ORIGINAL REPORT

23 March 2017

STAGE 1-2 AND 3 ARCHAEOLOGICAL ASSESSMENT

Pit 3 Extension, Part of Lot 13 Concession 5, West Side of Centre Road, Former Township of Caledon, County of Peel, now Town of Caledon, Regional Municipality of Peel, Ontario

Submitted to:
Luke McLeod
Lafarge Canada Inc.
6509 Airport Road
Mississauga, ON
L4V 1S7

Licensee: Dr. Peter Popkin, Golder Associates Ltd.

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Executive Summary

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

A Stage 1-2 and 3 archaeological assessment was conducted on behalf of Lafarge Canada Inc. (the Client) by Golder Associates Ltd. (Golder) for a study area on Part Lot 13, Concession 5, West Side of Centre Road, former Township of Caledon, County of Peel, now Town of Caledon, Regional Municipality of Peel, Ontario. The study area for the proposed Pit 3 Extension is approximately 25.7 hectares in size and was subject to an archaeological assessment as required under the *Aggregate Resources Act*.

The objective of the Stage 1 assessment was to compile all available information about the known and potential archaeological resources within the study area and to provide direction for the protection, management and/or recovery of these resources, consistent with Ministry of Tourism, Culture and Sport (MTCS) *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011). The Stage 1 background study found potential to exist within the study area for the recovery of pre- and post-contact Aboriginal and historical Euro-Canadian archaeological resources.

The objectives of the Stage 2 archaeological assessment were to provide an overview of archaeological resources on the property and to determine whether any of the resources might be artifacts and or archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources. Areas recommended for Stage 2 assessment were surveyed by either pedestrian survey at an interval of 5 metres (m) or test pit survey at 5 m intervals.

The Stage 2 assessment of the study area resulted in the identification of one pre-contact archaeological site, termed Location 1 in the field and registered as the Pinkney South site (AkHa-21). The site consisted of an isolated biface that was determined to have sufficient cultural heritage value and interest to warrant further assessment. As such Stage 3 work was recommended to further assess the cultural heritage value or interest of the site.

The objective of the Stage 3 assessment was to conduct a systematic investigation of the Pinkney South site (AkHa-21) identified during the Stage 2 assessment, to increase the recovered artifact sample and delineate the boundaries of the site, consistent with MTCS's *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011).

The Stage 3 assessment of Location 1, the Pinkney South site (AkHa-21), did not result in the recovery of any additional artifacts from the five excavated 1-m square units. The results of the Stage 3 assessment indicate that AkHa-21 represents an isolated find spot and as such no further archaeological assessment is recommended.

The MTCS is asked to review the results and recommendations presented herein and accept this report into the Provincial Register of archaeological reports. The MTCS is also asked to provide a letter concurring with the results presented herein.

Personnel

Project Manager	Peter Popkin, PhD, CAHP, MCIfA (P362), Senior Archaeologist
Licensed Archaeologist	Peter Popkin, (P362)
Field Supervisor	Jeremie Landry (R413)
Field Technicians	Bernal Arce (R1083), Zac Baccardax (R1023), Rob Fleming, Will Pettes, Donny Vongphakdy, Carey Matthews (R404)
Report Production	Christopher W. Lemon, BSc (R289), Project Archaeologist Peter Popkin Scott Martin, PhD (P218)
Senior Review	Carla Parslow, PhD (P243), Associate, Senior Archaeologist

Acknowledgments

Proponent Contacts	Luke McLeod, Mal Wensierski, Melissa Albanese
Ministry of Tourism, Culture And Sport	Malcolm Horne

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1.0 PROJECT CONTEXT

1.1 Development Context

A Stage 1-2 and 3 archaeological assessment was conducted on behalf of Lafarge Canada Inc. (the Client) by Golder Associates Ltd. (Golder) for a study area on Part Lot 13, Concession 5, West Side of Centre Road, former Township of Caledon, County of Peel, now Town of Caledon, Regional Municipality of Peel, Ontario (Map 1). The study area for the proposed Pit 3 Extension is approximately 25.7 hectares in size and was subject to an archaeological assessment as requiredl under the *Aggregate Resources Act*.

The objective of the Stage 1 assessment is to compile all available information about the known and potential archaeological resources within the study area and to provide direction for the protection, management and/or recovery of these resources, consistent with Ministry of Tourism, Culture and Sport (MTCS) *Standards and Guidelines for Consultant Archaeologists* (*SGCA*) (MTCS 2011). Specifically, the objectives of the Stage 1 archaeological assessment are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork and current land conditions;
- 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; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives Golder archaeologists employed the following research strategies:

- A review of relevant archaeological, historic and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the Ontario Archaeological Sites Database (OASD) to determine the presence of known archaeological sites in and around the study area; and
- An inquiry with the MTCS to determine previous archaeological assessments conducted in close proximity to the study area.

The objective of the Stage 2 archaeological assessment is to provide an overview of archaeological resources on the property and to determine whether any of the resources might be artifacts and archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the *SGCA* (MTCS 2011), the objectives of the Stage 2 property assessment are as follows:

- To document all archaeological resources on the property;
- To determine whether the property contains archaeological resources requiring further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

The Stage 2 assessment of the study area resulted in the identification of one pre-contact archaeological site, termed Location 1 in the field and registered as the Pinkney South site (AkHa-21). The objective of the Stage 3 archaeological assessment of the Pinkney South site (AkHa-21) is to establish the limits of the site and to systematically test the site's cultural heritage value or interest in order to make a determination of whether or not the site requires Stage 4 mitigation. All assessments of cultural significance were made in accordance with the *SGCA* (MTCS 2011).

To meet these objectives Golder archaeologists employed the following research strategies:

- A review of relevant archaeological, historic and environmental literature pertaining to the study area; and
- Stage 3 archaeological test unit excavations and artifact analysis.

The Stage 1-2 and 3 assessments were conducted under professional archaeological licence P362, issued to Dr. Peter Popkin of Golder by the MTCS. The Stage 1 and 2 assessments were undertaken using PIF: P362-0089-2014 and the Stage 3 assessment was undertaken using PIF: P362-0106-2015.

Permission for Golder staff to enter the property for the purposes of the Stage 1 property inspection and the Stage 2 survey was provided by Melissa Albanese of Lafarge Canada Inc. on 27 October 2014. Permission to enter the property to undertake the Stage 3 assessment was given by Melissa Albanese of Lafarge Canada Inc. on 22 June 2015.

1.2 Historical Context

1.2.1 Post-Contact Aboriginal Occupation of Southern Ontario

The post-contact Aboriginal occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking peoples by the New York State Iroquois and the subsequent arrival of Algonkian-speaking groups from northern Ontario at the end of the seventeenth century and beginning of the eighteenth century (Schmalz 1991).

Following the introduction of Europeans to North America, the nature of First Nations settlement size, population distribution, and material culture shifted as settlers began to colonize the land. Despite this shift in First Nations life ways, "written accounts of material life and livelihood, the correlation of historically recorded 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, First Nation peoples of southern Ontario have left behind archaeologically significant resources throughout southern Ontario which show continuity with past peoples, even if this connection has not been recorded in historical Euro-Canadian documentation.

The study area is situated within the Geographic Township of Caledon, Peel County, Ontario. The study area is located on land seeded to the crown as part of Treaty Number 19, between the Crown and the Chippewa's, signed 28 October 1818 (Morris 1943).

1.2.2 Euro-Canadian Settlement

In 1788, the political boundary of Nassau District, which included Peel County, was established. Delineated to the east by a line running north from the mouth of the Trent River and to the west by a line running north from Long Point on Lake Erie, the district town was originally Newark (Niagara-on-the-Lake), but became York (Toronto) in 1801. The district was renamed to the Home District in 1792, and six years later reorganized to consist of York and Simcoe counties. The subject area fell within the west riding of the County of York. In 1851, Peel County was created from a portion of York County, and formed a provisional council shortly thereafter in 1865, with the village of Brampton elected as the capital of the new county in 1867.

Based on Walker and Miles, 1877 Atlas Caledon Township was surveyed between 1818 and 1819 and opened to settlers in 1820. Caledon Township was divided into west and east sectors, with Hurontario Street being used as the dividing line. Walker and Miles's identify Caledon as the last Township in Peel to be settled and describe the area as a relatively hilly county that contains favorable soils (Walker and Miles 1877). Once the Township began to be settled it soon grew into a wealthy community. Walton's Home District Directory indicates that by 1837, 1,488 people resided in Caledon, with 738 of those residing west of Hurontario Street. Walton goes on to state that by 1842 Caledon's population was 1,920 and by 1846 the Township was home to three gristmills and one sawmill (Walton 1837).

The study area was originally a part of Lot 13, Concession 5 West Side of Centre Road (WSOCR) in the former Township of Caledon. The 1859 Tremaine Map of Peel County illustrates the entire 100 acres of Lot 13 Con 5 WSCOR as owned by Isaac Scott, with no structures on the lot at this time (Map 2). The 1877 Historic Atlas of Peel (Map 3) list William Pinkney as the owner of the full 100 acres; the map also illustrates structures on the north part of the property. The structure are clearly located north of the abandoned rail line (now the Elora-Cataract Trail way) that delineates the northern limits of the study area.

1.3 Archaeological Context

1.3.1 The Natural Environment

The study area is situated within the Guelph drumlin field:

> *Centered on the Town of Guelph the drumlin field occupied 320 square miles. … The drumlins of this field are not so closely grouped as those of some other areas and there is more intervening low ground. … Overall this area is a sloping plain between 1000 and 1400 feet a.s.l with an average gradient of 20 feet per mile north to south.*
>
> Chapman and Putnam 1984:137-139

The soils of the study area are categorized as Caledon loam; comprised of sorted sands and gravel intermixed with sand and sand loams. This type of soil can be found in smooth to moderately sloping formations throughout the historic township of Caledon. The sandy soils of the study area form a cap which resides on the limestone of the Niagara Escarpment as it tracks north towards Tobermory (Hoffman and Richards 1953). The composition of soils in the study area exhibit good natural drainage and would have been suitable for pre-contact Aboriginal agricultural practices.

The study area is situated between two unnamed tributaries of the Credit River, placing the closest source of potable water approximately 1.5 km to the north east of the study area or 1.2 km south east. There are also indications of a seasonal creek approximately 500 m north north-east of the study area. This seasonal creek is delineated by thick tree lines adjacent to an open area where topographic mapping illustrates a small water course. No water is apparent in available Google Earth imagery of the area.

1.3.2 General Overview of the Pre-Contact Period in the Caledon Area

The cultural chronology of the Caledon Area is briefly summarized in Table 1.

Table 1: Cultural Chronology for Caledon Area, based on chapters in Ellis and Ferris (eds.) (1990)

Period	Characteristics	Time Period	Comments
Early Paleo	Fluted Projectiles	9000 - 8400 BC	spruce parkland/caribou hunters
Late Paleo	Hi-Lo Projectiles	8400 - 8000 BC	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 - 6000 BC	slow population growth
Middle Archaic	Brewerton-like points	6000 - 2500 BC	environment similar to present
Late Archaic	Lamoka (Narrow Points)	2000 - 1800 BC	increasing site size
	Broad Points	1800 - 1500 BC	large chipped lithic tools
	Small Points	1500 - 950 BC	introduction of bow hunting, emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 BC	introduction of pottery
Middle Woodland	Dentate Stamp and Pseudo-Scallop Shell Impressed pottery	400 BC - AD 500/800	increased sedentism
Late Woodland	Princess Point Complex	AD 500 - 1050	introduction of corn
	Early Ontario Iroquoian	AD 900/1000 - 1300	emergence of agricultural villages
	Middle Ontario Iroquoian	AD 1300 - 1400	long longhouses (100m +)
	Late Ontario Iroquoian	AD 1400 - 1650	tribal warfare and displacement
Contact Aboriginal	Seneca, Mississaugas, Six Nations	AD 1650 - present	early written records and treaties
Late Historic	Euro-Canadian	AD 1785 - present	European settlement

1.3.3 Pre-Contact Aboriginal Documentation

Previous archaeological assessments and research surveys have demonstrated that the Caledon area was occupied by pre-contact Aboriginal communities.

The following subsections outline the cultural or temporal periods recognized for southern Ontario more generally.

1.3.3.1 Paleo Period

The first human occupation of southern Ontario began just after the end of the Wisconsin Glacial period. Although there was a complex series of ice retreats and advances which played a large role in shaping the local topography,

southwestern Ontario was finally ice free by 12,500 years ago. The first human settlement can be traced back 11,000 years, when this area was settled by Native groups that had been living south of the Great Lakes.

Our current understanding of Early Paleo period (*circa* 9000-8400 BC) settlement patterns suggest that small bands, consisting of probably no more than 25-35 individuals, followed a pattern of seasonal mobility extending over large territories (Ellis and Deller 1990:54). One of the most thoroughly studied of these groups followed a seasonal round that extended from as far south as Chatham to the Horseshoe Valley north of Barrie. Early Paleo sites tend to be located in elevated locations on well-drained loamy soils.

Many of the known sites were located on former beach ridges associated with Lake Algonquin, the post-glacial lake occupying the Lake Huron/Georgian Bay basin. There are a few extremely large Early Paleo sites, such as one located close to Parkhill, Ontario, which covered as much as six hectares (Ellis and Deller 1990:51).

It appears that these sites were formed when the same general locations were occupied for short periods of time over the course of many years. Given their placement in locations conducive to the interception of migratory mammals such as caribou, it has been suggested that they may represent communal hunting camps (Ellis and Deller 1990:51). There are also smaller Early Paleo camps scattered throughout the interior of southwestern Ontario, usually situated adjacent to wetlands. The most recent research suggests that population densities were very low during the Early Paleo period (Ellis and Deller 1990:54). Because this is the case, Early Paleo sites are exceedingly rare.

While the Late Paleo period (8400-8000 BC) is more recent, it has been less well researched, and is consequently more poorly understood. By this time the environment of southwestern Ontario was coming to be dominated by closed coniferous forests with some minor deciduous trees (Ellis and Deller 1990:60). 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 as in the case of the mastodons and mammoths, become extinct (Ellis and Deller 1990).

As in the early Paleo period, late Paleo period peoples covered 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 (Ellis and Deller 1990:62).

The end of the Paleo period was heralded by numerous technological and cultural innovations which may be best explained in relation to the dynamic nature of the post-glacial environment and region-wide population increases.

1.3.3.2 Archaic Period

During the Early Archaic period (8000-6000 BC), the jack and red pine forests that characterized the Late Paleo period environment were replaced by forests dominated by white pine with some associated deciduous trees (Ellis et al. 1990:68-69). One of the more notable changes in the Early Archaic period is the appearance of side and corner-notched projectile points.

Other significant innovations include the introduction of ground stone tools such as celts and axes, suggesting the beginnings of a simple woodworking industry (Ellis and Deller 1990:65). The presence of these often large and not easily portable tools suggests there may have been some reduction in the degree of seasonal movement, 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 to more diverse toolkits continued, as the presence of netsinkers suggest that fishing was becoming an important aspect of the subsistence economy. It was also at this time that "bannerstones" were first manufactured (Ellis et al. 1990:65). Bannerstones are carefully crafted ground stone devices that 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 lower quality materials which had been deposited by the glaciers in the local till and river gravels were utilized.

This reduction in territory size was probably the result of gradual region-wide population growth which led to the infilling of the landscape (Ellis et al. 1990:67). This process resulted in a reorganization of Native subsistence practices, as more people had to be supported from the resources of a smaller area.

During the latter part of Middle Archaic, technological innovations such as fish weirs have been documented as well as stone tools especially designed for the preparation of wild plant foods. It is also during the latter part of the Middle Archaic period that long distance trade routes began to develop, spanning the northeastern part of the continent. In particular, native copper tools manufactured from a source located northwest of Lake Superior were being widely traded (Ellis et al. 1990:66). By 3500 BC the local environment had stabilized in a near modern form (Ellis et al. 1990:69).

During the Late Archaic (2500-900 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 definitely expanded. It is during the Late Archaic that the first true cemeteries appear (Ellis et al. 1990:66). Before this time individuals were interred close to the location where they died. During the Late Archaic, if an individual died while his or her group happened to be at some distance from their group cemetery, the bones would be kept until they could be placed in the cemetery. Consequently, it is not unusual to find disarticulated skeletons, or even skeletons lacking minor elements such as fingers, toes or ribs, in Late Archaic burial pits.

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 (Ellis et al. 1990).

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 (Ellis et al. 1990:117; Ellis et al. 2009:824-825). 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" (Ellis et al. 1990:111). Birdstones are small, bird-like effigies usually manufactured from green banded slate.

1.3.3.3 Woodland Period

The Early Woodland period (900-200 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 very crudely constructed, thick walled, and friable. It has been suggested that they were used in the processing of nut oils by boiling crushed nut fragments in water and skimming off the oil (Spence et al. 1990:137). These vessels were not easily portable, and individual pots must not have enjoyed a long use life. There have also been numerous Early Woodland sites located at which no pottery was found, suggesting that these poorly constructed, undecorated vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

Other than the introduction of this rather limited ceramic technology, the life-ways of Early Woodland peoples show a great deal of continuity with the preceding Late Archaic period. For instance, birdstones continue to be manufactured, although the Early Woodland varieties have "pop-eyes" which protrude from the sides of their heads (Spence et al. 1990:129).

Likewise, the thin, well-made projectile points 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 (Spence et al. 1990:129). 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 in southern Ontario (Spence et al. 1990:138).

In terms of settlement and subsistence patterns, the Middle Woodland (200 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 were becoming an even more important part of the diet (Spence et al. 1990:151). Some Middle Woodland sites have produced literally thousands of bones from spring spawning species such as walleye and sucker. Nuts such as acorns were also being collected and consumed (Spence et al. 1990:134). In addition, Middle Woodland peoples relied much more extensively on ceramic technology. Middle Woodland vessels are often 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. Middle Woodland sites are significantly different in that the same location was occupied off and on for as long as several hundred years. Because this is the case, rich deposits of artifacts often accumulated.

Unlike earlier seasonally utilized locations, these Middle Woodland sites appear to have functioned as base camps, occupied off and on 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 (Fox 1990:174; Williamson 1990:312). However, it did not become a dietary staple until at least three to four hundred years later. Others have more recently espoused or accepted a Late Woodland beginning around A.D. 500 with the appearance or development of the Princess Point Complex (e.g., Crawford and Smith 2002; see also Martin 2004, 2008).

The first agricultural villages in southwestern Ontario date to the 10th century A.D. (Williamson 1990:291). 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 Ontario Iroquoian" (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 Ontario Iroquoians 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 Ontario Iroquoian economy. However, it had not reached the level of importance it would in the Middle and Late Ontario Iroquoian 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 (Williamson 1990:317). While beans are known to have been cultivated later in the Late Woodland period, they have yet to be identified on Early Ontario Iroquoian sites (Williamson 1990:291).

The Middle Ontario Iroquoian period (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 hectares in extent during the Early Ontario Iroquoian period, 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 Ontario Iroquoian period small villages were amalgamating to form larger communities for mutual defence (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 Ontario Iroquoian villages which had no palisades present (Dodd et al. 1990:358). 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 Ontario Iroquoian period villages were haphazardly planned at best, with houses oriented in various directions. During the Middle Ontario Iroquoian period 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 Ontario Iroquoian period (AD 1400-1650) continues many of the trends which have been documented for the proceeding century. For instance, between AD 1400 and 1450 house lengths continue to grow, reaching an average length of 62 m.

After AD 1450, house lengths begin to decrease, with houses dating between 1500-1580 A.D. 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 historic 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 continues to expand throughout the Late Ontario Iroquoian period, with many of the larger villages showing signs of periodic expansions. The Late Middle Ontario Iroquoian period and the first century of the Late Ontario Iroquoian period was a time of village amalgamation.

One large village situated in London expanded one-fifth of its size (Anderson 2009) and one village north of Toronto have been shown to have expanded on no fewer than five occasions (Ramsden 1990:374-375). 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.

After AD 1525 communities of pre-contact Aboriginals of the Late Ontario Iroquoian period who had formerly lived throughout southwestern Ontario as far west as the Chatham area moved further east to the Hamilton area. 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. They called these people the "Neutral", because they were not involved in the on-going wars between the Huron and the League Iroquois located in upper New York State.

1.3.4 Previously Identified Archaeological Sites and Surveys

A search of the OASD and Golder's corporate library indicated there are currently no registered archaeological sites within one kilometre of the study area.

No archaeological assessments are known to have been undertaken on properties within 50 m of the current study area.

1.3.5 Assessing Archaeological Potential

Archaeological potential is established by determining whether any features or characteristics indicating archaeological potential are located on or in the vicinity of a study area. Features and characteristics that indicate archaeological potential are defined within Section 1.3.1 of the *SGCA* (MTCS 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 MTCS and specifically indicated in Section 1.4 of the *SGCA* (MTCS 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; and
- No buffer, 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.

1.3.5.1 Archaeological Integrity

A negative indicator of archaeological potential is extensive below grade land disturbance. This includes widespread earth movement activities that would have eradicated or relocated any archaeological resources to such a degree that their information potential and cultural heritage value or interest has been lost.

Activities that are recognized to cause sufficient disturbance to remove archaeological potential include: quarrying, major landscaping involving grading below topsoil, building footprints and infrastructure development. Activities including agricultural cultivation, gardening, minor grading and landscaping do not necessarily remove archaeological potential (MTCS 2011:18).

Natural physical features can also indicate that all or portions of a study area have low or no archaeological potential including: permanently wet areas, exposed bedrock and slopes greater than 20 degrees (except in locations likely to contain pictographs or petroglyphs).

1.3.5.2 Potential for Pre- and Post-Contact Aboriginal Archaeological Resources

Following the criteria outlined above in Section 1.3.5 to determine pre- and post-contact Aboriginal archaeological potential, a number of factors can be highlighted. The soils of the study area would have been suitable for pre-contact Aboriginal agricultural practices. Although no Aboriginal archaeological sites have been identified within 1 km of the study area, it is possible the lack of registered Aboriginal sites is a reflection of the paucity of archaeological assessments undertaken in the area rather than an indication that Aboriginal sites do not exist in the area. The presence of potable water sources within 1.5 km of the study area also support the potential for both pre and post contact aboriginal use of the study area. There are also indications of a seasonal creek approximately 500 m north north-east of the study area.

The study area exhibits archaeological potential for pre-contact and post-contact Aboriginal sites. While areas of previous disturbance eradicate the potential for the recovery of archaeological resources (Section 1.3.5.1), areas of no or low levels of previous disturbance retain their archaeological potential. Map 5 illustrates areas of potential within the study area that were determined to require Stage 2 archaeological assessment.

1.3.5.3 Potential for Historical Euro-Canadian Archaeological Resources

Following the criteria outlined above in Section 1.3.5 to determine historical Euro-Canadian archaeological potential, a number of factors can be highlighted. The study area is located on the nineteenth-century road grid for the area, and 1877 mapping illustrates structures adjacent to the northern boundary of the study area (Walker and Miles 1877).

The study area exhibits archaeological potential for historical Euro-Canadian sites. While areas of previous disturbance eliminate the potential for the recovery of archaeological resources (Section 1.3.5.1), areas of no or low levels of previous disturbance retain their archaeological potential. Map 5 illustrates areas of potential within the study area that require Stage 2 archaeological assessment.

2.0 FIELD METHODS

2.1 Existing Conditions

2.1.1 Stage 2

The Stage 2 field survey of the study area was conducted on 14 May 2015 under archaeological consulting licence P362, issued to Dr. Peter Popkin of Golder. Dr. Popkin designated field supervisor duties to Mr. Jeremy Landry (R413) of Golder. The weather during the Stage 2 assessment was warm and sunny with clear skies. Ground visibility and lighting conditions were excellent and at no time were field conditions detrimental to the identification or recovery of cultural materials.

At the time of the survey the study area consisted predominately of recently ploughed and weathered agricultural fields. The study area also contained sections of undulating ground with high gravel content where ploughing was not possible as well as sections presenting with slopes in excess of 20°.

2.1.2 Stage 3

The Stage 3 excavation was conducted on 24 June 2015 under archaeological consulting licence P362, issued to Dr. Peter Popkin of Golder. Dr. Popkin designated field supervisor duties to Mr. Jeremy Landry (R413) of Golder. The weather during the Stage 3 assessment was warm and sunny with clear skies. At the time of Stage 3 excavation the field containing Location 1, the Pinkney South site (AkHa-21), was planted in soy beans approximately 30 centimetres (cm) in height (Image 18). Due to the low level of crop growth and the use of herbicides on the property to prevent weed growth ground visibility was 80% and in compliance with Section 2.1.1 Guideline 2 of the *SGCA* (MTCS 2011:30). Overall, ground visibility was 80% and lighting conditions were excellent and at no time were field conditions detrimental to the identification or recovery of cultural materials.

2.2 Methodology

2.2.1 Stage 2

The Stage 1 background study identified the potential for the identification of archaeological sites, both historical Euro-Canadian and pre and post-contact Aboriginal in nature. Map 6 illustrates the Stage 2 assessment of the study area and indicates all field conditions encountered. Map 6 also provides a photographic key to images illustrated in Section 8.0. Images 1-15 illustrate the field conditions and activities at the time of the Stage 2 survey.

The study area comprises approximately 25.7 hectares. Approximately 75% of the property consisted of agricultural fields. The agricultural fields were ploughed and allowed to weather resulting 90-100% visibility. The agricultural fields were assessed using pedestrian survey at 5 m intervals. When an artifact was identified during pedestrian survey, transect intervals were reduced to 1 m for a 20 m radius around the artifact. The Stage 2 pedestrian survey and artifact collection was conducted to meet the Standards required for Stage 3 controlled surface pick-up (CSP) as per Section 3.2.1 of the *SGCA* (MTCS 2011).

Approximately 25% of the study area was unable to be ploughed due to high rock content, steep slopes or previous disturbance. These areas were mapped and photo-documented. Of the areas not able to be ploughed, 5 hectares (12 acres) was able to be assessed using standard test pit methods at 5 m intervals. The remaining 1.4 hectares (3.5 acres) was not assessed due to the low potential presented by the presence of slopes in excess of 20° and previous ground disturbance consisting of historic small scale aggregate extraction and the installation of gravel road ways.

Field activities and conditions were documented using a Fujifilm XP digital camera. A Garmin Etrex 10 GPS, using the North American Datum (NAD) 83, with a minimal accuracy of 5 m was used to document the location of photos and all cultural artifacts. A field log was maintained for the duration of the investigations detailing pertinent information.

2.2.2 Stage 3

The Stage 3 excavation was conducted using a standard 5 m grid centred on the location of the isolated biface recovered during the Stage 2 survey. Prior to the excavation of any units the location of the biface was relocated using a hand held GPS. Once the location was relocated a second CSP was performed at the site, to complement the CSP conducted during the Stage 2 survey approximately six weeks prior, by walking a 20 m radius around the isolated biface location at 1 m intervals. No additional artifacts were identified. Following the second CSP, a 5 m grid was established, centred on the location of the isolated biface. All excavated soil was screened for artifacts using manual screens set up atop plastic tarping to limit crop damage and aid in backfilling. With the exception of the unit centred on the original biface location the screens were equipped with 6 mm hardware cloth. The unit centred on the original find spot was screened using 3 mm hardware cloth. The smaller 3 mm hardware cloth was used as opposed to the typical 6 mm hardware cloth as a precautionary measure as the identification of the recovered biface was ambiguous and the possibility existed that the biface dated to the Early Archaic period (*SGCA*, Section 3.2.2, Standard 7, MTCS 2011). Following excavation each unit was backfilled and returned to as close to ‘as found’ conditions as possible.

Map 7 illustrates the Stage 3 assessment of Location 1, the Pinkney South site (AkHa-21). Map 7 also provides a photographic key to images illustrated in Section 8.0. Images 18-20 illustrate the field conditions and activities at the time of the Stage 3 assessment.

Field activities were documented using a Fujifilm XP digital camera and the location of each unit was recorded using a Garmin Etrex 10, using the North American Datum (NAD) 83, with a minimal accuracy of 5 m. A field log was maintained for the duration of the investigations detailing pertinent information.

3.0 RECORD OF FINDS

3.1 Stage 2

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.2.1 and resulted in the identification of a single archaeological site, the Pinkney South site (AkHa-21). A description of the recovered artifact is provided below. Supplementary Document A, which illustrates the location of the archaeological site, and Supplementary Document B, which lists the UTM coordinates, are included as supplementary documents to this report.

Material culture recovered from this assessment is contained in a single 17 cm by 10 cm plastic bag and will be temporarily housed at Golder's Mississauga office until formal arrangements can be made for their transfer to an MTCS collections facility. Table 2 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 office in Mississauga	2 pages in original field book and photocopied in project file
Hand Drawn Maps	Golder office in Mississauga	1 hand drawn map in original field book and photocopied in project file
Maps Provided by Client	Golder office in Mississauga	1 map stored in project file
Digital Photographs	Golder office in Mississauga	124 photographs stored digitally in project file

3.1.1 Location 1, the Pinkney South Site (AkHa-21)

The Stage 2 archaeological assessment of the Pit 3 Extension study area resulted in the identification of a single Pre-Contact Aboriginal artifact. The recovered artifact is a triangular biface manufactured on Haldimand chert and exhibiting recent damage along its base (Images 16, 17). The biface measures 81.09 mm long by 36.56 mm wide by 8.39 mm thick. A detailed interpretation and analysis of the biface is provided in Section 4.1.1 below.

Table 3: Location 1, Pinkney South Site, Stage 2 Artifact Catalogue

Cat #	Date	Context	Artifact	Freq.	Shape	Comments
1	14-May-15	Surface find	biface	1	Triangular	Haldimand chert

3.2 Stage 3

3.2.1 Location 1, the Pinkney South Site (AkHa-21)

The Stage 3 archaeological assessment was conducted employing the methods described in Section 2.2.2 and resulted in the recovery of no archaeological resources.

Table 4: Inventory of Documentary Record

Document Type	Current Location of Document	*Additional Comments*
Field Notes	Golder office in Mississauga	1 page in original field book and stored digitally in project file
Hand Drawn Maps	Golder office in Mississauga	1 hand drawn map in original field stored digitally in project file
Maps Provided by Client	Golder office in Mississauga	1 stored digitally in project file
Digital Photographs	Golder office in Mississauga	23 photographs stored digitally in project file

4.0 ANALYSIS AND CONCLUSIONS

4.1 Stage 2

4.1.1 Location 1, the Pinkney South Site (AkHa-21)

Location 1, the Pinkney South site (AkHa-21) consists of a single foliate or trianguloid and biconvex (e.g., Ellis and Deller 1991:9-10) biface, manufactured from Haldimand chert and considered to be cache blade-like (Images 16, 17) was recovered during the Stage 2 archaeological assessment. This biface measured 81.09 mm long by 36.56 mm wide by 8.39 mm thick. Upon inspection of the incipient basal 'notches' under a microscope, it was discerned that both 'notches' comprised flake scars that were not patinated like the rest of the surface of the biface and one appeared to be jagged and fresh. These 'notches' were not original to the biface and reflect recent damage.

For the Caledon area, Haldimand chert is considered exotic (see MTCS 2011, Section 2.2, Standard 1.b.ii), found here some 100 km or more north of its source areas in Haldimand County. This points either to an exchange network at work at the time of its deposition or long-distance serial procurement from further south (see Ellis et al. 2009:39-40). Haldimand chert can also sometimes be considered 'period-specific' (cf. MTCS 2011, Section 2.2, Standard 1.b.ii) in that Late Paleo-Indian and Early Archaic communities seem to have favoured it (see MTCS 2011, Section 2.2, Standard 1.b.iii).

After delivery of the biface to the laboratory for analysis, the biface was first thought to be consistent with Meadowood cache blade or cache biface (Taché 2011:50). In Ontario, the Meadowood projectile point type dates to *circa* 1000-500 BC, during the Early Woodland (Kenyon 1980a, 1980b; Spence et al. 1990:128-137; Ritchie 1971:35, 89). Other possibilities, including either an unfinished Nettling projectile point or perhaps an unfinished Hind projectile point also came to be considered. In Ontario, the Nettling projectile point type dates to *circa* 8600-8000 BC, during the middle Early Archaic (see Ellis et al. 1990:73; Ellis et al. 2009:796-800), while the Hind projectile point type dates to *circa* 1100-950 BC, during the Small Point Late Archaic (Ellis et al. 2009:819). The biface is approximately 10 mm longer than the longest Meadowood points (Kenyon 1980), approximately 20 mm longer than the longest Nettling points (Fox 1980) and approximately 20 mm longer than the illustration of a Hind point in Ellis et al. (1990:97). It does not, then, neatly fit expectations of any of these point types.

Although Holcombe projectile point, Hi-Lo projectile point (Bursey 1994:53, 2012; Ellis and Deller 1991:5; Ellis et al. 2009:795; Parker 1986) and Early Archaic Side-Notched projectile point (Ellis et al. 1990:71; cf. Ellis et al. 2009:792) manufacturers seem to have favoured Haldimand chert, the biface does not appear to represent a blank for one of these point types. Neither does it appear to be a Bifurcate Base blank, whether late Early Archaic Bifurcate Base points (Ellis et al. 1990:78) or early Middle Archaic Lake Erie Bifurcated-like forms and/or Stanly/Neville forms (Ellis et al. 2009:803-804; cf. Woodley 1996:50-51).

At the Nettling site, Haldimand chert, among other raw materials was, "rare to non-existent" (Ellis and Deller 1991:5), although Haldimand chert seems to have been used at the Allan site adjacent to a Haldimand outcrop (Ellis et al. 2009:795) and appears to have continued in use in the western Lake Ontario area (Ellis et al. 1990:77). Further research has also shown that Meadowood projectile points were rarely, if ever, produced from Haldimand chert, indeed Onondaga chert is considered the "main currency" (Taché 2011:46) or "the key feature" (Taché 2011:52) of Meadowood Interaction Sphere.

The biface is somewhat reminiscent of the points from Burial 18A from the Hind site although most of these also appear to have been manufactured from Onondaga chert (Donaldson and Wortner 1995:23, Figure 22), and most seem to have taken on a more triangular outline with straighter bases (Donaldson and Wortner 1995, see Burial 22 bifaces on Figure 28) than the Pinkney South site (AkHa-21) biface. Hind projectile points are, on the other hand, said to have included specimens made on Haldimand chert, as at the Bruce Boyd site, some 60 or 70 km from Haldimand chert sources, although many other associated tools were manufactured from Onondaga chert at this site (Ellis et al. 2009:825). At the Welke-Tonkonoh and Thedford II sites, Onondaga chert was favoured for Hind projectile points instead (Ellis et al. 2009:825).

The Small Point Late Archaic period is characterised by a general reduction in projectile point size versus earlier or partially contemporary Broad Points (Snarey and Ellis 2010). While early Small Points, such as Crawford Knoll projectile points, are argued to have been used predominantly as arrow points, later Small Points, including Hind projectile points, may have instead been used as spear thrower dart points (Snarey and Ellis 2010). The Hind type-site (AdHk-1) was notable for producing a series of human burials, both cremations and inhumation, some of which were treated with red ochre. Grave goods included shell and copper beads, galena, banded slate birdstones and gorgets, a bear skull ‘mask’ and numerous bone and stone tools (Donaldson and Wortner 1995). Hind projectile points are also associated with the ‘Glacial Kame Complex’, featuring use of natural knolls and mounds for human burial grounds (Ferris and Spence 1995; Spence and Fox 1986). Exotic materials are notable in relation to the Glacial Kame Complex (Ellis et al. 1990:115; Ferris and Spence 1995:89).

The Meadowood period is characterised by the exchange of thin and well-made Meadowood projectile points and Meadowood cache blades, however, exotic and expensive craft items such as native copper beads and awls, banded slate gorgets and pop-eyed birdstones as well as marine shell beads from the Mid-Atlantic region (ASI 2005; Jackson 1986; Spence et al. 1990; Taché 2011). The earliest ceramic vessels in Ontario (Vinette I) also appear during this time. These typically thick, coarsely-tempered, coil-manufactured ceramics, which do not often survive in the archaeological record, may point to plant collection and processing camps, possibly associated with nut oil storage (Jackson 1986:397). The main centre of Meadowood cache blade and projectile point manufacture appears to be the Niagara Peninsula and adjacent areas along the north shore of Lake Erie in Ontario and into western New York State (Taché 2011:43, 48). The focus on this area reflects the preference for good quality, typically dark grey, Onondaga chert, which outcrops in this region. Numerous other areas have also produced Meadowood items, however, and may reflect exchange partners producing other goods that flowed back through other areas within the wider interaction sphere. While habitation sites are known for this time period, cremation burials with rich grave offerings of native copper artifacts as well as Meadowood projectile points and cache blades have also been discovered (Archaeological Services Inc. 2005; Jackson 1986; Spence et al. 1990; Taché 2011).

Given that the Pinkney Pit biface was located on a knoll or rise and given the biface’s exotic nature, its quality of manufacture and its possible period-specificity, it has cultural heritage value or interest. Overall, the Pinkney South site (AkHa-21) biface seems to best fit with Hind Late Archaic, which directly precedes Meadowood, although Meadowood cannot be ruled out.

4.2 Stage 3

4.2.1 Location 1, the Pinkney South Site (AkHa-21)

The Stage 3 archaeological assessment of Location 1 (AkHa-21) did not result in the recovery of any additional archaeological resources. As a result it appears that the Pinkney South site (AkHa-21) biface represents an isolated find spot. As no archaeological resources or cultural features were identified during the Stage 3 archaeological assessment, the cultural heritage value or interest of the Pinkney South site is considered to have been sufficiently assessed through the Stage 1-3 archaeological assessments and no further assessment of this site is required. This conclusion is consistent with Sections 3.4 and 3.4.1 of the *SGCA* (MTCS 2011).

5.0 RECOMMENDATIONS

5.1 Stage 2

The Stage 2 assessment of the study area resulted in the identification of a single pre-contact aboriginal biface. The biface was registered as the Pinkney South site (AkHa-21) as it was determined to have cultural heritage value and interest.

At the conclusion of the Stage 2 assessment the MTCS were consulted (Personal Communications, Malcolm Horne) and recommendations for the required Stage 3 assessment of the site were agreed upon (Appendix A). Given the very small site size and the determination that the recovered biface represented an example of exotic material it was recommended, in consultation with MTCS, that five Stage 3 1 x 1 m test units, centered on the recovered biface, would be hand excavated at 5 m intervals. If no additional artifacts were recovered no additional units would be required, and the cultural heritage value or interest of the site would be sufficiently assessed. Should artifacts have been recovered the site would need to expand in accordance with the *SGCA* (MTCS, 2011).

5.2 Stage 3

The Stage 3 archaeological assessment of Location 1, the Pinkney South site (AkHa-21) did not result in the recovery of any archaeological resources or features and as such no further archaeological assessment is recommended. The site may be considered free of archaeological concern and Stage 4 mitigation of impacts is not required for the site.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18. 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 project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licenced 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 licenced archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

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

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

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8.0 IMAGES

Image 1: Area of previous disturbance, facing north-northeast

Image 2: Area of previous disturbance, facing north-northeast

Image 3: Area of previous disturbance, artificial berm, facing north

Image 4: Stone fence row between fields, facing northwest

Image 5: Area of steep slope, facing east

Image 6: Steep slope, facing north-northeast

Image 7: Test pitting with steep slope in background, facing east

Image 8: Test pitting, facing north

Image 9: Test pitting, facing east

Image 10: Open test pit, facing down, east is up

Image 11: Field conditions, facing north

Image 12: Pedestrian survey at 5 m interval, facing southwest

Image 13: Pedestrian survey at 5 m interval, facing south-southeast

Image 14: Recovered biface (Location 1) in situ, facing down, northeast is up

Image 15: Intensification around Location 1, facing north-northeast

Image 16: Location 1 Biface Obverse, scale as indicated

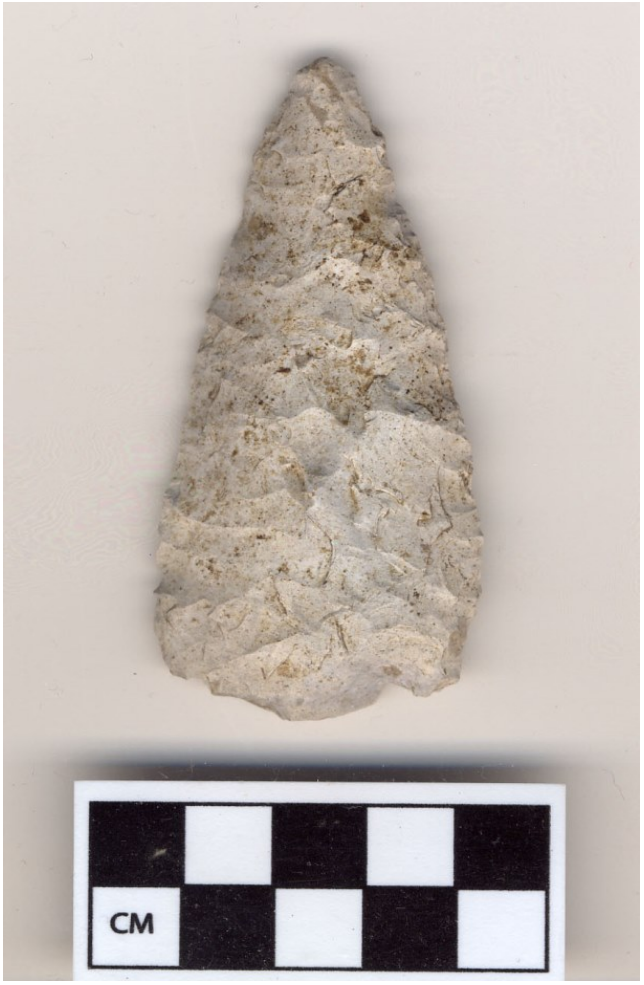


Image 17: Location 1 Biface Reverse, scale as indicated

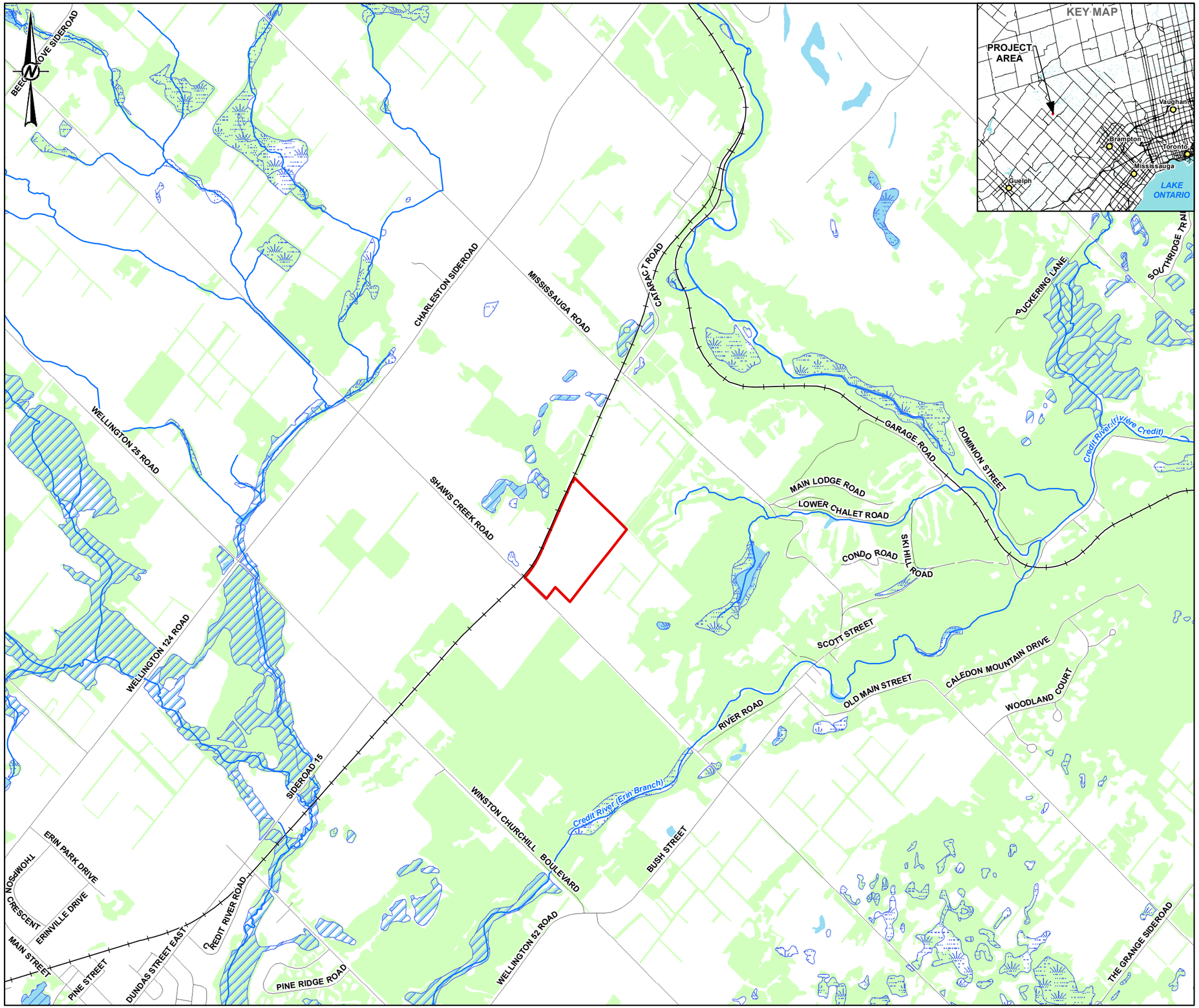
Image 18: Stage 3 excavation at Location 1, facing north-northwest

Image 19: Excavated unit, 300E 400N:1, facing down, north as indicated

Image 20: Location 1 backfilled, facing southwest

9.0 MAPS

All maps follow on succeeding pages



LEGEND

- ROADS
- RAILWAY
- WATERCOURSE
- WETLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- WATERBODY
- WOOED AREA
- PROJECT AREA

0 1,000 2,000

1:25,000 METERS

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2013
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PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM

CLIENT
LAFARGE CANADA INC.

PROJECT
STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS
OF THE LAFARGE PIT 3 EXTENSION

TITLE
APPROXIMATE LOCATION OF THE PROJECT AREA

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-11-03
DESIGNED	KD
PREPARED	KD
REVIEWED	PP
APPROVED	CP

PROJECT NO.	CONTROL	REV.	MAP
1415560	####	1.0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
0 25mm

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LEGEND

PROJECT AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. NOT TO SCALE

REFERENCE(S)

TREMAINE, GEORGE. 1859. MAP OF THE COUNTY OF PEEL, UPPER CANADA.

CLIENT

LAFARGE CANADA INC.

PROJECT

STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS
OF THE LAFARGE PIT 3 EXTENSION

TITLE

**A PORTION OF THE 1859 TREMAINE'S MAP
OF THE COUNTY OF PEEL, UPPER CANADA**

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO. 1415560 | CONTROL | REV. | MAP 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 0 25mm

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LEGEND

PROJECT AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. NOT TO SCALE

REFERENCE(S)

BASE IMAGE - WALKER AND MILES. 1877. ILLUSTRATED HISTORICAL ATLAS OF THE COUNTY OF PEEL.

CLIENT

LAFARGE CANADA INC.

PROJECT

STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS
OF THE LAFARGE PIT 3 EXTENSION

TITLE

A PORTION OF THE 1877 HISTORIC ATLAS MAP OF CALEDON TOWNSHIP

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO.	CONTROL	REV.	MAP
1415560			3

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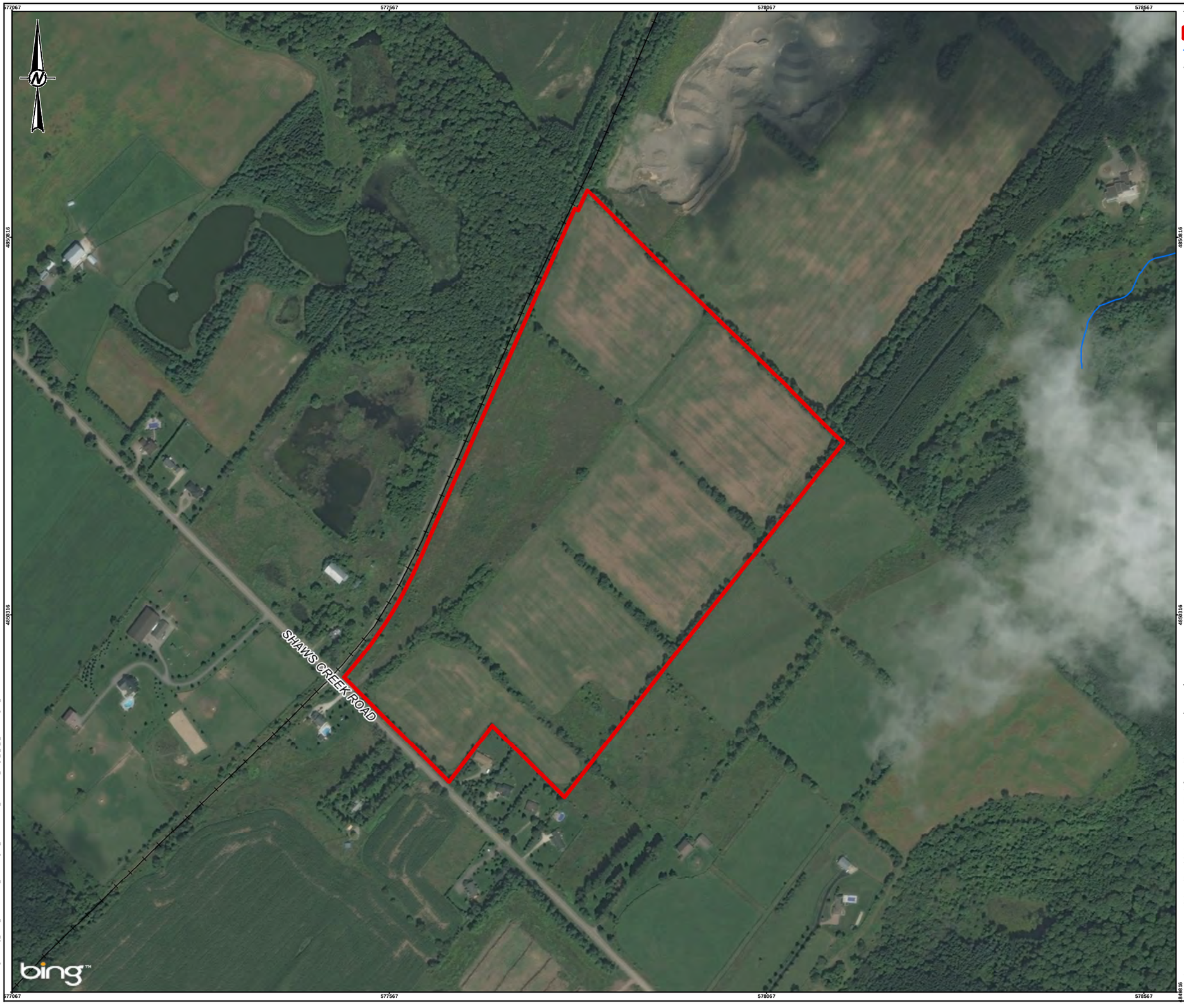
578067
578567
4850816
4850316



LEGEND

- PROJECT AREA
- WATERCOURSE
- RAILWAY

0 200 400

1:5,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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CLIENT
LAFARGE CANADA INC.

PROJECT
STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS
OF THE LAFARGE PIT 3 EXTENSION

TITLE
AERIAL IMAGE OF STUDY AREA

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO.	CONTROL	REV.	MAP
1415560			4

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0

LEGEND

- PROJECT AREA
- AREA OF ARCHAEOLOGICAL POTENTIAL STAGE 2 PEDESTRIAN SURVEY RECOMMENDED
- AREA OF ARCHAEOLOGICAL POTENTIAL STAGE 2 TEST PIT SURVEY RECOMMENDED

0 100 200

1:4,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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CLIENT
LAFARGE CANADA INC.

PROJECT
STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS OF THE LAFARGE PIT 3 EXTENSION

TITLE
STAGE 1 ASSESSMENT RESULTS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO.	CONTROL	REV.	MAP
1415560			5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0

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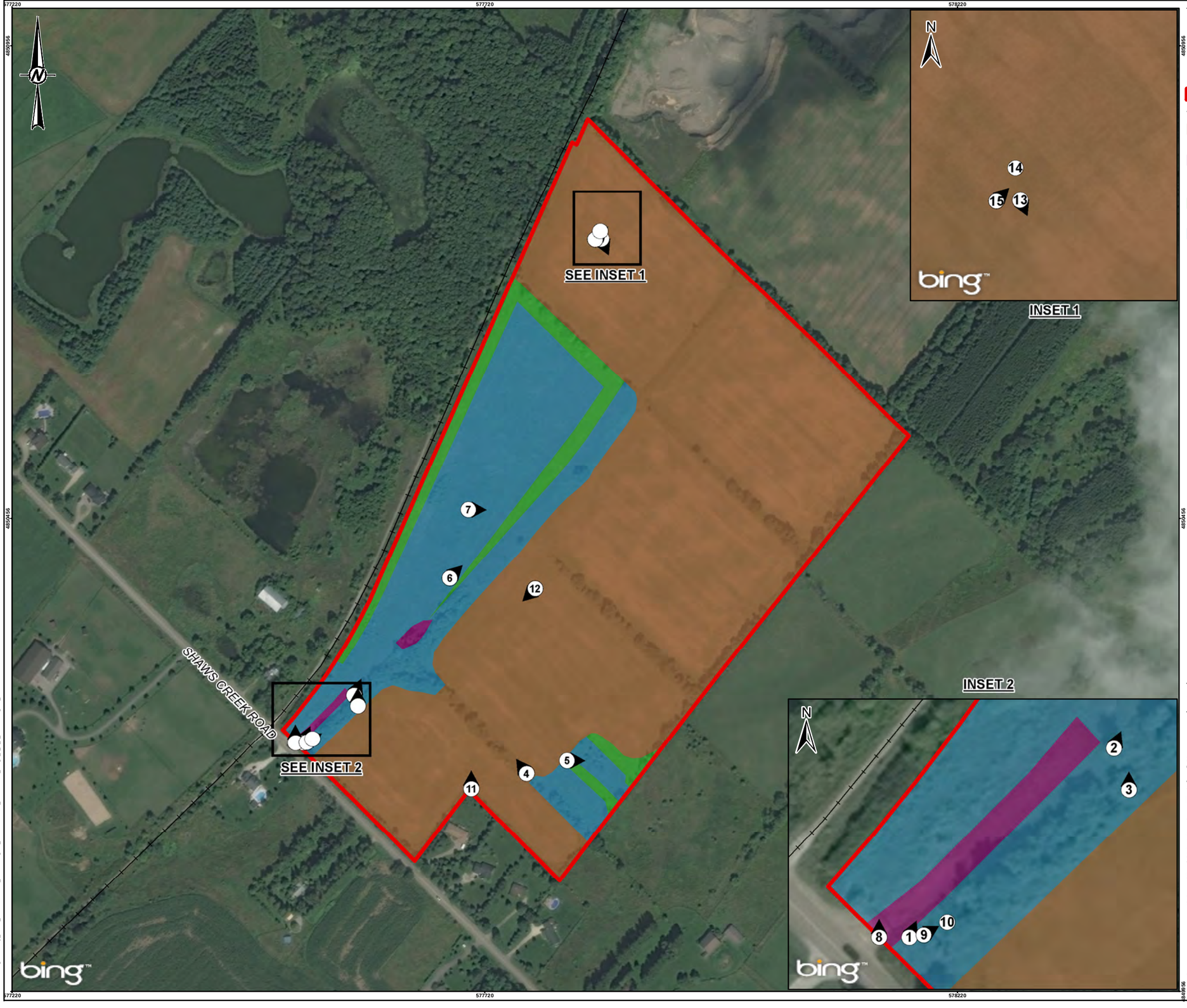

INSET 1

LEGEND

- PHOTOGRAPH LOCATION AND DIRECTION
- PHOTOGRAPH LOCATION AND DIRECTION (FACING DOWN)
- PROJECT AREA
- RAILWAY
- STAGE 2 PEDESTRIAN SURVEY AT 5M INTERVALS
- AREA OF PREVIOUS DISTURBANCE, LOW ARCHAEOLOGICAL POTENTIAL, NO STAGE 2 SURVEY UNDERTAKEN
- AREA OF SLOPE IN EXCESS OF 20°, LOW ARCHAEOLOGICAL POTENTIAL, NO STAGE 2 SURVEY UNDERTAKEN
- STAGE 2 TEST PIT SURVEY AT 5M INTERVALS

MAIN FIGURE SCALE

0 100 200

1:4,000 METRES

INSET SCALE

0 25 50

1:1,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

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PROJECT
STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS OF THE LAFARGE PIT 3 EXTENSION

TITLE
STAGE 2 ASSESSMENT RESULTS AND PHOTOGRAPHIC KEY

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO. 14115560 CONTROL REV. MAP **6**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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LEGEND

- PHOTOGRAPH LOCATION AND DIRECTION
- PHOTOGRAPH LOCATION AND DIRECTION (FACING DOWN)
- PROJECT AREA
- EXCAVATED UNIT AND FREQUENCY (STAGE 3)

0 10 20
1:350 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2013
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CLIENT
LAFARGE CANADA INC.

PROJECT
STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENTS
OF THE LAFARGE PIT 3 EXTENSION

TITLE
STAGE 3 ASSESSMENT RESULTS AND PHOTOGRAPHIC KEY

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-09-29
DESIGNED	JT
PREPARED	JT
REVIEWED	CL
APPROVED	CP

PROJECT NO.	CONTROL	REV.	MAP
1415560			7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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Report Signature Page

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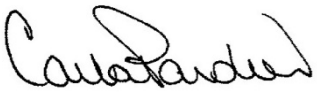

Peter Popkin, PhD, CAHP, MCIfA
Senior Archaeologist

Carla Parslow, PhD
Associate, Senior Archaeologist

PP/CAP/wlm

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APPENDIX A

MTCS Communication

Popkin, Peter

From: Horne, Malcolm (MTCS) <Malcolm.Horne@ontario.ca>
Sent: Thursday, September 22, 2016 4:51 PM
To: Popkin, Peter
Cc: Archaeology (MTCS)
Subject: Advice Provided Re Isolated Findspot Recovered Under Stage 2 PIF P362-0089-2014, Pinkney Pit Expansion, Town of Caledon, MTCS File 0002939

Hi, Peter. This is to confirm that on June 2, 2015, MTCS advised Scott Martin, then with Golder Associates, regarding an isolated find of a Haldimand chert biface. We agreed that concerns that this was a possible exotic item or of special interest would be resolved by a Stage 3 strategy of the excavation of five test units centered on the findspot. If those five test units produced sterile results, then we would be satisfied with a recommendation that there was no further CHVI for that archaeological site.

Hope that helps.

Sincerely,

Malcolm Horne
Archaeology Review Officer
Archaeology Programs Unit
Ministry of Tourism, Culture and Sport
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel. 416-314-7146
Fax 416-314-7175
Email: Malcolm.Horne@ontario.ca

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solutions@golder.com
www.golder.com

Golder Associates Ltd.
6925 Century Avenue, Suite #100
Mississauga, Ontario, L5N 7K2
Canada
T: +1 (905) 567 4444

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