYYY-MM-DD	2022-02-18
DESIGNED	---	
PREPARED	MG	
REVIEWED	MT	
APPROVED	RP	



PROJECT NO. 21468526 CONTROL 0001 REV. 0 MAP **6**

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 26mm



LEGEND

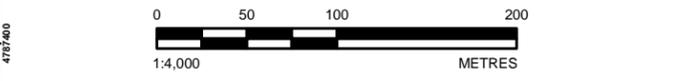
	ROADWAY
	RAILWAY
	WATERCOURSE
	WATERBODY
	STUDY AREA

PHYSIOGRAPHY DESCRIPTION

	3: SPILLWAYS
	5: TILL PLAINS (UNDRUMLINIZED)

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
1. CHAPMAN, L.J. AND PUTNAM, D.F. 2007. PHYSIOGRAPHY OF SOUTHERN ONTARIO; ONTARIO GEOLOGICAL SURVEY, MISCELLANEOUS RELEASE-DATA 228
 2. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2020
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CLIENT
VOTORANTIM CIMENTOS, ST. MARYS CEMENT

PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT
VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS

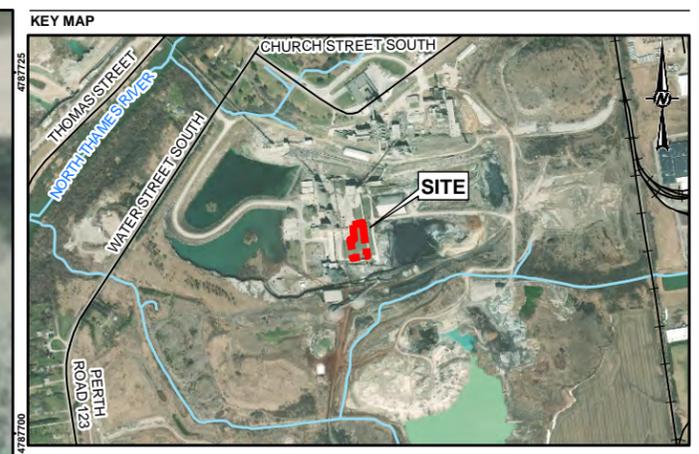
TITLE
PHYSIOGRAPHY MAP

CONSULTANT	YYYY-MM-DD	2022-02-18
	DESIGNED	---
	PREPARED	MG
	REVIEWED	MT
	APPROVED	RP

PROJECT NO. 21468526	CONTROL 0001	REV. 0	MAP 7
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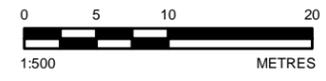


SCALE 1:20,000

- LEGEND**
- APPROXIMATE PHOTO LOCATION AND DIRECTION
 - ROADWAY
 - RAILWAY
 - WATERCOURSE
 - PREVIOUSLY DISTURBED; STAGE 2 ARCHAEOLOGICAL ASSESSMENT NOT RECOMMENDED
 - STUDY AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

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CLIENT		
VOTORANTIM CIMENTOS, ST. MARYS CEMENT		
PROJECT		
STAGE 1 ARCHAEOLOGICAL ASSESSMENT VCNA ALTERNATIVE LOW CARBON FUELS, ST. MARYS		
TITLE		
STAGE 1 ASSESSMENT RESULTS AND PHOTO LOCATIONS		
CONSULTANT	YYYY-MM-DD	2022-02-18
	DESIGNED	---
	PREPARED	MG
	REVIEWED	MT
	APPROVED	RP
PROJECT NO.	CONTROL	REV.
21468526	0001	0
		MAP
		9

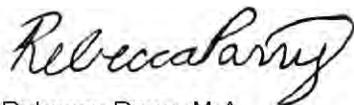
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487800 487825 487850 487875
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 26mm

10.0 CLOSURE

We trust that this report meets your current needs. If you have any questions, or if we may be of further assistance, please contact the undersigned.

Golder Associates Ltd.



Rebecca Parry, M.A.
Staff Archaeologist



Michael Teal, M.A.
Director of Archaeology and Heritage

RP/RF/MT/ca

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