



## REPORT

# Archaeology Existing Conditions and Impact Assessment

*W12A Landfill Expansion EA, City of London, Ontario*

Submitted to:

**City of London**  
300 Dufferin Avenue  
London, Ontario  
PO BOX 5035  
N6A 4L9

Attention: Mike Losee, Division Manager, Solid Waste Management

Submitted by:

**Golder Associates Ltd.**  
1931 Robertson Road  
Ottawa, Ontario, K2H 5B7 Canada

+1 613 592 9600

1648176

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## **ATTACHMENTS**

### **ATTACHMENT A**

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B.01 Stage 3 Archaeological Assessment

B.02 MHSTCI Review and Entry in Public Registry

### **ATTACHMENT C**

C.01 Stage 1-2 Archaeological Assessment

C.02 MHSTCI Review and Entry in Public Registry

## Acronyms and Glossary of Terms

| Term / Acronym | Definition                                                  |
|----------------|-------------------------------------------------------------|
| EA             | Environmental Assessment                                    |
| EASR           | Environmental Assessment Study Report                       |
| ha             | hectares                                                    |
| m              | metre                                                       |
| m <sup>3</sup> | cubic metres                                                |
| masl           | metres above sea level                                      |
| MHSTCI         | Ministry of Heritage, Sport, Tourism and Culture Industries |
| MRF            | Material Recovery Facility                                  |
| ToR            | Terms of Reference                                          |

## 1.0 INTRODUCTION

The City of London is proposing an expansion of the existing W12A Landfill site (the Project) located at 3502 Manning Drive, part of Lots 18, 19 and 20 of Concession 6 in the former Township of Westminster, in the south end of the City of London Ontario.

The environment is considered in broad terms to include the natural, social, cultural, and economic aspects of the environment. This document presents the details of the existing conditions and impact assessment related to archaeology for the Environment Assessment (EA) of the proposed W12A Landfill expansion. This work has been completed in three parts; Golder Associates Ltd. (Golder) completed a Stage 2 Archaeological Assessment in Attachment A and, based on report recommendations for further investigation, one pre-contact Indigenous site (White Oak 1) was advanced to a Stage 3 Archaeological Assessment provided in Attachment B. Golder also completed an additional Stage 1-2 Archaeological Assessment for additional areas for landfill expansion in Attachment C.

All work was conducted in accordance with the requirements set out in the approved Amended Terms of Reference (ToR) dated February 2019.

This report is a supporting document to the Environmental Assessment Study Report (EASR).

## 2.0 PROJECT DESCRIPTION

The following describes the Project components considered relevant for the purposes of this archaeological assessment.

The landfill expansion consists of a vertical expansion over the existing landfill footprint to provide 13.8 million cubic metres (m<sup>3</sup>) of airspace for waste and daily cover. To accommodate ancillary features and provide additional on-Site buffer width compared to the existing landfill, the northern boundary of the landfill property will be adjacent to Scotland Drive and a 100 metre (m) buffer width will be provided on the east side of the landfill footprint and some additional area in the southeast corner to tie into the adjacent Material Recovery Facility (MRF) property line. This results in a 106.3 hectare (ha) landfill footprint within a 192.4 ha landfill property, with a highest ridge elevation of waste of 318.43 metres above sea level (masl).

## 3.0 EXISTING CONDITIONS

The details and discussion of existing historical and archaeological conditions is provided in Section 1.0 of Attachments A, B.01 and C.01. Background information on the pre- and post-Indigenous contact culture history of the former geographic Township of Westminster, Middlesex County, now City of London, Ontario was compiled and reviewed. The 21 day Stage 2 Archaeological Assessment described in Attachment A consisted of a field program between August 2018 and November 2019. The Stage 2 Archaeological Assessment consisted of a combination of pedestrian and test pit surveys at 5 m intervals, as described in Attachment A Section 2.0. Six artifact producing locations were identified during the field program, of which one location was considered to have cultural heritage value or interest and recommended to be subject to a Stage 3 Archaeological Assessment.

The Stage 2 assessment in Attachment C.01, which involved a combination of pedestrian survey at 5 m intervals and shovel test pit survey at 5 m intervals, resulted in the identification of six artifact-producing locations. One location was considered to have cultural heritage value or interest and was recommended for Stage 3 Archaeological Assessment if further development in this area was anticipated. The proposed landfill expansion was not occurring in this location and hence further study was not completed.

#### **4.0 IMPACT ASSESSMENT**

The results of the completed Stage 3 Archaeological Assessments identified the presence of one site with archaeological potential in the Site Area (White Oak 1 site [AfHh-926]), located on the north side of the western portion of the existing landfill footprint. The site appears to represent an occupation dating to the Late Archaic Period (ca. 1500 – 500 B.C.). The limited quantity of the cultural material identified at the site suggests that it represents a small, briefly occupied, campsite. The lithic tools and debitage suggest latter stage tool production and maintenance were carried out at this site.

The presence of high artifact-yielding test units (e.g.,  $\geq 10$  artifacts) indicates that the White Oak 1 site (AfHh-926) has further cultural heritage value or interest and will require Stage 4 mitigation prior to development. This conclusion is consistent with Section 3.4.1, Standard 1a of the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI)'s *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The Stage 4 mitigation for the White Oak 1 site will be an avoidance and protection strategy. As per Section 4.1.1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011a) the avoidance and protection strategy for the White Oak 1 site (AfHh-926) will involve the establishment of a “no-go” zone consisting of a 10 m protective buffer around the extent of the site as defined by the results of the Stage 3 assessment. The area of the White Oak 1 site (AfHh-926) does not interfere with the proposed landfill expansion construction but care will be required when using proposed buffer land to the north of the landfill expansion to ensure soil stockpiles or other ancillary uses avoid the “no-go” zone. Details regarding the plans for avoidance and long-term protection of the White Oak 1 site (AfHh-926) are provided in Attachment B.01.

There are no further concerns for impacts to archaeological sites in the remainder of the Site Area outside the 10 m buffer. No monitoring or mitigation measures in addition to those required for the protection of White Oak 1 site are identified.

#### **5.0 OTHER APPROVALS**

The MHSTCI has reviewed the results and recommendations presented in the Stage 3 Archaeological Assessment Report (Attachment B.01) and accepted the report into the Provincial Register of archaeological reports, and issued a standard letter of compliance with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

The Stage 1-2 Archaeological Assessment Report was submitted to MHSTCI in September 2018 and accepted by MHSTCI via the standard letter of compliance with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

**ATTACHMENT A**

**A.01 Stage 2 Archaeological Assessment**

| Cat. #                | Loc. | CSP #  | Depth (cm) | Material 1 | Material 2                  | Function 1          | Function 2         | Object                            | Fragment               | Attribute 1             | Attribute 2      | Manufacture | Alteration     | # of Artifacts | # of Objects | Note                                |
|-----------------------|------|--------|------------|------------|-----------------------------|---------------------|--------------------|-----------------------------------|------------------------|-------------------------|------------------|-------------|----------------|----------------|--------------|-------------------------------------|
| Location 1            |      |        |            |            |                             |                     |                    |                                   |                        |                         |                  |             |                |                |              |                                     |
| 1                     | P1-6 | 1      | N/A        | stone      | chert:Onondaga              | tools and equipment | tool               | biface                            | incomplete             | stage 4                 |                  | chipped     |                | 1              |              | probable broken projectile point    |
| Location 2            |      |        |            |            |                             |                     |                    |                                   |                        |                         |                  |             |                |                |              |                                     |
| 1                     | P1-7 | 1      | N/A        | stone      | chert:Onondaga              | tools and equipment | debitage           | biface thinning flake             | complete               |                         |                  | chipped     |                | 1              |              |                                     |
| 2                     | P1-7 | 1      | N/A        | stone      | chert:Onondaga              | tools and equipment | debitage           | biface thinning flake             | complete               |                         |                  | chipped     |                | 1              |              |                                     |
| Location 3            |      |        |            |            |                             |                     |                    |                                   |                        |                         |                  |             |                |                |              |                                     |
| 1                     | P5-1 | TP1    | N/A        | stone      | chert: selkirk              | tools and equipment | debitage           | flake fragment                    |                        |                         |                  | chipped     |                | 1              |              |                                     |
| Location 4 (AFHh-945) |      |        |            |            |                             |                     |                    |                                   |                        |                         |                  |             |                |                |              |                                     |
| 1                     | P5-2 | TP1    | N/A        | faunal     | bone                        | ecological          | faunal             | bone                              | long bone fragment     | mammal, small to medium |                  |             | burnt/calcined | 1              | 2            |                                     |
| 2                     | P5-2 | TP2    | N/A        | faunal     | bone                        | ecological          | faunal             | bone                              |                        | mammal, indeterminate   |                  |             |                | 1              |              |                                     |
| 3                     | P5-2 | TP2    | N/A        | metal      | iron                        | miscellaneous       | hardware           | barbed wire                       | fragment               |                         |                  |             |                | 1              |              |                                     |
| 4                     | P5-2 | TP3    | N/A        | ceramic    | Rockingham ware             | food and beverage   | tableware          | tableware: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 5                     | P5-2 | TP3    | N/A        | glass      | indeterminate               | indeterminate       | container          | container: indeterminate          | body                   |                         | light aqua       |             |                | 1              |              |                                     |
| 6                     | P5-2 | TP4    | N/A        | ceramic    | coarse buff earthenware     | food and beverage   | storage container  | container: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 7                     | P5-2 | TP4    | N/A        | composite  | asphalt                     | structural          | building component | roof shingle                      | fragment               |                         | black            |             |                | 1              |              |                                     |
| 8                     | P5-2 | TP4    | N/A        | brick      | brick                       | structural          | building component | brick                             | fragment               |                         | red              |             |                | 1              |              | exfoliated                          |
| 9                     | P5-2 | TP5    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 1              |              |                                     |
| 10                    | P5-2 | TP5    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | holloware: indeterminate          | body                   | hand-painted            | late palette     |             |                | 1              |              | green, floral pattern               |
| 11                    | P5-2 | TP5    | N/A        | ceramic    | coarse buff earthenware     | food and beverage   | storage container  | container: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 12                    | P5-2 | TP5    | N/A        | ceramic    | porcelain                   | structural          | electrical         | insulator                         | fragment               |                         | white            |             |                | 1              |              |                                     |
| 13                    | P5-2 | TP6    | N/A        | faunal     | bone                        | ecological          | faunal             | bone                              | long bone fragment     | mammal, small to medium |                  | burnt       |                | 1              |              | possibly butchered (sawn) but burnt |
| 14                    | P5-2 | TP6    | N/A        | brick      | brick                       | structural          | building component | brick                             | fragment               |                         | red              |             |                | 1              |              |                                     |
| 15                    | P5-2 | TP6    | N/A        | carbon     | coal                        | miscellaneous       | indeterminate      | coal                              |                        |                         |                  |             |                | 1              |              |                                     |
| 16                    | P5-2 | TP7    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | hand-painted            | early palette    |             |                | 1              |              | brown                               |
| 17                    | P5-2 | TP7    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate           | body/footring/base     | plain/undecorated       |                  |             |                | 1              |              |                                     |
| 18                    | P5-2 | TP7    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 1              |              |                                     |
| 19                    | P5-2 | TP7    | N/A        | ceramic    | porcelain                   | food and beverage   | tableware          | tableware: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 20                    | P5-2 | TP7    | N/A        | ceramic    | coarse earthenware, red     | food and beverage   | storage container  | container: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 21                    | P5-2 | TP7    | N/A        | ceramic    | clay: terracota             | tools and equipment | agricultural       | flower pot                        | body                   |                         |                  |             |                | 2              |              |                                     |
| 22                    | P5-2 | TP7    | N/A        | ceramic    | coarse buff earthenware     | indeterminate       | indeterminate      | indeterminate                     | body                   |                         |                  |             |                | 1              |              |                                     |
| 23                    | P5-2 | TP7    | N/A        | ceramic    | coarse buff earthenware     | indeterminate       | indeterminate      | indeterminate                     | body                   |                         |                  |             |                | 1              |              |                                     |
| 24                    | P5-2 | TP7    | N/A        | metal      | iron                        | structural          | building component | nail: common                      | distal                 |                         |                  | machine-cut |                | 1              |              |                                     |
| 25                    | P5-2 | TP7    | N/A        | carbon     | coal                        | miscellaneous       | indeterminate      | coal                              |                        |                         |                  |             |                | 2              |              |                                     |
| 26                    | P5-2 | TP7    | N/A        | plastic    | indeterminate               | indeterminate       | indeterminate      | indeterminate                     | fragment               |                         | yellow           |             |                | 1              |              |                                     |
| 27                    | P5-2 | TP7    | N/A        | composite  | indeterminate               | indeterminate       | indeterminate      | tile                              | fragment               |                         | grey             |             |                | 1              | 2            | cement based asbestos tile          |
| 28                    | P5-2 | TP8    | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate           | body                   | transfer printed        | blue             |             |                | 1              |              | indeterminate pattern               |
| 29                    | P5-2 | TP9    | N/A        | concrete   | concrete                    | structural          | building component | concrete                          | fragment               |                         |                  |             |                | 1              |              |                                     |
| 30                    | P5-2 | TP9    | N/A        | composite  | asphalt                     | structural          | building component | roof shingle                      | fragment               |                         | black            |             |                | 1              |              |                                     |
| 31                    | P5-2 | TP11   | N/A        | metal      | iron                        | indeterminate       | indeterminate      | can lid                           | fragment               |                         |                  |             |                | 2              |              |                                     |
| 32                    | P5-2 | TP12   | N/A        | glass      | indeterminate               | structural          | building component | window pane                       | fragment               |                         | clear/colourless |             |                | 2              |              |                                     |
| 33                    | P5-2 | TP13   | N/A        | metal      | iron/white metal alloy      | indeterminate       | indeterminate      | indeterminate machinery/mechanism | incomplete             |                         |                  |             |                | 1              |              |                                     |
| 34                    | P5-2 | TP14   | N/A        | ceramic    | coarse earthenware, red     | indeterminate       | indeterminate      | indeterminate                     | body                   |                         |                  |             |                | 1              |              |                                     |
| 35                    | P5-2 | TP15   | N/A        | ceramic    | coarse earthenware, red     | food and beverage   | storage container  | container: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 36                    | P5-2 | TP16   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 1              |              |                                     |
| 37                    | P5-2 | TP16   | N/A        | brick      | brick                       | structural          | building component | brick                             | fragment               |                         | red              |             |                | 1              |              |                                     |
| 38                    | P5-2 | TP17   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 2              |              |                                     |
| 39                    | P5-2 | TP17   | N/A        | ceramic    | porcelain                   | food and beverage   | tableware          | tableware: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 40                    | P5-2 | TP17   | N/A        | ceramic    | Rockingham ware             | food and beverage   | tableware          | tableware: indeterminate          | body                   |                         |                  |             |                | 1              |              |                                     |
| 41                    | P5-2 | TP17   | N/A        | ceramic    | coarse earthenware, red     | indeterminate       | indeterminate      | indeterminate                     | body                   |                         |                  |             |                | 1              |              |                                     |
| 42                    | P5-2 | TP17   | N/A        | ceramic    | coarse earthenware, yellow  | indeterminate       | indeterminate      | indeterminate                     | body                   |                         |                  |             |                | 1              |              |                                     |
| 43                    | P5-2 | TP17   | N/A        | metal      | iron                        | structural          | building component | nail: common                      | complete               |                         |                  | machine-cut |                | 1              |              |                                     |
| 44                    | P5-2 | TP18   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | holloware: indeterminate          | body                   | hand-painted            | late palette     |             |                | 1              |              | green, red, floral pattern          |
| 45                    | P5-2 | TP18   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | transfer printed        | blue             |             |                | 1              |              | indeterminate pattern               |
| 46                    | P5-2 | TP18   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 2              |              |                                     |
| 47                    | P5-2 | TP18   | N/A        | ceramic    | clay: white ball            | personal/societal   | smoking            | pipe bowl                         | rim                    |                         |                  |             |                | 1              |              |                                     |
| 48                    | P5-2 | TP18   | N/A        | glass      | indeterminate               | indeterminate       | container          | container: indeterminate          | body                   |                         | clear/colourless |             |                | 1              |              |                                     |
| 49                    | P5-2 | TP18   | N/A        | brick      | brick                       | structural          | building component | brick                             | fragment               |                         | red              |             |                | 2              |              |                                     |
| 50                    | P5-2 | TP19   | N/A        | ceramic    | refined white earthenware   | food and beverage   | tableware          | tableware: indeterminate          | body                   | plain/undecorated       |                  |             |                | 1              |              |                                     |
| 51                    | P5-2 | TP19   | N/A        | glass      | indeterminate               | indeterminate       | container          | container: indeterminate          | body                   |                         | dark olive       |             |                | 2              |              |                                     |
| 52                    | P5-2 | TP19   | N/A        | faunal     | bone                        | ecological          | faunal             | bone                              | indeterminate fragment | mammal, small to medium |                  |             | calcined       | 1              |              |                                     |
| 53                    | P5-2 | TP19   | N/A        | faunal     | bone                        | ecological          | faunal             | bone                              | long bone fragment     | mammal, small to medium |                  |             |                | 1              |              |                                     |
| 54                    | P5-2 | TP19   | N/A        | metal      | iron                        | structural          | building component | nail: common                      | complete/proximal      |                         |                  | machine-cut |                | 2              |              | 1 complete, 1 proximal frag.        |
| 55                    | P5-2 | TP19   | N/A        | metal      | iron                        | indeterminate       | indeterminate      | indeterminate                     | fragment               |                         |                  |             |                | 2              |              |                                     |
| 56                    | P5-2 | TP19   | N/A        | metal      | copper alloy                | miscellaneous       | hardware           | wire                              | fragment               |                         |                  |             |                | 1              |              |                                     |
| 57                    | P5-2 | TP19   | N/A        | clinker    | clinker                     | miscellaneous       | indeterminate      | clinker                           |                        |                         |                  |             |                | 2              |              |                                     |
| 58                    | P5-2 | TP19   | N/A        | plastic    | indeterminate               | indeterminate       | indeterminate      | indeterminate                     | fragment               |                         | blue             |             |                | 1              |              |                                     |
| 59                    | P5-2 | TP20   | N/A        | metal      | iron                        | miscellaneous       | hardware           | bolt                              | complete               |                         |                  |             |                | 1              |              |                                     |
| 60                    | P5-2 | TP20   | N/A        | plastic    | indeterminate               | indeterminate       | indeterminate      | indeterminate                     | fragment               |                         | blue             |             |                | 1              |              |                                     |
| 61                    | P5-2 | TP20   | N/A        | metal      | brass                       | arms and ammunition | ammunition         | shell casing, .22 caliber         | fragment               |                         |                  |             |                | 1              | 3            |                                     |
| 62                    | P5-2 | TP21   | N/A        | glass      | indeterminate               | indeterminate       | container          | container: indeterminate          | body                   |                         | clear/colourless |             |                | 1              |              |                                     |
| 63                    | P5-2 | TP22   | N/A        | glass      | indeterminate               | indeterminate       | container          | container: indeterminate          | body                   |                         | aqua             |             |                | 1              |              |                                     |
| 64                    | P5-2 | TU1-L1 | 0-26       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate           | body                   | plain/undecorated       |                  |             |                | 3              |              |                                     |
| 65                    | P5-2 | TU1-L1 | 0-26       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate           | body                   | transfer printed        | blue             |             |                | 2              |              |                                     |
| 66                    | P5-2 | TU1-L1 | 0-26       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate           | body                   | hand-painted            | late palette     |             |                | 2              |              | red                                 |
| 67                    | P5-2 | TU1-L1 | 0-26       | ceramic    | refined white earthenware   | food and beverage   | tableware          | holloware: indeterminate          | body                   | industrial slip         |                  |             |                | 5              |              | banded<br>blue, green               |
| 68                    | P5-2 | TU1-L1 | 0-26       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate           | rim                    | moulded                 | wheat/ceres      |             |                | 1              |              |                                     |

| Cat. # | Loc. | CSP #   | Depth (cm) | Material 1 | Material 2                  | Function 1          | Function 2         | Object                   | Fragment   | Attribute 1           | Attribute 2        | Manufacture   | Alteration | # of Artifacts | # of Objects | Note                   |
|--------|------|---------|------------|------------|-----------------------------|---------------------|--------------------|--------------------------|------------|-----------------------|--------------------|---------------|------------|----------------|--------------|------------------------|
| 69     | P5-2 | TU1-L1  | 0-26       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated     |                    |               |            | 5              |              |                        |
| 70     | P5-2 | TU1-L1  | 0-26       | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | body       | red slip              |                    |               |            | 1              |              |                        |
| 71     | P5-2 | TU1-L1  | 0-26       | ceramic    | coarse earthenware, yellow  | food and beverage   | container          | container: indeterminate | body       | yellow glaze          |                    |               |            | 1              |              |                        |
| 72     | P5-2 | TU1-L1  | 0-26       | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            |            |                       |                    |               |            | 1              |              |                        |
| 73     | P5-2 | TU1-L1  | 0-26       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       | dark olive         |               |            | 1              |              |                        |
| 74     | P5-2 | TU1-L1  | 0-26       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       | clear/colourless   |               |            | 6              |              |                        |
| 75     | P5-2 | TU1-L1  | 0-26       | metal      | ferrous alloy               | tools and equipment | clothing           | clothespin spring        | incomplete |                       |                    |               |            | 1              |              |                        |
| 76     | P5-2 | TU1-L1  | 0-26       | metal      | ferrous alloy               | structural          | building component | nail: common             | incomplete |                       |                    | machine-cut   |            | 4              |              |                        |
| 77     | P5-2 | TU1-L1  | 0-26       | metal      | ferrous alloy               | miscellaneous       | hardware           | bolt                     | complete   | lag                   | square head        |               |            | 1              |              |                        |
| 78     | P5-2 | TU1-L1  | 0-26       | brick      |                             | structural          | building component | brick                    | incomplete |                       |                    |               |            | 3              |              | 2 yellow, 1 red        |
| 79     | P5-2 | TU1-L1  | 0-26       | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                       | white              |               |            | 1              |              |                        |
| 80     | P5-2 | TU1-L1  | 0-26       | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate |                    |               |            | 2              |              |                        |
| 81     | P5-2 | TU1-L1  | 0-26       | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | Bos taurus            | metapodial condyle |               |            | 1              |              |                        |
| 82     | P5-2 | TU1-L1  | 0-26       | faunal     | dentition                   | ecological          | faunal             | tooth                    | incomplete | Bos taurus            | molar              |               |            | 1              |              |                        |
| 83     | P5-2 | TU1-L2  | 26-31      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | flow transfer printed | blue               |               |            | 1              |              |                        |
| 84     | P5-2 | TU1-L2  | 26-31      | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | rim        | moulded               | wheat/ceres        |               |            | 1              |              |                        |
| 85     | P5-2 | TU1-L2  | 26-31      | ceramic    | stoneware                   | food and beverage   | container          | container: indeterminate | rim        | clear glaze           |                    |               |            | 2              |              |                        |
| 86     | P5-2 | TU1-L2  | 26-31      | ceramic    | white ball clay             | personal/societal   | smoking            | pipe stem                | incomplete |                       |                    |               |            | 1              |              |                        |
| 87     | P5-2 | TU1-L2  | 26-31      | brick      |                             | structural          | building component | brick                    | incomplete |                       |                    |               |            | 1              |              | red                    |
| 88     | P5-2 | TU1-L2  | 26-31      | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                       |                    |               |            | 1              |              |                        |
| 89     | P5-2 | TU2-L1  | 0-20       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated     |                    |               |            | 4              |              |                        |
| 90     | P5-2 | TU2-L1  | 0-20       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | rim        | transfer printed      | blue               |               |            | 2              |              |                        |
| 91     | P5-2 | TU2-L1  | 0-20       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed      | black              |               |            | 1              |              |                        |
| 92     | P5-2 | TU2-L1  | 0-20       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed      | brown              |               |            | 1              |              |                        |
| 93     | P5-2 | TU2-L1  | 0-20       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated     |                    |               |            | 1              |              |                        |
| 94     | P5-2 | TU2-L1  | 0-20       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed      | blue               |               |            | 1              |              |                        |
| 95     | P5-2 | TU2-L1  | 0-20       | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | body       | yellow glaze          |                    |               |            | 1              |              |                        |
| 96     | P5-2 | TU2-L1  | 0-20       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       | manganese          |               |            | 2              |              |                        |
| 97     | P5-2 | TU2-L1  | 0-20       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       | white              |               |            | 1              |              |                        |
| 98     | P5-2 | TU2-L1  | 0-20       | glass      |                             | structural          | building component | window pane              | body       |                       | clear/colourless   |               |            | 2              |              |                        |
| 99     | P5-2 | TU2-L1  | 0-20       | metal      | ferrous alloy               | indeterminate       | indeterminate      | indeterminate            |            |                       |                    |               |            | 2              |              |                        |
| 100    | P5-2 | TU2-L1  | 0-20       | metal      | ferrous alloy               | structural          | building component | nail: common             | incomplete |                       |                    | machine-cut   |            | 1              |              |                        |
| 101    | P5-2 | TU2-L1  | 0-20       | brick      |                             | structural          | building component | brick                    | incomplete |                       |                    |               |            | 2              |              | red                    |
| 102    | P5-2 | TU2-L1  | 0-20       | mortar     |                             | structural          | building component | mortar                   |            |                       |                    |               |            | 1              |              |                        |
| 103    | P5-2 | TU2-L1  | 0-20       | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                       |                    |               |            | 1              |              |                        |
| 104    | P5-2 | TU2-L1  | 0-20       | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                       | red                |               |            | 1              |              |                        |
| 105    | P5-2 | TU2-L1  | 0-20       | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate |                    |               |            | 1              |              |                        |
| 106    | P5-2 | TU2-L2  | 20-25      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | rim        | transfer printed      | blue               |               |            | 2              |              |                        |
| 107    | P5-2 | TU2-L2  | 20-25      | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | body       | yellow glaze          |                    |               |            | 2              |              |                        |
| 108    | P5-2 | TU2-L2  | 20-25      | glass      |                             | structural          | building component | window pane              |            |                       | clear/colourless   |               |            | 1              |              |                        |
| 109    | P5-2 | TU2-L2  | 20-25      | brick      |                             | structural          | building component | brick                    |            |                       |                    |               |            | 1              |              | red                    |
| 110    | P5-2 | TU2-L2  | 20-25      | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                       |                    |               |            | 1              |              |                        |
| 111    | P5-2 | TU2-L2  | 20-25      | clinker    |                             | miscellaneous       | indeterminate      | clinker                  |            |                       |                    |               |            | 1              |              |                        |
| 112    | P5-2 | TU2-L2  | 20-25      | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, large         | humerus            |               |            | 1              | 4            |                        |
| 113    | P5-2 | TU2-L2  | 20-25      | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, large         | ulna               |               |            | 1              |              |                        |
| 114    | P5-2 | TU3-L1A | 0-10       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated     |                    |               |            | 2              |              |                        |
| 115    | P5-2 | TU3-L1A | 0-10       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | rim        | transfer printed      | blue               |               |            | 1              |              |                        |
| 116    | P5-2 | TU3-L1A | 0-10       | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | flow transfer printed | blue               |               |            | 1              |              |                        |
| 117    | P5-2 | TU3-L1A | 0-10       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | holloware: indeterminate | rim        | flow transfer printed | blue               |               |            | 3              |              |                        |
| 118    | P5-2 | TU3-L1A | 0-10       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | holloware: indeterminate | body       | plain/undecorated     |                    |               |            | 1              |              |                        |
| 119    | P5-2 | TU3-L1A | 0-10       | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | body       | yellow glaze          |                    |               |            | 1              |              |                        |
| 120    | P5-2 | TU3-L1A | 0-10       | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            |            |                       |                    |               |            | 8              |              |                        |
| 121    | P5-2 | TU3-L1A | 0-10       | glass      |                             | indeterminate       | container          | jar                      | finish     | external thread       | clear/colourless   |               |            | 1              | 2            |                        |
| 122    | P5-2 | TU3-L1A | 0-10       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       | clear/colourless   |               |            | 15             |              |                        |
| 123    | P5-2 | TU3-L1A | 0-10       | glass      |                             | indeterminate       | container          | container: indeterminate | body       | moulded               | clear/colourless   |               |            | 4              |              | plant motif            |
| 124    | P5-2 | TU3-L1A | 0-10       | glass      |                             | indeterminate       | container          | container: indeterminate | rim        | moulded               | clear/colourless   | press moulded |            | 1              |              |                        |
| 125    | P5-2 | TU3-L1A | 0-10       | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                       |                    |               | burnt      | 1              |              |                        |
| 126    | P5-2 | TU3-L1A | 0-10       | glass      |                             | structural          | building component | window pane              |            |                       | clear/colourless   |               |            | 10             |              |                        |
| 127    | P5-2 | TU3-L1A | 0-10       | brick      |                             | structural          | building component | brick                    | incomplete |                       |                    |               |            | 2              |              | 1 red, 1 yellow        |
| 128    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | structural          | building component | nail: common             | incomplete |                       |                    | machine-cut   |            | 3              |              |                        |
| 129    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                       |                    | wire-drawn    |            | 37             |              |                        |
| 130    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                       |                    | wire-drawn    |            | 50             |              | estimate; nail ball    |
| 131    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | miscellaneous       | hardware           | spike                    | complete   |                       |                    | wire-drawn    |            | 1              |              |                        |
| 132    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | miscellaneous       | hardware           | bolt                     | complete   | carriage              |                    |               |            | 2              |              |                        |
| 133    | P5-2 | TU3-L1A | 0-10       | metal      | lead alloy                  | miscellaneous       | hardware           | pipe cap                 | complete   |                       |                    |               |            | 1              |              |                        |
| 134    | P5-2 | TU3-L1A | 0-10       | metal      | ferrous alloy               | indeterminate       | indeterminate      | indeterminate            |            |                       |                    |               |            | 5              |              |                        |
| 135    | P5-2 | TU3-L1A | 0-10       | metal      | aluminum alloy              | indeterminate       | decoration         | indeterminate            | incomplete |                       |                    |               |            | 1              |              | decorative metal       |
| 136    | P5-2 | TU3-L1A | 0-10       | metal      | aluminum alloy              | miscellaneous       | container          | tube                     | complete   |                       |                    |               |            | 1              |              | like a toothpaste tube |
| 137    | P5-2 | TU3-L1A | 0-10       | metal      | aluminum alloy              | miscellaneous       | foil               | aluminum foil            |            |                       |                    |               |            | 2              |              |                        |
| 138    | P5-2 | TU3-L1A | 0-10       | asbestos   |                             | structural          | building component | tile                     | incomplete |                       |                    |               |            | 1              |              |                        |
| 139    | P5-2 | TU3-L1A | 0-10       | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                       |                    | white         |            | 1              |              |                        |
| 140    | P5-2 | TU3-L1B | 10-22      | ceramic    | vitrified white earthenware | food and beverage   | tableware          | holloware: indeterminate | body       | plain/undecorated     |                    |               |            | 1              |              |                        |
| 141    | P5-2 | TU3-L1B | 10-22      | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | rim        | lithographed          |                    |               | burnt      | 1              |              |                        |
| 142    | P5-2 | TU3-L1B | 10-22      | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            |            |                       |                    |               |            | 5              |              |                        |
| 143    | P5-2 | TU3-L1B | 10-22      | glass      |                             | indeterminate       | container          | jar                      | finish     | external thread       | clear/colourless   |               |            | 4              |              |                        |
| 144    | P5-2 | TU3-L1B | 10-22      | glass      |                             | indeterminate       | container          | container: indeterminate | rim        | moulded               | manganese          | press moulded |            | 1              |              |                        |

| Cat. # | Loc. | CSP #   | Depth (cm) | Material 1 | Material 2                  | Function 1          | Function 2         | Object                   | Fragment   | Attribute 1               | Attribute 2      | Manufacture | Alteration | # of Artifacts | # of Objects | Note                       |
|--------|------|---------|------------|------------|-----------------------------|---------------------|--------------------|--------------------------|------------|---------------------------|------------------|-------------|------------|----------------|--------------|----------------------------|
| 145    | P5-2 | TU3-L1B | 10-22      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | clear/colourless |             |            | 7              |              |                            |
| 146    | P5-2 | TU3-L1B | 10-22      | glass      |                             | structural          | building component | window pane              |            |                           | clear/colourless |             |            | 4              |              |                            |
| 147    | P5-2 | TU3-L1B | 10-22      | brick      |                             | structural          | building component | brick                    | incomplete |                           |                  |             |            | 1              |              | yellow                     |
| 148    | P5-2 | TU3-L1B | 10-22      | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                           |                  | wire-drawn  |            | 9              |              |                            |
| 149    | P5-2 | TU3-L1B | 10-22      | metal      | ferrous alloy               | miscellaneous       | hardware           | hinge                    | incomplete |                           |                  |             |            | 1              |              | spring-return              |
| 150    | P5-2 | TU3-L1B | 10-22      | metal      | ferrous alloy               | miscellaneous       | hardware           | bracket                  | complete   |                           |                  |             |            | 2              |              |                            |
| 151    | P5-2 | TU3-L1B | 10-22      | metal      | steel                       | miscellaneous       | hardware           | pipe                     | incomplete | threaded                  |                  |             |            | 1              |              |                            |
| 152    | P5-2 | TU3-L1B | 10-22      | composite  | metal/cloth                 | structural          | building component | electrical wire          |            |                           |                  |             |            | 1              |              |                            |
| 153    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | miscellaneous       | clothing           | safety pin               | complete   |                           |                  |             |            | 1              |              |                            |
| 154    | P5-2 | TU3-L1B | 10-22      | metal      | ferrous alloy               | miscellaneous       | hardware           | wire                     |            |                           |                  |             |            | 2              |              |                            |
| 155    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | indeterminate       | indeterminate      | indeterminate            |            |                           |                  |             |            | 6              |              |                            |
| 156    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | personal/societal   | photography        | film canister            |            |                           |                  |             |            | 1              |              | Kodak                      |
| 157    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | miscellaneous       | container          | tube                     | complete   |                           |                  |             |            | 1              |              | like a toothpaste tube     |
| 158    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | miscellaneous       | foil               | aluminum foil            |            |                           |                  |             |            | 4              |              |                            |
| 159    | P5-2 | TU3-L1B | 10-22      | metal      | aluminum alloy              | miscellaneous       | container          | can                      | incomplete |                           | pink             |             |            | 1              |              |                            |
| 160    | P5-2 | TU3-L1B | 10-22      | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                           | grey             |             |            | 1              |              |                            |
| 161    | P5-2 | TU3-L1B | 10-22      | clinker    |                             | miscellaneous       | indeterminate      | clinker                  |            |                           |                  |             |            | 1              |              |                            |
| 162    | P5-2 | TU3-L1B | 10-22      | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate     |                  |             | calcined   | 3              |              |                            |
| 163    | P5-2 | TU3-L1B | 0-10       | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate     |                  |             | 1 calcined | 3              |              |                            |
| 164    | P5-2 | TU3-L2  | 22-32      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated         |                  |             | 1 burnt    | 4              |              |                            |
| 165    | P5-2 | TU3-L2  | 22-32      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | rim        | edged                     | blue             |             |            | 2              |              | 1 scalloped, 1 unscalloped |
| 166    | P5-2 | TU3-L2  | 22-32      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed          | blue             |             |            | 1              |              |                            |
| 167    | P5-2 | TU3-L2  | 22-32      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed          | black            |             |            | 2              |              |                            |
| 168    | P5-2 | TU3-L2  | 22-32      | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated         |                  |             |            | 1              |              |                            |
| 169    | P5-2 | TU3-L2  | 22-32      | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | rim        | yellow glaze              |                  |             |            | 2              |              |                            |
| 170    | P5-2 | TU3-L2  | 22-32      | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            | incomplete |                           |                  |             |            | 1              |              |                            |
| 171    | P5-2 | TU3-L2  | 22-32      | glass      |                             | indeterminate       | container          | bottle                   | finish     | mineral                   | aqua             |             | burnt      | 1              |              |                            |
| 172    | P5-2 | TU3-L2  | 22-32      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | clear/colourless |             |            | 1              |              |                            |
| 173    | P5-2 | TU3-L2  | 22-32      | glass      |                             | structural          | building component | window pane              |            |                           | clear/colourless |             |            | 6              |              |                            |
| 174    | P5-2 | TU3-L2  | 22-32      | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                           |                  | machine-cut |            | 9              |              |                            |
| 175    | P5-2 | TU3-L2  | 22-32      | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                           |                  | wire-drawn  |            | 7              |              |                            |
| 176    | P5-2 | TU3-L2  | 22-32      | metal      | ferrous alloy               | miscellaneous       | hardware           | wire                     |            |                           |                  |             |            | 1              |              |                            |
| 177    | P5-2 | TU3-L2  | 22-32      | metal      | bronze                      | indeterminate       | indeterminate      | indeterminate            |            |                           |                  |             |            | 2              |              |                            |
| 178    | P5-2 | TU3-L2  | 22-32      | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                           |                  |             |            | 1              |              |                            |
| 179    | P5-2 | TU3-L2  | 22-32      | clinker    |                             | miscellaneous       | indeterminate      | clinker                  |            |                           |                  |             |            | 1              |              |                            |
| 180    | P5-2 | TU3-L2  | 22-32      | faunal     | bone                        | food and beverage   | food               | bone                     | incomplete | Bos taurus                | vertebra         |             | butchered  | 1              |              |                            |
| 181    | P5-2 | TU3-L2  | 22-32      | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate     |                  |             |            | 3              |              |                            |
| 182    | P5-2 | TU3-L2  | 22-32      | faunal     | bone                        | ecological          | faunal             | bone                     | incomplete | mammal, indeterminate     |                  |             | calcined   | 2              |              |                            |
| 183    | P5-2 | TU3-L3  | 32-42      | metal      | ferrous alloy               | structural          | building component | nail: common             | incomplete |                           |                  | machine-cut |            | 3              |              |                            |
| 184    | P5-2 | TU3-L3  | 32-42      | brick      |                             | structural          | building component | brick                    | incomplete |                           |                  |             |            | 1              |              | red                        |
| 185    | P5-2 | TU4-L1  | 0-13       | ceramic    | yellowware                  | food and beverage   | tableware          | holloware: indeterminate | body       | plain/undecorated         |                  |             |            | 1              |              |                            |
| 186    | P5-2 | TU4-L1  | 0-13       | ceramic    | vitrified white earthenware | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated         |                  |             |            | 1              |              |                            |
| 187    | P5-2 | TU4-L1  | 0-13       | ceramic    | stoneware                   | food and beverage   | container          | container: indeterminate | body       | salt glaze ext            | Albany slip int. |             |            | 1              |              | "D-"                       |
| 188    | P5-2 | TU4-L1  | 0-13       | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            |            |                           |                  |             |            | 5              |              |                            |
| 189    | P5-2 | TU4-L1  | 0-13       | glass      |                             | structural          | building component | window pane              |            |                           | clear/colourless |             |            | 2              |              |                            |
| 190    | P5-2 | TU4-L1  | 0-13       | metal      | steel                       | miscellaneous       | hardware           | support                  |            |                           |                  |             |            | 1              |              | machine part               |
| 191    | P5-2 | TU4-L1  | 0-13       | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                           |                  |             |            | 1              |              |                            |
| 192    | P5-2 | TU4-L1  | 0-13       | plastic    |                             | tools and equipment | agricultural       | syringe                  | complete   |                           | white            |             |            | 1              |              | antibiotic syringe         |
| 193    | P5-2 | TU4-L1  | 0-13       | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                           |                  |             |            | 4              |              |                            |
| 194    | P5-2 | TU4-L2  | 12-41      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | plain/undecorated         |                  |             |            | 2              |              |                            |
| 195    | P5-2 | TU4-L2  | 12-41      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | transfer printed          | blue             |             |            | 2              |              |                            |
| 196    | P5-2 | TU4-L2  | 12-41      | ceramic    | refined white earthenware   | food and beverage   | tableware          | flatware: indeterminate  | body       | industrial slip           | banded           |             |            | 1              |              | blue                       |
| 197    | P5-2 | TU4-L2  | 12-41      | ceramic    | vitrified white earthenware | food and beverage   | tableware          | holloware: indeterminate | body       | transfer printed          | blue             |             |            | 1              |              |                            |
| 198    | P5-2 | TU4-L2  | 12-41      | ceramic    | porcelain                   | food and beverage   | tableware          | holloware: indeterminate | body       | plain/undecorated         |                  |             |            | 1              |              |                            |
| 199    | P5-2 | TU4-L2  | 12-41      | ceramic    | Rockingham ware             | food and beverage   | tableware          | holloware: indeterminate | body       | Rockingham glaze          |                  |             |            | 1              |              |                            |
| 200    | P5-2 | TU4-L2  | 12-41      | ceramic    | stoneware                   | food and beverage   | container          | container: indeterminate | body       | salt glaze ext            | Albany slip int. |             |            | 6              |              |                            |
| 201    | P5-2 | TU4-L2  | 12-41      | ceramic    | stoneware                   | food and beverage   | container          | container: indeterminate | rim        | yellow glaze              |                  |             |            | 1              |              |                            |
| 202    | P5-2 | TU4-L2  | 12-41      | ceramic    | coarse earthenware, red     | food and beverage   | container          | container: indeterminate | body       | tan, brown, yellow glazes |                  |             |            | 4              |              | 2 tan, 1 brown, 1 yellow   |
| 203    | P5-2 | TU4-L2  | 12-41      | ceramic    | coarse earthenware, red     | tools and equipment | agricultural       | drainage tile            |            |                           |                  |             |            | 17             |              |                            |
| 204    | P5-2 | TU4-L2  | 12-41      | ceramic    | dust-pressed                | structural          | building component | tile                     | incomplete | unglazed                  |                  |             |            | 1              |              |                            |
| 205    | P5-2 | TU4-L2  | 12-41      | glass      |                             | indeterminate       | container          | container: indeterminate | body       | embossed                  | manganese        | mould       |            | 2              |              | illegible                  |
| 206    | P5-2 | TU4-L2  | 12-41      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | dark olive       |             |            | 1              |              |                            |
| 207    | P5-2 | TU4-L2  | 12-41      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | brown            |             |            | 2              |              |                            |
| 208    | P5-2 | TU4-L2  | 12-41      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | aqua             | mould       |            | 2              |              |                            |
| 209    | P5-2 | TU4-L2  | 12-41      | glass      |                             | indeterminate       | container          | container: indeterminate | body       |                           | clear/colourless |             |            | 1              |              |                            |
| 210    | P5-2 | TU4-L2  | 12-41      | glass      |                             | structural          | building component | window pane              |            |                           | clear/colourless |             |            | 4              |              |                            |
| 211    | P5-2 | TU4-L2  | 12-41      | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                           |                  | machine-cut |            | 2              |              |                            |
| 212    | P5-2 | TU4-L2  | 12-41      | metal      | ferrous alloy               | structural          | building component | nail: common             | complete   |                           |                  | wire-drawn  |            | 1              |              |                            |
| 213    | P5-2 | TU4-L2  | 12-41      | metal      | ferrous alloy               | miscellaneous       | hardware           | bolt                     | complete   | carriage                  |                  |             |            | 1              |              |                            |
| 214    | P5-2 | TU4-L2  | 12-41      | metal      | copper alloy                | miscellaneous       | hardware           | pipe cap                 | complete   |                           | chromed          |             |            | 1              |              |                            |
| 215    | P5-2 | TU4-L2  | 12-41      | metal      | ferrous alloy               | miscellaneous       | hardware           | fence wire               |            |                           |                  |             |            | 2              |              |                            |
| 216    | P5-2 | TU4-L2  | 12-41      | metal      | cast iron                   | indeterminate       | indeterminate      | plate                    |            |                           |                  |             |            | 1              |              |                            |
| 217    | P5-2 | TU4-L2  | 12-41      | metal      | copper alloy                | personal/societal   | clothing           | button                   | complete   | 4-hole                    |                  |             |            | 1              |              |                            |
| 218    | P5-2 | TU4-L2  | 12-41      | metal      | aluminum alloy              | miscellaneous       | container          | tube                     | complete   |                           |                  |             |            | 1              |              | like a toothpaste tube     |
| 219    | P5-2 | TU4-L2  | 12-41      | brick      |                             | structural          | building component | brick                    | incomplete |                           |                  |             |            | 1              |              | 1 red, 1 yellow            |
| 220    | P5-2 | TU4-L2  | 12-41      | carbon     | coal                        | miscellaneous       | indeterminate      | coal                     |            |                           |                  |             |            | 3              |              |                            |
| 221    | P5-2 | TU4-L2  | 12-41      | plastic    |                             | indeterminate       | indeterminate      | indeterminate            |            |                           |                  |             |            | 3              |              | 1 tan, 2 black             |



| Cat. #                | Loc. | CSP # | Depth (cm) | Material 1                  | Material 2        | Function 1          | Function 2              | Object                | Fragment                         | Attribute 1      | Attribute 2 | Manufacture | Alteration | Object Artifacts | Object Categories | Note            |
|-----------------------|------|-------|------------|-----------------------------|-------------------|---------------------|-------------------------|-----------------------|----------------------------------|------------------|-------------|-------------|------------|------------------|-------------------|-----------------|
| Location 5 (AFHh-946) |      |       |            |                             |                   |                     |                         |                       |                                  |                  |             |             |            |                  |                   |                 |
| 1                     | P7-1 | TP1   | ceramic    | vitrified white earthenware | food and beverage | tableware           | tableware:indeterminate | body                  | plain/undecorated                |                  |             |             | 2          |                  |                   |                 |
| 2                     | P7-1 | TP7   | glass      |                             | food and beverage | container           | container:indeterminate | body                  |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| 3                     | P7-1 | TP6   | glass      |                             |                   | structural          | building component      | window glass          |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| 4                     | P7-1 | TP11  | glass      |                             |                   | structural          | building component      | window glass          |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| 5                     | P7-1 | TP5   | fauna      | bone                        | ecological        | fauna               | bone                    | incomplete            | mammal large                     | rib              |             |             | 1          | 3                |                   |                 |
| 6                     | P7-1 | TP8   | glass      |                             | indeterminate     | container           | container:indeterminate | body                  |                                  | aqua:light       |             |             | 3          |                  |                   |                 |
| 7                     | P7-1 | TP8   | ceramic    | vitrified white earthenware | food and beverage | tableware           | tableware:indeterminate | rim                   | transfer: print                  | blue             |             |             | 1          |                  |                   |                 |
| 8                     | P7-1 | TP8   | metal      | iron                        | structural        | building component  | nail common             | complete              |                                  |                  | machine cut |             | 1          |                  |                   |                 |
| 9                     | P7-1 | TP8   | metal      | iron                        | miscellaneous     | hardware            | bracket                 | incomplete            |                                  |                  |             |             | 1          |                  |                   |                 |
| 10                    | P7-1 | TP8   | metal      | iron                        | indeterminate     | indeterminate       | indeterminate           | incomplete            |                                  |                  |             |             | 1          |                  |                   |                 |
| 11                    | P7-1 | TP8   | fauna      | bone                        | food and beverage | food                | bone                    | incomplete            | Bov: taurus                      | humerus head     |             | butchered   | 1          |                  |                   |                 |
| 12                    | P7-1 | TP12  | ceramic    | vitrified white earthenware | food and beverage | tableware           | tableware:indeterminate | body                  | plain/undecorated                |                  |             |             | 1          |                  |                   |                 |
| 13                    | P7-1 | TP12  | ceramic    | vitrified white earthenware | food and beverage | tableware           | tableware:indeterminate | body                  | transfer: print                  | teal             |             |             | 5          |                  |                   |                 |
| 14                    | P7-1 | TP12  | glass      |                             | food and beverage | container           | container:indeterminate | body                  |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| 15                    | P7-1 | TP12  | rubber     | indeterminate               | indeterminate     | indeterminate       | indeterminate           | incomplete            |                                  | black            |             |             | 1          |                  |                   |                 |
| 16                    | P7-1 | TP12  | metal      | iron                        | structural        | building component  | nail common             | complete              |                                  |                  | wire drawn  |             | 1          |                  |                   |                 |
| 17                    | P7-1 | TP12  | fauna      | bone                        | food and beverage | food                | bone                    | incomplete            | mammal indeterminate             | indeterminate    |             | butchered   | 1          |                  |                   |                 |
| 18                    | P7-1 | TP12  | metal      | iron                        | miscellaneous     | hardware            | staple                  | complete              |                                  |                  |             |             | 1          |                  |                   |                 |
| 19                    | P7-1 | TP12  | plastic    | indeterminate               | indeterminate     | indeterminate       | indeterminate           | incomplete            |                                  | white            |             |             | 3          |                  |                   |                 |
| 20                    | P7-1 | TP3   | brick      | brick                       | structural        | building component  | brick                   | incomplete            | red                              |                  |             |             | 1          |                  |                   |                 |
| 21                    | P7-1 | TP3   | metal      | iron                        | miscellaneous     | indeterminate       | wire                    |                       |                                  |                  |             |             | 1          |                  |                   |                 |
| 22                    | P7-1 | TP3   | carbon     | coal                        | miscellaneous     | fuel                | coal                    |                       |                                  |                  |             |             | 1          |                  |                   |                 |
| 23                    | P7-1 | TP3   | glass      |                             | structural        | building component  | window glass            | fragment              |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| 24                    | P7-1 | TP9   | carbon     | coal                        | miscellaneous     | fuel                | coal                    |                       |                                  |                  |             |             | 1          |                  |                   |                 |
| 25                    | P7-1 | TP9   | glass      |                             | food and beverage | container           | container:indeterminate | body                  |                                  | green dark olive |             |             | 1          |                  |                   |                 |
| 26                    | P7-1 | TP9   | glass      |                             | food and beverage | container           | container:indeterminate | body                  |                                  | clear/colourless |             |             | 1          |                  | solarized         | solarized       |
| 27                    | P7-1 | TP9   | glass      |                             | food and beverage | container           | container:indeterminate | body                  |                                  | clear/colourless |             |             | 2          |                  |                   |                 |
| 28                    | P7-1 | TP9   | glass      |                             | food and beverage | tableware           | tableware:indeterminate | body                  | pressed                          | clear/colourless |             |             | 1          | diamond patter   | diamond patter    | diamond pattern |
| 29                    | P7-1 | TP9   | ceramic    | vitrified white earthenware | food and beverage | tableware           | tableware:indeterminate | body                  | plain/undecorated                |                  |             |             | 3          |                  |                   |                 |
| 30                    | P7-1 | TP2   | metal      | iron                        | structural        | building component  | nail common             | complete              |                                  |                  | wire drawn  |             | 1          |                  |                   |                 |
| 31                    | P7-1 | TP2   | metal      | iron                        | structural        | building component  | nail common             | incomplete            |                                  |                  | wire drawn  |             | 1          |                  |                   |                 |
| 32                    | P7-1 | TP10  | metal      | iron                        | structural        | building component  | nail common             | complete              |                                  |                  | machine cut |             | 1          |                  |                   |                 |
| 33                    | P7-1 | TP13  | ceramic    | coarse red earthenware      | food and beverage | storage container   | container:indeterminate | rim                   | greener salt glaze int. and ext. |                  |             |             | 1          |                  |                   |                 |
| 34                    | P7-1 | TP13  | metal      |                             | indeterminate     | indeterminate       | tinfoil                 | fragment              |                                  |                  |             |             | 1          | 2                |                   |                 |
| 35                    | P7-1 | TP4   | glass      |                             | structural        | building component  | window glass            | fragment              |                                  | clear/colourless |             |             | 1          |                  |                   |                 |
| Location 6            |      |       |            |                             |                   |                     |                         |                       |                                  |                  |             |             |            |                  |                   |                 |
| 1                     | P7-2 | TP1   | N/A        | stone                       | chert:Onondaga    | tools and equipment | debitage                | biface thinning flake | complete                         |                  |             | chipped     |            | 1                |                   |                 |

**ATTACHMENT B**

**B.01 Stage 3 Archaeological Assessment**

**B.02 MHSTCI Review and Entry in Public Registry**



## REVISED REPORT

# Stage 3 Archaeological Assessment

*White Oak 1 Site (AfHh-926),  
W12A Landfill Site, Potential Landfill Expansion Area,  
Part of Lot 20, Concession 6,  
Former Township of Westminster, Middlesex County,  
Now City of London, Ontario*

Submitted to:

**Michael Losee, B.Sc.**

Division Manager,  
City of London,  
Solid Waste Management,  
300 Dufferin Avenue,  
London, ON N6A 4L9

Submitted by:

**Golder Associates Ltd.**

309 Exeter Road, Unit #1,  
London, Ontario, N6L 1C1, Canada

+1 519 652 0099

1648176-40000-R01

June 12, 2020

**Licensee:** Lafe Meichenheimer, M.A.

**PIF#:** P457-0071-2018

## Distribution List

1 e-copy to City of London

1 e-copy to the Ministry of Tourism, Culture, and Sport

1 e-copy to Golder

## Project Personnel

**Project Director** Hugh Daechsel, M.A. (P051), Principal, Senior Archaeologist

**Project Manager** Michael Teal, M.A. (P364), Senior Archaeologist

**Archaeological Licensee** Lafe Meicenheimer, M.A. (P457)

**Field Director** Rebecca Parry, M.A. (R1013)

**Field Assistants** Ian Petty, Jocelynn Thomas, Kaitlyn Crow, Connor Schmidt, Sheryl Spigelski, Robyn Lacy

**Report Production** Rebecca Parry, M.A. (R1013)  
Liz Yildiz, Environmental Group Administrator

**Senior Review** Hugh Daechsel, M.A. (P051), Principal, Senior Archaeologist

## Acknowledgements

**Proponent Contacts** Michael Losee, City of London  
Wesley Abbott, City of London

## 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.*

Golder Associates Ltd. (“Golder”) was contracted by the Corporation of the City of London (the “City”) to conduct a Stage 3 Archaeological Assessment of the White Oak 1 Site (AfHh-926), a pre-contact Indigenous site located within a potential landfill expansion area for the W12 Landfill Site at 3502 Manning Drive, London, Ontario

(Map 1 and Map 2). The potential landfill expansion area, hereafter referred to as the “Study Area”, is being considered by the City as an option for further growth of the W12A Landfill Site. It is approximately 3 ha in size and legally described as part of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, now City of London, Ontario. The White Oak 1 site (AfHh-926) was previously identified by Golder during a Stage 2 survey of the Study Area and subsequently recommended for Stage 3 assessment (Golder 2018).

The Stage 3 Archaeological Assessment of White Oak 1 (AfHh-926) was conducted to meet the standard requirements of the *Environmental Assessment Act*, R.S.O 1990, c.E.18 (Government of Ontario 1990a), as required by the City of London prior to land disturbance. It consisted of the hand excavation of 28 one-metre square test units across an area measuring approximately 30 m east-west by 25 m north-south and resulted in the recovery of 126 pre-contact Indigenous artifacts and 62 historical Euro-Canadian artifacts.

Based on the results of the Stage 3 Archaeological Assessment, the White Oak 1 site (AfHh-926) is interpreted as a small Late Archaic campsite that meets provincial criteria for have sufficient cultural heritage value or interest to require Stage 4 mitigation prior to development impacts. This conclusion is based on the identification of four Stage 3 test units that produced 10 or more pre-contact Indigenous artifacts.

The Ministry of Tourism, Culture and Sport’s (MTCS) preferred method of Stage 4 mitigation is through avoidance and protection. Through discussions with the proponent and engagement with Indigenous communities, it has been determined that White Oak 1 (AfHh-926) can be avoided. As such, Stage 4 mitigation by long-term avoidance and protection is recommended for the White Oak 1 site (AfHh-926). Further details regarding this recommendation are provided in Section 5.0.

There are no further concerns for impacts to archaeological sites in the remainder of the Study Area outside the 10 m buffer.

The MTCS is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry’s 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

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## **APPENDICES**

### **APPENDIX A**

Glossary of Terms and Definitions

### **APPENDIX B**

Artifact Catalogue

User Note: This Table of Contents section acts as a reference point for the Record of Issue, Executive Summary and Study Limitations sections as and when they might be required.

## **1.0 PROJECT CONTEXT**

### **1.1 Development Context**

Golder Associates Ltd. (“Golder”) was contracted by the Corporation of the City of London (the “City”) to conduct a Stage 3 Archaeological Assessment of the White Oak 1 Site (AfHh-926), a pre-contact Indigenous site located within a potential landfill expansion area for the W12 Landfill Site at 3502 Manning Drive, London, Ontario (Map 1 and Map 2). The potential landfill expansion area, hereafter referred to as the “Study Area”, is being considered by the City as an option for further growth of the W12A Landfill Site. It is approximately 3 ha in size and legally described as part of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, now City of London, Ontario. The White Oak 1 site (AfHh-926) was previously identified by Golder during a Stage 2 survey of the Study Area and subsequently recommended for Stage 3 assessment (Golder 2018).

The Stage 3 assessment was conducted to meet the standard requirements of the *Environmental Assessment Act*, R.S.O 1990, c.E.18 (Government of Ontario 1990a), as required by the City of London prior to land disturbance. White Oak 1 (AfHh-926) was discovered during a Stage 1-2 Archaeological Assessment conducted by Golder in the spring of 2018 (Golder 2018).

The Stage 3 assessment was conducted under professional archaeological licence P457, issued to Lafe Meicenheimer of Golder by the MTCS (PIF# P457-0071-2018). Permission to enter the property to conduct all required archaeological fieldwork activities, including the recovery of artifacts, was granted by Michael Losee of the City of London.

### **1.2 Historical Context**

The Study Area is situated in an area of Ontario that exhibits evidence of an extended period of human settlement dating back at least 11,000 years (see Map 3). To provide context to the following sections of this report, the nature of this settlement is summarized below, beginning with the pre-contact Indigenous period as it relates to the London area in general. This is followed by a summary of the historical Euro-Canadian period for Westminster Township in general, and the Study Area specifically.

#### **1.2.1 Pre-Contact Indigenous Period**

Table 1 provides a general outline of the pre- and post-contact culture history for Middlesex County, drawn from Ellis and Ferris (1990).

**Table 1: Cultural Chronology for Middlesex County**

| <b>Period</b>                      | <b>Characteristics</b>         | <b>Time</b>       | <b>Comments</b>                                     |
|------------------------------------|--------------------------------|-------------------|-----------------------------------------------------|
| 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                       | Narrow Points                  | 2000 - 1800 BC    | increasing site size                                |
| Late Archaic                       | Broad Points                   | 1800 - 1500 BC    | large chipped lithic tools                          |
| Late Archaic                       | Small Points                   | 1500 - 1100 BC    | introduction of bow hunting                         |
| Terminal Archaic                   | Hind Points                    | 1100 - 950 BC     | emergence of true cemeteries                        |
| Early Woodland                     | Meadowood Points               | 950 - 400 BC      | introduction of pottery                             |
| Middle Woodland                    | Dentate/Pseudo-Scallop Pottery | 400 BC - AD 500   | increased sedentism                                 |
| Middle Woodland                    | Princess Point                 | AD 550 - 900      | introduction of corn                                |
| Ontario Iroquoian<br>Late Woodland | Early Ontario Iroquoian        | AD 900 - 1300     | emergence of agricultural villages                  |
| Ontario Iroquoian<br>Late Woodland | Middle Ontario Iroquoian       | AD 1300 - 1400    | long longhouses (100m +)                            |
| Ontario Iroquoian<br>Late Woodland | Late Ontario Iroquoian         | AD 1400 - 1650    | tribal warfare and displacement                     |
| Western Basin<br>Late Woodland     | Riviere au Vase                | AD 500 - 900      | introduction of corn                                |
| Western Basin<br>Late Woodland     | Young Phase                    | AD 900 - 1200     | dense storage pits, proto-settlements               |
| Western Basin<br>Late Woodland     | Springwell Phase               | AD 1200 - 1400    | emergence of agricultural villages                  |
| Western Basin<br>Late Woodland     | Wolf Phase                     | AD 1400 - 1550    | palisaded villages, tribal warfare and displacement |
| Contact<br>Indigenous              | Various Algonquian Groups      | AD 1700 - 1875    | early written records and treaties                  |
| Historical                         | Euro-Canadian                  | AD 1796 - present | European settlement                                 |

### **1.2.1.1 Paleo Period**

The first human occupation of the London area, known as the Paleo Period, begins 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 London 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 Indigenous groups that had been living south of the Great Lakes.

Our current understanding of Early Paleo settlement patterns suggests that small bands, that consisted of probably no more than 25 to 35 individuals, followed a pattern of seasonal mobility extending over large territories. 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 the one located close to Parkhill, Ontario, which covered as much as six hectares. 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. There are also smaller Early Paleo camps scattered throughout the interior of southwestern Ontario, usually situated adjacent to wetlands.

Research suggests that population densities were very low during the Early Paleo Period, with all of southwestern Ontario being occupied by perhaps only 100 to 200 people (Ellis and Deller 1990:54). Because this is the case, Early Paleo sites are exceedingly rare, and within the limits of London only four locations are known. Three of these sites are isolated find spots of the distinctive fluted points or channel flakes, while one site, located near Dingman Creek, represents a rare occupation area with a good deal of potential for contributing to our knowledge of this period. To date, all of the known Early Paleo sites in Middlesex are located south of the Main and South branches of the Thames River.

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 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 as in the case of the mastodons and mammoths, become 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.

#### **1.2.1.2 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 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. 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 towards more diverse toolkits continued, as the presence of net-sinkers 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 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. This process resulted in a reorganization of Indigenous subsistence practices, as more people had to rely on resources from smaller areas. During the latter part of the 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 (2500-950 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 definitely expanded.

It is during the Late Archaic that the first true cemeteries appear. 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 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.

#### **1.2.1.3 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 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 sustained a long use life.

There have also been numerous Early Woodland sites located at which no pottery was found, suggesting that these poorly constructed, undecorated vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

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

The trade networks which were established in the Middle and Late Archaic also continued to function, although there does not appear to have been as much traffic in marine shell during the Early Woodland Period. 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 in 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 the 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; Smith 1990; Williamson 1990). Corn may have been introduced into southwestern Ontario from the American Midwest as early as AD 600. However, it did not become a dietary staple until at least three to four hundred years later.

The first agricultural villages in southwestern Ontario date to the 10<sup>th</sup> 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 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 not actually 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. 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.

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 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 Ontario Iroquoian 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 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 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 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 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 Ontario Iroquoian village expansion has been clearly documented in the London area. The ongoing excavations at the Lawson site, a large Late Iroquoian village located on the grounds of the Museum of Ontario Archaeology, has shown that the original village had expanded by at least twenty percent to accommodate the construction of nine additional longhouses (Anderson 2009).

The Ontario Iroquoian and Western Basin are two archaeological traditions that characterize pre-contact Indigenous communities living in the Middlesex County area of southwestern Ontario from about AD 500 to 1650. Peoples of the Western Basin Tradition lived throughout the southwestern-most portion of the province, from the present-day Sarnia/Windsor area to about London. Iroquoian peoples, on the other hand, appear to have lived from the present-day Chatham area east to Toronto. Each of these traditions are divided into distinct temporal phases (see Table 1) defined by material cultural attributes, and settlement and subsistence patterns that exhibit a shift towards larger and more permanent villages due to an increasing reliance on cultivated plants such as corn, beans, squash, sunflower, and tobacco (Dodd et al. 1990; Foreman 2011; Fox 1990; Lennox and Fitzgerald 1990; Murphy and Ferris 1990).

After AD 1525, communities of pre-contact Indigenous peoples 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 ongoing wars between the Huron and the League Iroquois located in upper New York State.

It has been satisfactorily demonstrated that the Late Ontario Iroquoian communities which were located in southwestern Ontario as far west as the Chatham area were ancestral to at least some of the Neutral Nation groups (Lennox and Fitzgerald 1990; Smith 1990:283). For this reason, the Late Ontario Iroquoian groups which occupied southwestern Ontario prior to the arrival of the French are often identified as "Prehistorical Neutral". They occupied a large area extending along the Grand River and throughout the Niagara Peninsula as far east as Fort Erie and Niagara Falls (Lennox and Fitzgerald 1990:448).

### **1.2.2 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 arrival of Algonkian-speaking groups from northern Ontario at the end of the 17<sup>th</sup> century and beginning of the 18<sup>th</sup> century (Schmalz 1991).

The nature of their settlement size, population distribution, and material culture shifted as European settlers encroached upon their territory. However, despite this shift, "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). Indigenous peoples of southern Ontario have left behind archaeologically significant resources throughout southern Ontario which show continuity with past peoples, even if they have not been recorded in historical Euro-Canadian documentation.

Portions of southwestern Ontario were also occupied by Algonkian-speaking groups who also exhibited cultural influence from Iroquoian-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-17<sup>th</sup> 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).

### **1.2.3 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 lying to the west of a 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 Middlesex County and Westminster Township, respectively. One of the first Euro-Canadian historic records for this area is found as part of Treaty No. 2, which:

*... was made with the O[dawa], Chippew[a], Pottawatom[i] and Huro[n] May 19th, 1790, portions of which nations had established themselves on the Detroit River all of whom had been driven by the Iroquois from the northern and eastern parts of the Province, from the Detroit River easterly to Catfish Creek and south of the river La Tranche [Thames River] and Chenail Ecarte, and contains Essex County except Anderdon Township and Part of West Sandwich; Kent County except Zone Township, and Gores of Camden and Chatham; Elgin County except Bayham Township and parts of South Dorchester and Malahide. In Middlesex County, Del[a]ware and Westminster Townships and part of North Dorchester [are included].*

Morris 1943:17

In 1791, Colonel John Graves Simcoe became the first Lieutenant-Governor of the newly formed Province of Upper Canada. Simcoe was particularly concerned about the threat of American expansion northward and their ability to cross at Detroit into the area known as the Western District (DWITH 2006:32).

It was believed that the best way to defend the land was to populate the area; therefore, in 1793, Simcoe ordered the lands of the Thames River basin to be surveyed for habitation. Surveying and settlement of the Middlesex County area was arranged by Colonel Thomas Talbot, who had been granted a 618,000-acre tract of land along the north shore of Lake Erie. He arranged for his settlement to be surveyed into various townships with networks of roads and concessions that were divided into 200 acre lots.

### **1.2.3.1 Westminster Township**

Westminster Township, in particular, was surveyed in three different segments (DWITH 2006:33-34). The first segment along the North Branch of the Talbot Road (NBTR) was surveyed according to the single front survey system by Deputy Provincial Surveyor Simon T. Z. Watson in 1809. The second segment, which included Concessions A, B, 1 and 2, was also surveyed according to the single front survey system by Deputy Provincial Surveyor Watson and Deputy Surveyor John Bostwick in 1810. The remainder of the township (Concessions 3 to 9 and the Gore Concession between the NBTR and Delaware Township) was surveyed according to the double front survey system by Colonel Mahlon Burwell and John Bostwick in 1820.

The first land patents for Westminster Township were issued as early as 1812 (Brock and Moon 1972). Settlement in the area began in the southwest corner of the township along NBTR. This was followed by later settlements along Commissioners Road, with the southeast portion of the township being settled last (Wilson and Horne 1995). By 1817, the township contained 107 houses and 428 people, and the first meeting of the Westminster Council was held. Two school houses, one grist mill and one saw mill were the only public buildings present in the township at this time (Brock and Moon 1972:566). By 1842, the population had grown to 3,376 and four grist and two saw mills were operating in the township (Smith 1846). By 1850, the population had grown to 4,525 residents, and the industries present included three grist mills, two carding machines, and a fulling mill (Brock and Moon 1972:566). The London and

Port Stanley Railway line, which runs north-south through the township, was fully operational by 1856 (Brock and Moon 1972:566). Several small hamlets also developed within the township, including Byron, Lambeth, Hall Mills, Pond Mills, and Glanworth; these communities were settled over the course of the 19th century (Brock and Moon 1972:577-581). Residents were undoubtedly attracted to the fertile soils and plethora of natural resources (e.g., rivers and streams, game animals, fish, fruit trees, limestone) that the area boasted (H.R. Page and Co. 1878).

### **1.2.3.2 Study Area Historical Context**

Prior to its annexation by the City of London in 1993, the Study Area fell within the northern half of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, Ontario. Several maps of the Study Area exist through online resources and publications, dating as far back as the Patent Plan of Westminster Township from 1857 (Map 4; Burwell 1857). The Patent Plan states that the land was owned by the Canada Company at the time of the map's creation (Heritage Property Index 2018), however, the Abstract Index to Deeds records obtained from the Land Registry Office in London indicate that the Canada Company obtained the 200-acre lot from the Crown in 1835. Edward Jarmain (illegible) and wife had obtained the north half and part of the south half of the lot totalling 168 acres a few years later in 1839.

The 1862 Tremaine Map of Middlesex County shows that the Ezekiel Burley owned the north half of the Lot, while a G. Smith resided in the south half (Map 5; Tremaine 1862). Burley's property shows a house or other structure just south of centre, adjacent to a jog in the road which is no longer present. In lots directly east and west of Lot 20, the Johnson Family own land. Burley had obtained the north portion of the lot in 1854, and subsequently held mortgages on the land from several individuals, suggesting that he had tenants on the land.

In 1869, Peter Johnson obtained the north half and a portion of the south half of Lot 20, totalling 108 acres, from Samuel St. Lewis. He further subdivided the property, selling the west half and part of the south portion to George Johnson in 1873. The 1878 *Illustrated Historical Atlas* map of Westminster Township indicates that George Johnson was residing on the west half of the north half of Lot 20, while W & D Johnson held the east half of the north (Map 6; Page and Co. 1878). A house and garden are illustrated on this map just north of center on George Johnson's property. The Johnson Family had resided in the area, on the south half of Lot 19 Con 6 primarily, since approximately 1834/35 (Murray 1987), and had obtained land on several adjacent lots, as is evident in the historical records.

The current Study Area is a portion of ploughed agricultural field, located immediately north of the London landfill and adjacent to White Oak Road to the west.

## 1.3 Archaeological Context

### 1.3.1 The Natural Environment

The Study Area is situated within the “Mount Elgin Ridges” physiographic region. According to Chapman and Putnam (1984: 144-146) the Mount Elgin Ridges is located:

*Between the Thames Valley and the Norfolk sand plain lies a succession of ridges and vales which are called the Mount Elgin Ridges....South of the Westminster and St. Thomas Moraines the country drains to Lake Erie by means of the tributaries of Kettle, Catfish and Otter Creeks....The two major landform components of this region provide obviously contrasting soils. The ridges are well drained while imperfect and even poor drainage characterize the hollows. The ridges are formed from clay till similar to that of the Wyoming Moraine and the Stratford plain.*

The localized topography of the Study Area is moderately flat with mildly undulating terrain. Elevation for the Study Area ranges between 270 and 280 metres above sea level. The soils of the Study Area are comprised of the Muriel Association, specifically Muriel, Gobles and Kelvin soils, which include silty clay loams, silty clays, and clay loams. Muriel soils are generally found on higher slope positions and are well to imperfectly drained. Gobles and Kelvin soils generally occur at mid to lower slope positions or depressional areas and are imperfectly to poorly drained. Due to their lower slope position, Gobles and Kelvin soils tend to exhibit a mottled upper B-horizon due to perched water tables, as well as a higher organic matter content. Muriel Association soils are used today for common field crops, including corn and soybeans (Hagerty and Kingston 1992). The closest potable water source is an unnamed tributary of Dodd Creek, which flows through the northern portion of the landfill (Cells 9 and 10), located immediately south of the current Study Area. Dodd Creek is located in the Kettle Creek Watershed and is Kettle Creek’s largest tributary, joining it in St. Thomas before continuing to flow south and ultimately draining into Lake Erie at Port Stanley, Ontario.

The bedrock deposits in the vicinity date to the Middle Devonian Period and consist of the Hamilton Group and Dundee Formations (Hewitt 1972). Selkirk chert, a moderate quality raw material, outcrops from the Dundee formation from the mouth of the Grand River along the north shore of Lake Erie, and as far west as the Chatham area (Eley and von Bitter 1989; Fox 2010).

The Study Area lies within the Mixed-wood Plains ecozone of Ontario (The Canadian Atlas Online 2015). 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. Smith (1850:90) confirms that the timber present in the vicinity of Westminster Township during the first half of the 19<sup>th</sup> century included oak, beech, maple and chestnut, among other varieties.

Currently, the Study Area is comprised of ploughed agricultural field, bordered by unploughed overgrown grassy fencelines or drainage ditches.



### 1.3.2 Previous Archaeological Work

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 (MTCS 2018).

According to MTCS records, one assessment has taken place within 50 m of the Study Area, including the current Study Area. In 2005, Archaeologix Inc. conducted a Stage 1 archaeological and built heritage assessment of a 397-ha study area from Scotland Drive to Manning Drive between White Oak Road and Wellington Road. This Stage 1 assessment found areas within the 397 ha study area to have archaeological potential and recommended that those areas be subject to Stage 2 archaeological assessment should they be developed (Archaeologix 2005).

#### 1.3.2.1 Previous Assessments of the Current Study Area

In the spring of 2018, Golder conducted a Stage 1-2 Archaeological Assessment for the current Study Area. The Stage 2 consisted of a combination of pedestrian survey and test pit survey and resulted in the identification of seven archaeological locations. For sites found during pedestrian survey, a controlled surface pickup (CSP) that met all requirements outlined in Section 3.2.1 of the *Standards and Guidelines for Consultant Archaeologists* was conducted (Golder 2018).

Location A (AfHh-929) consisted of 717 Euro-Canadian artifacts and 80 faunal elements recovered from 42 test pits and two test units in an area measuring roughly 30 m east-west by 50 m north-south. The location was determined to be in an area of disturbance associated with the demolition of the farm complex that existed there before the creation of the W12A landfill site. This complex was demolished between 2008 and 2014. Because the artifacts recovered from Location A (AfHh-929) were recovered from disturbed context, the site was concluded to have no further cultural heritage value or interest and not recommended for further work (Golder 2018).

Location 1 (AfHh-928) consisted of one Late Archaic Innes projectile point and one piece of lithic debitage. This location was concluded to have no further cultural heritage value or interest and was not recommended for further work (Golder 2018).

Location 2 consisted of four pieces of lithic debitage, while Locations 3, 5, and 6 were each represented by a single chert flake. Given the isolated and non-diagnostic nature of the finds, these locations were concluded to have no further cultural heritage value or interest and were not recommended for further work (Golder 2018).

Location 4 (AfHh-926) consisted of one projectile point, one scraper, and four pieces of lithic debitage from an area measuring approximately 23 m east-west by 20 m north-south. The projectile point was determined to be a Late Archaic Crawford Knoll point. Location 4 (AfHh-926) was concluded to have further cultural heritage value or interest and was recommended for Stage 3 Archaeological Assessment; this site was named White Oak 1 and is the subject of the current report (Golder 2018).

To the best of our knowledge, no additional archaeological assessments have been conducted within 50 m of the current Study Area.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. For this reason, maps and data that provide information on archaeological site locations are provided as supplementary documentation and do not form part of this public report.

The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

## 2.0 FIELD METHODS

### 2.1 Methodology

The Stage 3 Archaeological Assessment of the White Oak 1 site (AfHh-926) was conducted between June 15, 18-22, 25-26 and 28, 2018, under archaeological consulting license P457, issued to Lafe Meicenheimer of Golder by the MTCS (PIF# P457-0071-2018). Rebecca Parry (R1013), delegated licensed field supervisor for Golder, assumed responsibility of undertaking the archaeological fieldwork at the Study Area as per Section 12 of the MTCS 2013 *Terms and Conditions for Archaeological Licences*, issued in accordance with clause 48(4)(d) of the *Ontario Heritage Act*.

The weather during the assessment was variable, ranging from mainly sunny to overcast with temperatures varying from 13°C to 33°C. At no time were the conditions detrimental to the observation or recovery of archaeological material. Photo locations are illustrated on Map 7. All activities undertaken during the assessment were in compliance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists* (MTCS 2011).

White Oak 1 (AfHh-926) was relocated from the original Stage 2 assessment data, including field notes, maps, and UTM coordinates. Since a controlled surface pick-up (CSP) that met all requirements outlined in Section 3.2.1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) was conducted for White Oak 1 (AfHh-926), previously Location 4, during the Stage 2 Assessment of the Study Area, the Stage 3 Assessment began with test unit excavations.

A network of 5 m by 5 m grid squares was established across the extent of the site as determined by the location of the Stage 2 surface finds. The grid squares are referred to by the intersection coordinates of their southwest corner. Each 5 m<sup>2</sup> set was further subdivided into 25 1 m<sup>2</sup> units, with sub-square number one located in the southwest corner of the 5 m<sup>2</sup> set, number five in the southeast corner, number six located immediately north of number one, and so on.

Since the White Oak 1 site (AfHh-926) was interpreted in the previous Stage 2 assessment as a small, pre-contact Indigenous site where it is not clearly evident that Stage 4 mitigation of impacts will be required, the location and placement of test units followed the strategy outlined in Section 3.2 and Table 3.1, Standards 1 and 2 of the MTCS' *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Test units were excavated at 5 m intervals across the site with 20% infill units placed in areas of interest around the site. White Oak 1 (AfHh-926) consisted of 21 grid units and seven infill units.

Each 1 m<sup>2</sup> test unit was excavated to the interface between the topsoil and subsoil and all soil was screened through 6 mm hardware cloth to facilitate the recovery of small artifacts (Image 1 and Image 2). The subsoil surface of each unit was then shovel shined and examined for evidence of subsurface cultural features prior to backfilling. If no possible features were identified, then excavation continued into the top 5 cm of the subsoil layer. No potential cultural features were encountered during the Stage 3 of White Oak 1 (AfHh-926). Test units ranged from 18 cm to 33 cm in depth and yielded from 0 to 14 artifacts (Image 3 and Image 4). Stage 3 test units were backfilled upon completion (Image 5, Image 6, and Image 7).



All excavated artifacts were recorded with reference to their sub-square unit number and retained for laboratory analysis and description, as per Section 6.0 of the *Standards and Guidelines* (Government of Ontario 2011).

## 2.2 GPS Coordinates

All coordinates and elevations were collected with a Trimble Geo7X Global Navigation Satellite System (GNSS) using the UTM NAD 83 (Zone 17) datum, and coordinated within the Cansel network (Can-Net) for base station references. The collected coordinates are provided as a six digit easting, and a seven digit northing.

The Trimble Geo7x GPS receiver has built-in Wide-Area Augmentation System (WAAS) and European Geostationary Navigation Overlay Service (EGNOS) capabilities. It supports a wide range of satellite signals, including GPS L1C/A/L2C/L2E and GLONASS L1C/A/L1P/L2C/A/L2P. The GNSS receiver is a dual frequency differential GPS (DGPS) capable of real time kinematic (RTK) corrections within the Can-Net Virtual Reference Station (VRS) network. The collected coordinates provide real time accuracy between 1 and 10 cm. Therefore, each survey observation can be considered a permanent and known datum point regardless of any future disturbance to the location of each observation.

Relevant UTM coordinates for all locations are presented in the Supplementary Documentation, separate from this report. The Supplementary Documentation also contains Tiles showing the specific site location.

### 3.0 RECORD OF FINDS

The Stage 3 assessment of the White Oak 1 site (AfHh-926) was conducted employing the methods outlined in Section 2.0 of this report. Section 3.1 provides a description of the location and the artifacts recovered, while Map 7 shows the location and distribution of the test units. The UTM coordinate reference marker (datum point) is listed in the Supplementary Documentation that accompanies this report as a separate attachment.

For a list of terms and definitions regarding the pre-contact Indigenous cultural material discussed in the present report, see Appendix A.

An inventory of the documentary record generated by the fieldwork at White Oak 1 (AfHh-926) is provided in Table 2 and a complete catalogue of all artifacts recovered during the Stage 3 Assessment is provided below in Appendix B.

**Table 2: Inventory of Documentary Record**

| <b>Document Type</b>    | <b>Current Location of Document</b> | <b>Additional Comments</b>                                                                             |
|-------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------|
| Field Notes             | Golder Office in London             | 23 pages from original field book. Hard copies stored in project folder and digitally in project file. |
| Hand Drawn Maps         | Golder Office in London             | One map from original field book. Hard copy stored in project folder and digitally in project file.    |
| Maps provided by Client | Golder Office in London             | One map stored in project folder and stored digitally in project file.                                 |
| Digital Photographs     | Golder Office in London             | 94 photos stored in project folder and stored digitally in project file.                               |

Material culture recovered from the Stage 3 Assessment of White Oak 1 (AfHh-926) has been washed, catalogued, and analyzed, and will be stored in one banker's box at Golder's office in London, Ontario.

### 3.1 White Oak 1 (AfHh-926)

A total of 126 pre-contact Indigenous artifacts were recovered during Stage 3 test unit excavation at the White Oak 1 site (AfHh-926), all of which were identified as pieces of lithic debitage. In addition, 62 historical Euro-Canadian artifacts were recovered, including: 30 brick fragments, 13 ceramic sherds, 12 shards of container glass and four shards of window pane glass, two plastic fragments, and one nail. These artifacts were recovered from an area measuring approximately 30 m east-west by 25 m north-south, with test units excavated at the site yielding from 0 to 14 artifacts. Table 3 presents a summary of the artifacts recovered and class is discussed in detail in sections below.

**Table 3: White Oak 1 (AfHh-926) Artifact Summary**

| <b>Artifacts</b>                                 | <b>Frequency</b> | <b>%</b>       |
|--------------------------------------------------|------------------|----------------|
| <b><i>Pre-Contact Indigenous Artifacts</i></b>   |                  |                |
| <b>Lithic Debitage</b>                           |                  |                |
| Biface Thinning Flake                            | 54               | 28.57%         |
| Flake Fragment                                   | 34               | 17.99%         |
| Primary Thinning Flake                           | 23               | 12.17%         |
| Primary Reduction Flake                          | 8                | 4.23%          |
| Bipolar Flake                                    | 3                | 1.59%          |
| Retouch Flake                                    | 2                | 1.06%          |
| Potlid                                           | 1                | 0.53%          |
| Spall                                            | 1                | 0.53%          |
| <b>Sub-Total</b>                                 | <b>126</b>       | <b>66.67%</b>  |
| <b><i>Historical Euro-Canadian Artifacts</i></b> |                  |                |
| <b>Ceramics</b>                                  |                  |                |
| Refined White Earthenware                        | 7                | 3.70%          |
| Vitrified White Earthenware                      | 4                | 2.12%          |
| Yellowware                                       | 2                | 1.06%          |
| <b>Glass</b>                                     |                  |                |
| Container: Indeterminate                         | 12               | 6.35%          |
| Window Pane                                      | 4                | 2.12%          |
| <b>Metal</b>                                     |                  |                |
| Nail                                             | 1                | 0.53%          |
| <b>Other Artifacts</b>                           |                  |                |
| Brick                                            | 30               | 15.87%         |
| Plastic                                          | 2                | 1.06%          |
| <b>Sub-Total</b>                                 | <b>62</b>        | <b>32.80%</b>  |
| <b><i>Faunal</i></b>                             |                  |                |
| <b>Faunal Total</b>                              | <b>1</b>         | <b>0.53%</b>   |
| <b>Grand Total</b>                               | <b>189</b>       | <b>100.00%</b> |

### 3.1.1 Lithic Artifacts

A total of 126 lithic artifacts were recovered, consisting entirely of lithic debitage. No formal or informal tools were recovered during the Stage 3 assessment of White Oak 1 (AfHh-926).

#### ***Lithic Debitage***

A total of 126 pieces of lithic debitage were recovered from the Stage 3 test unit excavations. An analysis of the debitage is presented in Table 4. The majority of the debitage assemblage consists of biface thinning flakes (42.86%) (Image 8), flake fragments (26.98%), primary thinning flakes (18.25%) (Image 9), with smaller percentages of primary reduction flakes (6.35%), bipolar flakes (2.38%), retouch flakes (1.59%) potlids (0.79%) and spalls (0.79%) (Image 10 and Image 11). Regarding chert type, the debitage primarily consists of Onondaga chert (77.78%), with smaller and more similar percentages of Selkirk chert (8.73%) and Kettle Point chert (5.56%), along with two instances of both Ancaster chert (1.59%) and Devonian Till Chert (1.59%), one instance of Haldimand chert (0.79%), and five instances of indeterminate chert (3.97%). A total of 13 pieces of debitage, including eight biface thinning flakes, three flake fragments, one primary thinning flake and one potlid, were identified as heat-treated or burnt, consisting of 10% of the lithic debitage assemblage and 7% of the total artifact assemblage for the site. The heat-treated flakes exhibited potlid scars and/or colour change that may suggest either deliberate or unintentional exposure to high heat, such as a hearth.

Table 4: White Oak 1 (AfHh-926) Classification of Lithic Debitage

| Chert Type    | Primary Reduction | Primary Reduction | Primary Thinning | Primary Thinning | Biface Thinning | Biface Thinning | Retouch | Retouch | Bipolar | Bipolar | Flake Fragment | Flake Fragment | Potlid | Potlid | Spall | Spall | Total | Total   |
|---------------|-------------------|-------------------|------------------|------------------|-----------------|-----------------|---------|---------|---------|---------|----------------|----------------|--------|--------|-------|-------|-------|---------|
|               | Freq.             | %                 | Freq.            | %                | Freq.           | %               | Freq.   | %       | Freq.   | %       | Freq.          | %              | Freq.  | %      | Freq. | %     | Freq. | %       |
| Onondaga      | 3                 | 2.38%             | 15               | 11.90%           | 43              | 34.13%          | 2       | 1.59%   | 3       | 2.38%   | 30             | 23.81%         | 1      | 0.79%  | 1     | 0.79% | 98    | 77.78%  |
| Selkirk       | 2                 | 1.59%             | 3                | 2.38%            | 3               | 2.38%           | 0       | 0.00%   | 0       | 0.00%   | 3              | 2.38%          | 0      | 0.00%  | 0     | 0.00% | 11    | 8.73%   |
| Kettle Point  | 0                 | 0.00%             | 1                | 0.79%            | 5               | 3.97%           | 0       | 0.00%   | 0       | 0.00%   | 1              | 0.79%          | 0      | 0.00%  | 0     | 0.00% | 7     | 5.56%   |
| Ancaster      | 1                 | 0.79%             | 1                | 0.79%            | 0               | 0.00%           | 0       | 0.00%   | 0       | 0.00%   | 0              | 0.00%          | 0      | 0.00%  | 0     | 0.00% | 2     | 1.59%   |
| Haldimand     | 0                 | 0.00%             | 0                | 0.00%            | 1               | 0.79%           | 0       | 0.00%   | 0       | 0.00%   | 0              | 0.00%          | 0      | 0.00%  | 0     | 0.00% | 1     | 0.79%   |
| Till Chert    | 0                 | 0.00%             | 1                | 0.79%            | 1               | 0.79%           | 0       | 0.00%   | 0       | 0.00%   | 0              | 0.00%          | 0      | 0.00%  | 0     | 0.00% | 2     | 1.59%   |
| Indeterminate | 2                 | 1.59%             | 2                | 1.59%            | 1               | 0.79%           | 0       | 0.00%   | 0       | 0.00%   | 0              | 0.00%          | 0      | 0.00%  | 0     | 0.00% | 5     | 3.97%   |
| TOTAL         | 8                 | 6.35%             | 23               | 18.25%           | 54              | 42.86%          | 2       | 1.59%   | 3       | 2.38%   | 34             | 26.98%         | 1      | 0.79%  | 1     | 0.79% | 126   | 100.00% |

### 3.1.2 Historical Euro-Canadian Artifacts

A total of 62 historical Euro-Canadian artifacts were recovered from the Stage 3 assessment of the White Oak 1 site (AfHh-926), including: 13 ceramic artifacts, 16 glass artifacts, one metal artifact, two plastic fragments and 30 brick fragments.

#### ***Ceramic***

A total of 13 ceramic sherds were recovered. The historical ceramic assemblage consisted entirely of tableware, specifically seven sherds of refined white earthenware, four sherds of vitrified white earthenware and two sherds of yellowware (Image 12).

Refined white earthenware (RWE) is slightly porous, white-pasted earthenware with a near colourless glaze that replaced earlier near white ceramics, such as pearlware and creamware, by the early 1830s. First developed in 1805, this ware type declined considerably in popularity by the 1840s with the introduction of ironstone and vitrified white earthenware (Miller 2000:10, 13). Of the seven RWE sherds recovered, five were plain or undecorated and one exhibited an indeterminate cobalt blue decoration.

Vitrified white earthenware, also known as white granite, graniteware, white stone ironstone, or simply ironstone is a variety of white bodied earthenware with a white to greyish-white fabric that is usually thick and heavy beneath a thick, hard clear glaze with a white, greyish or bluish tint. Vitrified white earthenware was first developed in the 1840s but did not become popular until the second half of the 19<sup>th</sup> century. Its popularity continued into the 20<sup>th</sup> century and it is still in use to some extent today. A total of four pieces of vitrified white earthenware were recovered from the White Oak 1 Site, all of which were plain or undecorated.

Yellow ware is earthenware made from naturally coloured buff/yellow clay, covered with a clear glaze. Glazed wares vary from brownish mustard to light yellow (Sussman 1997:77). This ware type was primarily used for food preparation and storage, and dates from 1830 to 1940 (Miller 2000:12), with its peak popularity after 1850 (Burke 1991:35). One of the two pieces of yellowware recovered was plain/undecorated and the other exhibited a banded brown decoration.

#### ***Glass***

A total of 12 glass shards were recovered during the Stage 3 assessment, including 12 pieces of indeterminate container glass and four pieces of window pane glass. The container glass fragments range in colour from largely olive (n=4), clear/colourless (n=3) and green (n=3), along with one instance of both manganese-tinted and brown. Three glass window pane fragments were clear/colourless and the remaining was aqua coloured (Image 13).

#### ***Metal***

One machine cut nail was recovered from the Stage 3 assessment of the White Oak 1 Site (AfHh-926) (Image 14). Cut nails were machine cut from flat sheets of iron creating a nail that is of even thickness when viewed from the side, not tapered on all sides like hand-made nails, with a square and flat head. Invented about 1790, cut nails were in common use from the 1830s until the 1890s (Adams et al. 1994: 94).

### ***Other Artifacts***

Other artifacts recovered from the White Oak 1 site (AfHh-926) include 30 red brick fragments and two indeterminate plastic fragments (Image 14).

#### **3.1.3 Fauna**

One faunal element was recovered from White Oak 1 (AfHh-926), specifically a proximal long bone fragment of a medium to large mammal (Image 14).

#### **3.1.4 Stratigraphy and Cultural Features**

The soil stratigraphy across the White Oak 1 site (AfHh-926) was predominately medium grey-brown clay-loam topsoil over red-brown / yellow-brown clay subsoil (Image 15 and Image 16). However, some test units in lower slope positions or depressions, located in the north and west areas of site, tend to exhibit distinct mottles, particularly at the interface and sometimes into the subsoil (Image 17 to Image 19). This mottling varied in depth and thickness across the site, and was typically not artifact-bearing, containing one or no artifacts compared to the topsoil. A few units also exhibited irregular black organic staining at interface, which would at times continue within the B-horizon subsoil (Image 20 and Image 21). This is believed to be a part of the natural soil layers, as it is characteristic of Muriel Association soils, particularly Gobles and Kelvin soils, which are known to contain distinct, prominent mottles in the upper B-Horizons due to imperfect drainage and perched water tables. Muriel soils are found on upper slope positions and Goble and Kelvin soils are found in mid to lower slope positions (Hagerty and Kingston 1992).

Ephemerally high-water tables result in the formation of gleysols (soils formed under anaerobic conditions) where the water table is perched. Gleysols are characteristically varying colours of dark greys and blues. Because the water tables in Gobles and Kelvin soils fluctuate, alternating illuviation (leaching of material across a soil profile) and capillary action (upward movement of material when evaporation exceeds precipitation) creates the turbulent appearance of this layer (MLURI 2017).

No cultural features were identified during the Stage 3 test unit excavations of the White Oak 1 site (AfHh-926).

## 4.0 ANALYSIS AND CONCLUSIONS

The Stage 3 Archaeological Assessment of the White Oak 1 site (AfHh-926) resulted in the recovery of 126 pieces of lithic debitage and 62 historical Euro-Canadian artifacts. When included with the artifacts collected during the Stage 2 assessment (one projectile point, one scraper and four pieces of lithic debitage), a total of 132 artifacts have been recovered from the site to date.

The higher incidence of primary thinning and biface thinning flakes in the Stage 2 and 3 assemblages indicates that the latter stages of tool production, as well as tool maintenance were carried out at the site, while the relatively low number of primary reduction flakes indicates that the early stages of lithic reduction were not frequently performed at the site.

Diagnostic artifacts recovered from the White Oak 1 site (AfHh-926) are limited to the projectile point and scraper found during the Stage 2 assessment. The point was manufactured on Kettle Point chert and identified as a Late Archaic Crawford Knoll 'corner-notched' projectile point (ca. 1500 – 500 BC) (Kenyon 1980). The point measured 33.66 mm long, 17.9 mm wide, and 6.25 mm thick. The scraper was also manufactured on Kettle Point chert, and measures 28.22 mm long, 18.48 mm wide, and 8.4 mm thick.

An examination of the Stage 3 test unit counts suggests that there is one concentrated area of activity at the site, located from 310 to 315 east-west and 505 to 515 north-south on the site grid (Map 7). This area of the site yielded the highest artifact counts.

A search of the OASD reveals that no sites have been registered in a 1 km circumference around White Oak 1 (AfHh-926). This is likely a result of a lack of archaeological assessment or survey of the surrounding areas, rather than an actual lack of archaeological sites.

Based on the results of the Stage 2 and Stage 3 assessments, the White Oak 1 site (AfHh-926) appears to represent an occupation dating to the Late Archaic Period (ca. 1500 – 500 B.C.). The limited quantity of the cultural material identified at White Oak 1 (AfHh-926) suggests that it represents a small, briefly occupied, campsite. The lithic tools and debitage suggest latter stage tool production and maintenance were carried out at this site.

The presence of high artifact-yielding test units (e.g.,  $\geq 10$  artifacts) indicates that the White Oak 1 site (AfHh-926) has further cultural heritage value or interest. This conclusion is consistent with Section 3.4.1, Standard 1a of the MTCS's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The 62 historical Euro-Canadian artifacts found at White Oak 1 (AfHh-926) were intermixed with the pre-contact Indigenous material across the site and are interpreted as incidental domestic debris that was introduced to the site area through cultivation. The artifact assemblage dates to the late 19<sup>th</sup> to early 20<sup>th</sup> century, and possibly relates to the house structure depicted centrally within Lot 20, Concession 6 when George Johnston owned the land parcel in the late 19<sup>th</sup> century (Map 6). Given the relatively low artifact counts, late occupation date, and random distribution of the artifacts across site, the historical Euro-Canadian component from the White Oak 1 site (AfHh-926) is considered to have no further cultural heritage value or interest.



## 5.0 RECOMMENDATIONS

Based on the results of the Stage 3 Archaeological Assessment, the White Oak 1 site (AfHh-926) is interpreted as a small, briefly occupied, Late Archaic campsite and it is concluded that the site has further cultural heritage value or interest and will require Stage 4 mitigation prior to development impacts. This recommendation is based on four Stage 3 test units that produced greater than 9 artifacts, all of which were lithic debitage. These findings satisfy standard conditions under Section 3.4.1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) that trigger a requirement for Stage 4 mitigation because they have cultural heritage value or interest. Section 3.4.1, Standard 1a, states that small or diffuse sites with one or more Stage 3 test units yielding 10 or more artifacts require Stage 4 mitigation.

The MTCS's preferred method of Stage 4 mitigation is through avoidance and protection. Through discussions with the proponent and engagement with Indigenous communities, it has been determined that the White Oak 1 site (AfHh-926) can be avoided. As such, Stage 4 mitigation by long-term avoidance and protection is recommended for the White Oak 1 site (AfHh-926). Further records of the engagement between Golder, the proponent and interested First Nations communities are contained in the Supplementary Documentation.

As per Section 4.1.1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011a) the avoidance and protection strategy for the White Oak 1 site (AfHh-926) will involve the establishment of a "no-go" zone consisting of a 10-metre protective buffer around the extent of the site as defined by the results of the Stage 3 assessment (Map 7). A temporary fencing barrier will be erected to clearly delineate the 10-metre protective buffer around the site. A construction monitoring schedule will be established whereby a licensed archaeologist would be present to monitor any construction activities that extend to the edge of the protected area. The protected area and the location of the temporary barrier will be shown on all contract drawings and be labeled as a "no-go" zone where construction activities will not be permitted. Instructions will be provided to all construction staff to stay outside of this area and to ensure that it is appropriately monitored by a licensed archaeologist during any construction which takes place within 10 m of the protected area. After completion of construction, the area will be inspected and the effectiveness of the monitoring and avoidance strategy for the site will be reported on by the licensed consultant archaeologist. If any archaeological resources turn up during monitoring and construction, the archaeologist must be permitted sufficient time to assess these resources and mitigate as required.

Plans for the avoidance and long-term protection of the White Oak 1 site (AfHh-926) have been provided to the City of London as the proponent and approval authority of this project. These plans include a commitment that any ground alterations will avoid the archaeological site and its protective buffer area. As well, if the City of London or any other future land owner determines at a later date that the White Oak 1 site (AfHh-926) will be altered in any way, either temporarily or permanently, then Stage 4 mitigation will be required. This includes even minor forms of soil disturbance such as tree removal, minor landscaping, and utilities installation.

The City of London has agreed to the long-term avoidance and protection plan (see Supplementary Documentation).

There are no further concerns for impacts to archaeological sites in the remainder of the Study Area outside the 10 m buffer. The MTCS is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

## 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 1990b). 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 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 1990b).

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 1990b).

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.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence (Government of Ontario 1990).

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## 8.0 IMAGES



**Image 1: White Oak 1 (AfHh-926); Stage 3 excavations in progress; facing south, June 18, 2018.**



**Image 2: White Oak 1 (AfHh-926); Stage 3 excavations in progress; facing southeast, June 25, 2018**





**Image 3: White Oak 1 (AfHh-926); Stage 3 test unit; facing south, June 15, 2018**



**Image 4: White Oak 1 (AfHh-926); Stage 3 test unit; facing east, June 20, 2018**





**Image 5: White Oak 1 (AfHh-926); Stage 3 backfilling; facing south, June 28, 2018**



**Image 6: White Oak 1 (AfHh-926); Stage 3 backfilling; facing south, June 28, 2018**





**Image 7: White Oak 1 (AfHh-926); Stage 3 excavations complete, site backfilled; facing southeast, June 28, 2018**



**Image 8: White Oak 1 (AfHh-926); Representative example of lithic debitage (top to bottom); biface thinning flakes (5), burnt or heat-modified biface thinning flakes (4).**





**Image 9: White Oak 1 (AfHh-926); Representative example of lithic debitage (top to bottom); primary thinning flakes (4), flake fragment (4).**



**Image 10: White Oak 1 (AfHh-926); Representative example of lithic debitage (top to bottom); primary reduction flakes (3), bipolar flakes (2).**



Image 11: White Oak 1 (AfHh-926); Representative example of lithic debitage (top to bottom, left to right); retouch flakes (2), potlid, spall.

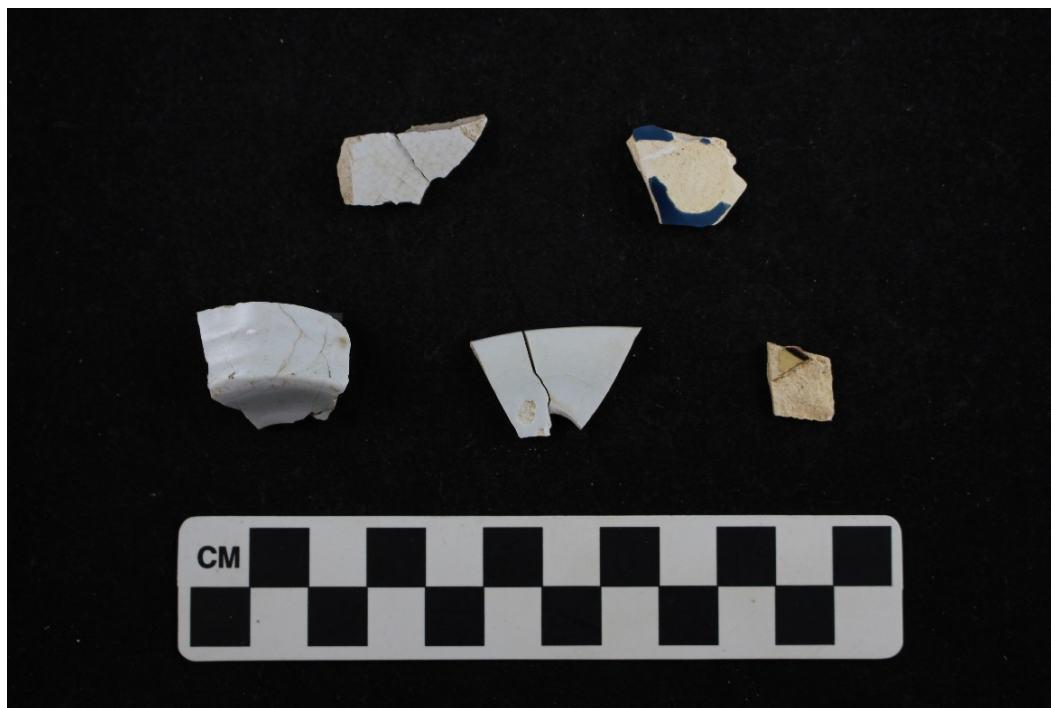


Image 12: White Oak 1 (AfHh-926); Representative example of historical Euro-Canadian ceramic artifacts (top to bottom, left to right); plain/undecorated refined white earthenware (RWE), indeterminate blue decor RWE, plain/undecorated vitrified white earthenware (2), banded yellowware.





**Image 13: White Oak 1 (AfHh-926); Representative example of historical Euro-Canadian glass artifacts (top to bottom, left to right); indeterminate container glass (olive, green, clear/colourless, manganese-tinted, brown) (5), window pane glass (aqua, clear/colourless) (2).**



**Image 14: White Oak 1 (AfHh-926); Representative example of other historical Euro-Canadian artifacts (top to bottom, left to right); red brick (2), cut nail, plastic fragment, medium to large mammal bone.**





**Image 15: A representative example of stratigraphy found at White Oak 1 (AfHh-926); facing east, June 15, 2018.**



**Image 16: A representative example of stratigraphy found at White Oak 1 (AfHh-926); facing east, June 20, 2018.**





**Image 17: A representative example of mottling found at interface at White Oak 1 (AfHh-926); facing north, June 21, 2018.**



**Image 18: A representative example of mottling found within subsoil at White Oak 1 (AfHh-926); facing north, June 15, 2018.**





**Image 19: A representative example of mottling in profile at White Oak 1 (AfHh-926); facing south, June 15, 2018.**



**Image 20: A representative example of mottling/organic staining found within subsoil at White Oak 1 (AfHh-926); facing north, June 19, 2018.**





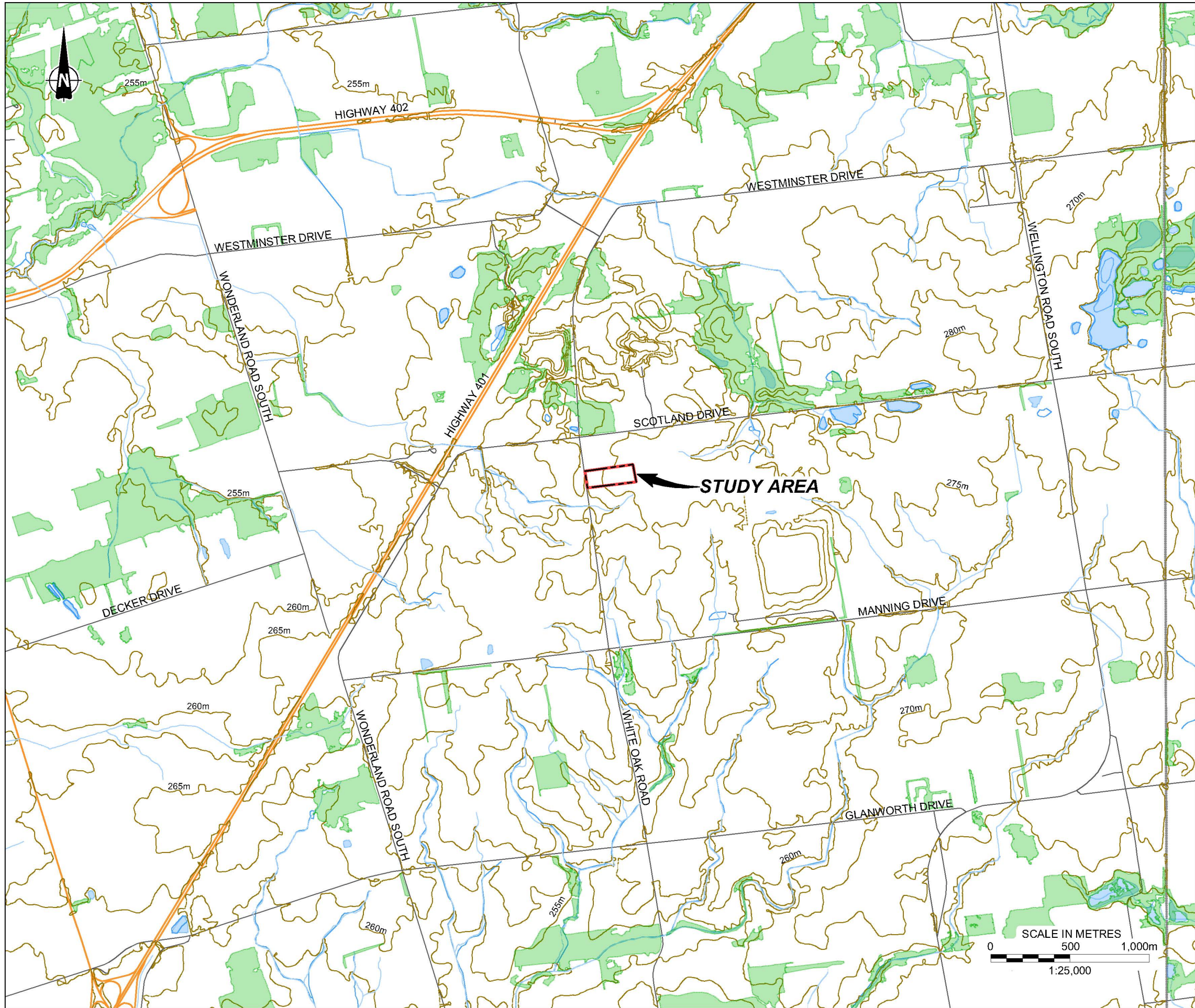
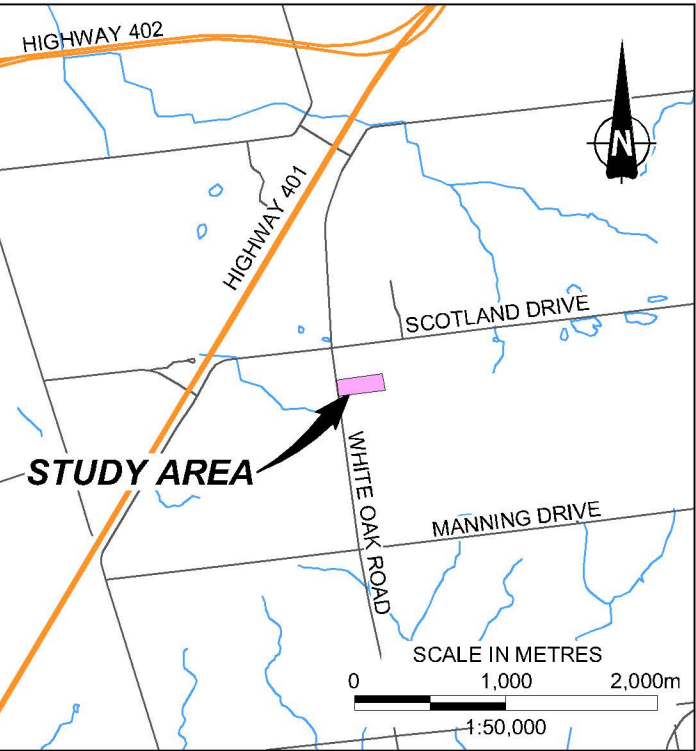
**Image 21: A representative example of mottling/organic staining in profile at White Oak 1 (AfHh-926); facing south, June 19, 2018.**

## **9.0 MAPS**

All maps follow on the succeeding pages.



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REGIONAL MAP

#### LEGEND

APPROXIMATE LOCATION OF STUDY AREA

#### REFERENCE

DRAWING BASED ON MNR LIO, OBTAINED 2017  
PRODUCED BY GOLDER ASSOCIATES LTD UNDER  
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#### NOTES

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ALL LOCATIONS ARE APPROXIMATE.

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| TITLE   | LOCATION OF STUDY AREA                                                                                              |         |           |                      |
| GOLDER  | PROJECT No.                                                                                                         | 1648176 | FILE No.  | 1648176-40000-R01001 |
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| MAP 1   |                                                                                                                     |         |           |                      |



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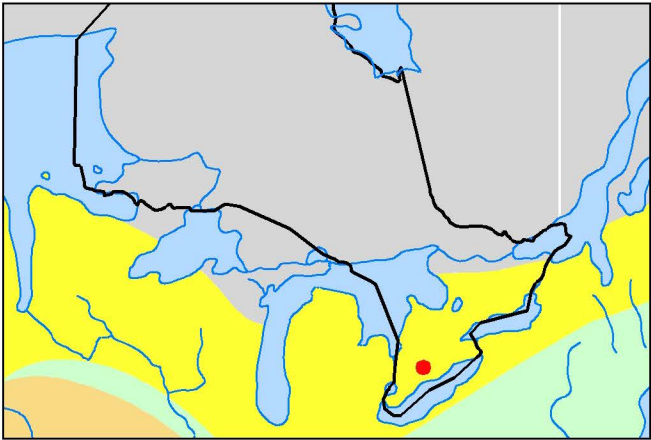
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**NOTES**

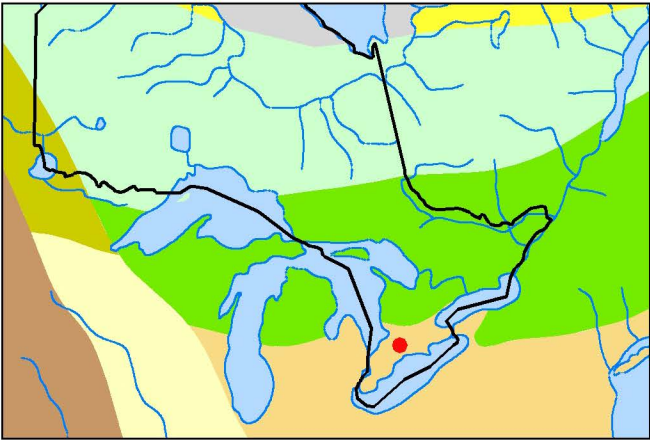
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|                                                                                              | TITLE<br><br>DETAIL OF STUDY AREA                                                                                   |     |           |                              |          |
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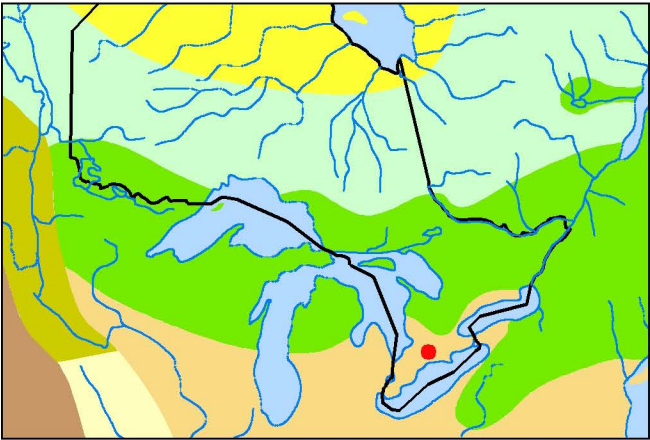




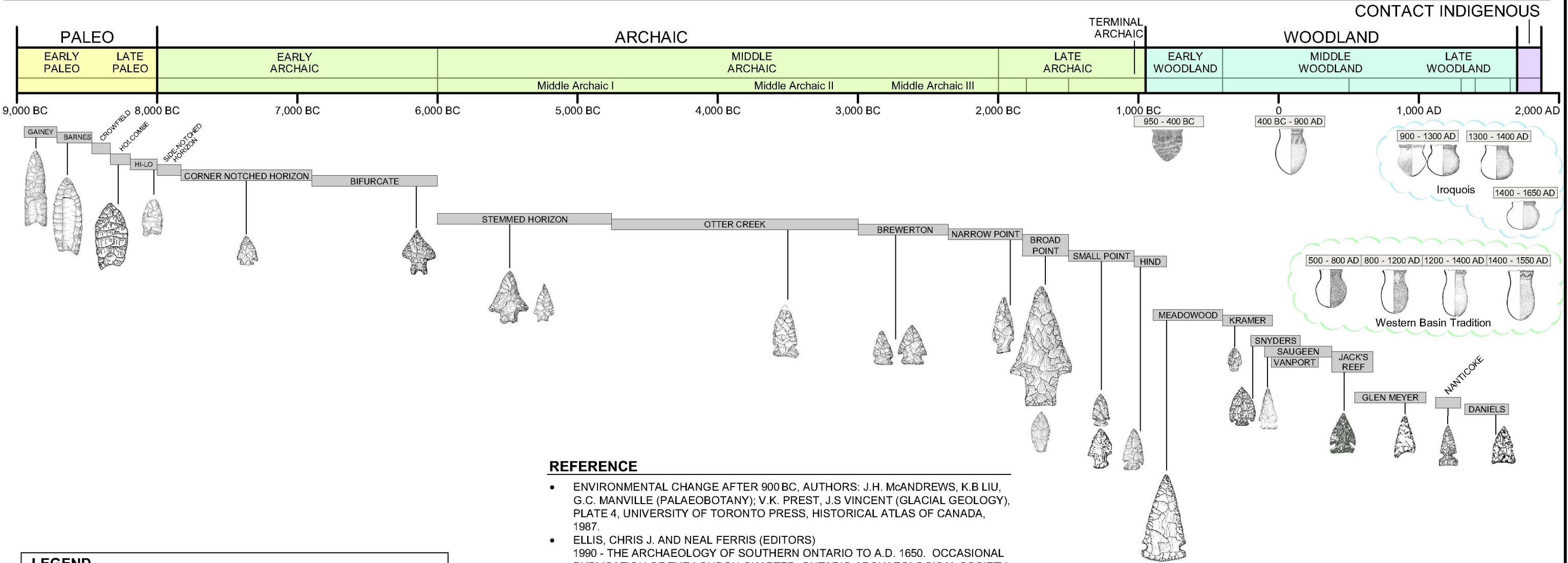
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5,000 BC



1,000 AD



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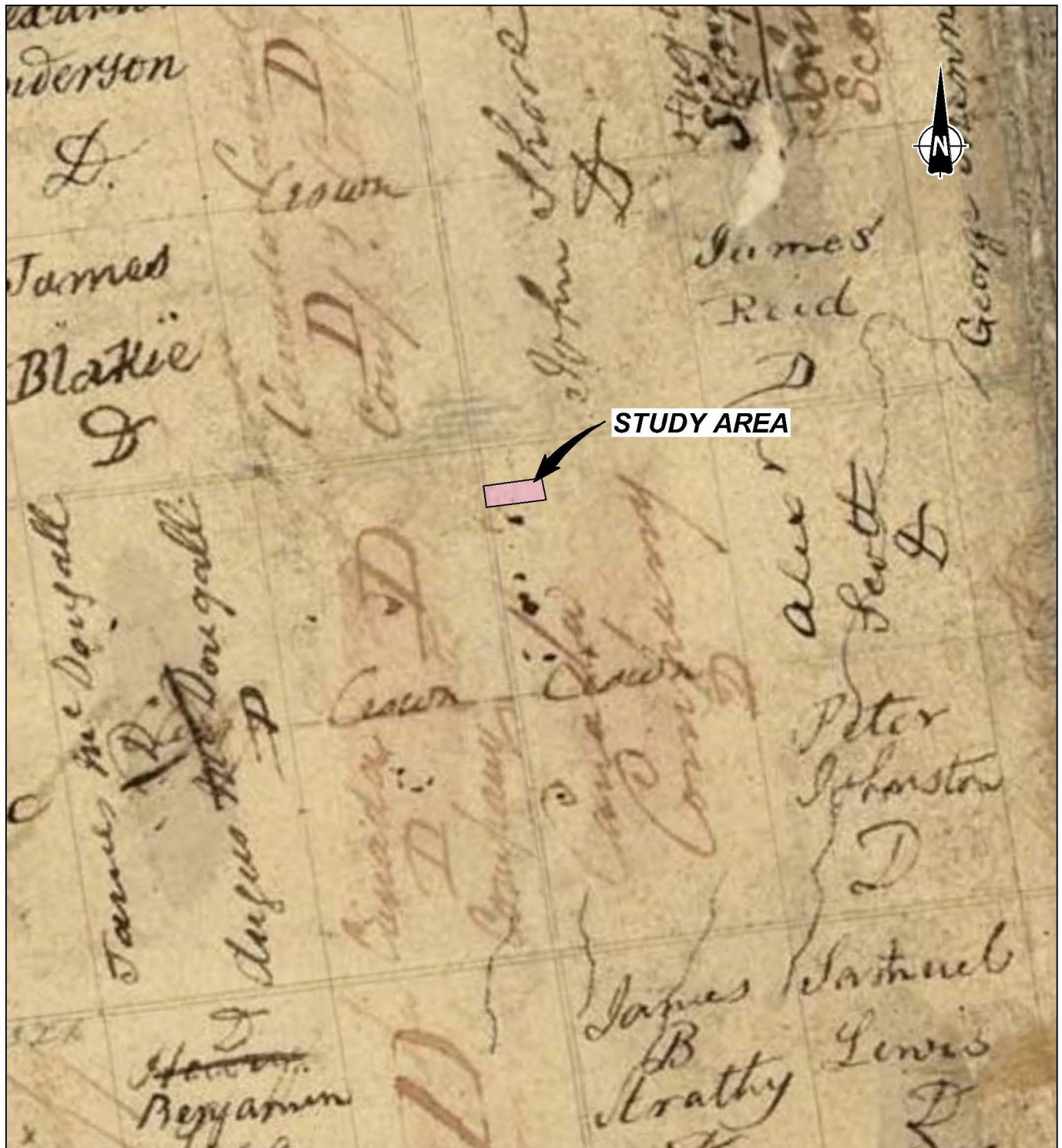
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LEGEND

- PROJECT AREA
- VEGETATION COVERAGE:
- Tundra
  - Boreal Forest
  - Great Lakes-St. Lawrence Forest
  - Deciduous Forest
  - Deciduous Woodlands
  - Grassland
  - Lichen Woodland
  - Parkland

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| PROJECT | STAGE 3 ARCHAEOLOGICAL ASSESSMENT<br>WHITE OAK 1 SITE (AfHh-926)<br>W12A LANDFILL EXPANSION AREA<br>LONDON, ONTARIO |         |           |                      |
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| MAP 3   |                                                                                                                     |         |           |                      |





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APPROXIMATE LOCATION OF STUDY AREA

## REFERENCE

BURWELL, MAHLON, 1857, TOWNSHIP OF WESTMINSTER PATENT PLAN, ONTARIO ARCHIVES REFERENCE CODE RG 1-100-0-4142.

## NOTES

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PROJECT

STAGE 3 ARCHAEOLOGICAL ASSESSMENT  
WHITE OAK 1 SITE (AfHh-926)  
W12A LANDFILL EXPANSION AREA  
LONDON, ONTARIO

TITLE

**A PORTION OF THE 1857 PATENT MAP  
FOR WESTMINSTER TOWNSHIP**



GOLDER

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| PROJECT No. |     | 1648176   | FILE No. 1648176-40000-R01004 |     |
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### APPROXIMATE LOCATION OF STUDY AREA

## REFERENCE

TREMAINE GEORGE R., 1862, TREMAINE'S MAP OF THE  
COUNTY OF MIDDLESEX. GEORGE C. TREMAINE.,  
TORONTO.

## NOTES

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| PROJECT | <b>STAGE 3 ARCHAEOLOGICAL ASSESSMENT</b><br><b>WHITE OAK 1 SITE (AfHh-926)</b><br><b>W12A LANDFILL EXPANSION AREA</b><br><b>LONDON, ONTARIO</b> |
| TITLE   | <b>A PORTION OF TREMAINE'S 1862 MAP OF<br/>THE COUNTY OF MIDDLESEX</b>                                                                          |

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## LEGEND

APPROXIMATE LOCATION OF STUDY AREA

## REFERENCE

PAGE, H.R. AND CO., 1878, ILLUSTRATED HISTORICAL ATLAS OF MIDDLESEX COUNTY. H.R. PAGE & CO., TORONTO.

## NOTES

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PROJECT

STAGE 3 ARCHAEOLOGICAL ASSESSMENT  
WHITE OAK 1 SITE (AfHh-926)  
W12A LANDFILL EXPANSION AREA  
LONDON, ONTARIO

TITLE

**A PORTION OF THE  
1878 HISTORICAL ATLAS MAP OF  
WESTMINSTER TOWNSHIP**



**GOLDER**

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| <b>MAP 6</b> |                    |           |                               |          |





LEGEND

- APPROXIMATE LOCATION OF STUDY AREA
- STAGE 2 SURFACE FIND
- STAGE 3 UNIT
- 2 TOTAL PRE-CONTACT ARTIFACT COUNT (WITHIN STAGE 3 UNIT EXCAVATION)
- 2 TOTAL HISTORIC ARTIFACT COUNT (WITHIN STAGE 3 UNIT EXCAVATION)
- 2 TOTAL FAUNAL COUNT (WITHIN STAGE 3 UNIT EXCAVATION)
- 2 PHOTOGRAPH LOCATION, VIEWING DIRECTION, AND PLATE NUMBER

REFERENCE

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## 10.0 IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Golder has prepared this report in a manner consistent with the level of care and skill ordinary 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 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 others is prohibited and is without responsibility to Golder. The report, all plans, data, drawings 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 Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party 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 or 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 investigations 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 comply with those identified in the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultants Archaeologists* (Government of Ontario 2011).

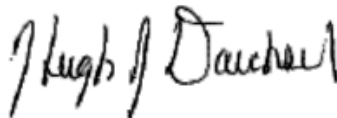
## 11.0 CLOSURE

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.**



Michael Teal, M.A.  
*Senior Archaeologist*



Hugh Daechsel, M.A.  
*Principal, Senior Archaeologist*

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**APPENDIX A**

# Glossary of Terms and Definitions

## Debitage

Chipped lithic tools anddebitage were found at the site (or sites) described in this report. Some of the more common chert types found on pre-contact Indigenous sites in southern Ontario are described below.

**Kettle Point chert:** a relatively high quality raw material found within the Upper Devonian age Kettle Point Formation that outcrops between Kettle Point and Ipperwash, on Lake Huron. Currently, Kettle Point occurs as submerged outcrops extending for approximately 1,350 metres into Lake Huron. Secondary deposits of Kettle Point chert have been reported in Essex County and in the Ausable River watershed (Eley and von Bitter 1989; Fox 2009:362).

**Onondaga chert:** a high quality raw material found within the Onondaga Formation that outcrops along the north shore of Lake Erie west of the mouth of the Grand River as far west as Nanticoke, east of the mouth of the Grand River as far east as Fort Erie, and along the Onondaga Escarpment between Cayuga and Hagersville (Telford and Tarrant 1975). This material can also be recovered from secondary, glacial deposits across much of southwestern Ontario, east of Chatham (Eley and von Bitter 1989; Fox 2009:361-362).

**Selkirk chert:** a moderate to relatively high quality raw material that occurs within the Dundee Formation; it outcrops along Sandusk Creek and its tributaries just west of the village of Selkirk (Telford and Tarrant 1975). The chert ranges in colour from mottled or banded grey to a predominantly brown colour, the latter of which being of relatively more vitreous fabric than the former. Its distribution as a secondary source material is similar to Onondaga chert and it is frequently encountered as far west as the Chatham area (Eley and von Bitter 1989; Fox 2009:362).

**Non-chert:** some materials other than chert were occasionally used for the manufacture of chipped tools, and consequently some pieces of non-chertdebitage may occur on some sites. Materials in the non-chert category may include quartzite, quartz-like materials, schist and slate or shale.

All chert types discussed herein were identified visually by comparison to reference materials located in Golder's London offices. The flake assemblage was subject to morphological analysis following the classification scheme described by Lennox et al. (1986) and expanded upon by Fisher (1997), with the exception that no attempt was made to distinguish "primary" from "primary bipolar" flakes.

With reference to the analysis of lithicdebitage, the following overview provides descriptions of the various types of cores anddebitage commonly found on pre-contact Indigenous sites.

**Cores:** Pieces of stone (usually chert) from which flakes or blades have been removed. A core may be uni-facetted (flake removed from one surface or edge only) or multi-facetted (flakes removed from two or more surfaces or edges. A core may retain a segment of its exterior, weathered surface.

**Primary Reduction Flakes:** are by-products of the initial stages of the reduction of lithic material, they are derived from cores and are generally attributed to direct hard hammer

percussion. Primary flakes may exhibit a large cortical striking platform. This platform may appear on an otherwise unmodified flake scar or a crushed flake margin. Where measureable the striking platform – ventral surface angle is approximately 90 degrees, usually unfacetted and large. Ventral surface attributes are usually well pronounced while the dorsal surface consists of 50-100% cortex, implying little or no modification of the core prior to the removal of the primary flake.

**Primary Thinning Flake:** a large, thick flake with an unprepared striking platform and few to no flake scars on its dorsal (exterior) surface. These flakes are typically thinner than Primary Reduction Flakes. Their platform is usually large, flat or minimally facetted, and close to 90 degrees. A Large bulb of percussion is common on the ventral side. Primary Thinning Flakes are typically associated with the hard hammer percussion method from the initial stage of chipped stone tool production.

**Biface Thinning Flake:** a moderately thick to thin flake with a small platform that can be ground and/or facetted to some degree. The platform angle is usually acute or less than 90 degree. The dorsal side of the flake often has several shallow intersecting scars with no cortex material remaining. Biface Thinning Flakes are associated with the medial stage of biface reduction where a stone tool is thinned through the removal of flakes from opposing surfaces.

**Retouch Flakes:** small, thin flakes removed from the edge of a stone tool or larger flake through pressure flaking. These flakes tend to have a small, lipped platform that may exhibit crushing or part of a dulled bifacial edge. The dorsal surface typically displays flake scars from previous removals and lacks cortex material. They are associated with the final stage of chipped stone tool production when edges are sharpened and notches for hafting are created. They are also associated with maintenance activities where tools are re-sharpened and broken edges rejuvenated.

**Shatter:** usually consists of thick, blocky pieces of chert which lack striking platforms and ventral flake surface attributes. This category of debitage is thought to be a by-product of the initial stages of reduction through the uncontrolled breakage of the raw material along structural faults or irregularities. They commonly result from the use of horizontally and vertically flawed material, these flaws apparently a result of stresses occurring to the material while still within its primary deposit. A relatively high incidence of shatter is usually associated with the bipolar reduction strategy.

**Flake Fragments:** are broken flakes with no platform or proximal end. They cannot be convincingly linked to any particular lithic activity. As such, they have very little analytical value.

**Micro flake:** Very small broken flakes are classed as micro flakes, less than 3mm in size. These flakes are small and generally only recovered from floatation samples.

#### **Stages of Reduction for Chert Bifaces** (based on Fisher 1997:25-29)

There have been several different approaches to the definition of the stages of biface reduction, in both Eurasia (Andrefsky 2005:32) and North America (i.e. Callahan 1979: 30-31). Many Ontario-based researchers have adopted the classification scheme used by Fisher (1997: 25-29), which was based largely on Callahan (1979: 30-31). Fisher's definitions of

Stage 1 (initial) through Stage 4 (final) bifaces take into consideration characteristics such as number and size of flakes removed, length and depth of flake scars, cross-section, length-width ratio, and edge configuration.

Stage 1: During this initial stage of biface reduction specimens are only roughly shaped. The biface cross-section is hexagonal, irregular to thick lenticular, and is not plano-convex at all (Callahan 1979:36). Biface thinning flake scars are deep, large and generally do not cross half of the biface width, leaving remnants of the original material surface. From a lateral view, the edge of the biface is jagged and highly irregular.

Stage 2: At this stage the biface is still relatively thick compared to its width, with more lateral flake removals crossing over half the biface width, leaving less of the original surface present. As well, thinning flakes are more numerous and smaller. The edge of the biface is still irregular, but less jagged.

Stage 3: This stage of reduction produces a biface with a lenticular cross-section, thinning flakes are shallow and are consistently greater than half the biface width. Also, there is a greater regularity to the edge, and bases may be formed, if only incipiently, on some specimens.

Stage 4: Stage 4 is represented by an almost finished projectile point with a relatively high width to thickness ratio, a relatively regular or even edge, some retouch, and a shaped base. Some items classed as Stage 4 specimens may have been finished projectile points. However, they are not so finely crafted as the definitive finished projectile points, perhaps due to material or knapping flaws, or skills of knappers.

## Other Artifacts

The following glossary defines some of the terms for some of the formal and informal chipped lithic tools from the sites discussed in this report. All of the definitions are derived from a reputable online sources such as [www.archaeologywordsmith.com](http://www.archaeologywordsmith.com) . and [www.wvculture.org/shpo/glossary.html](http://www.wvculture.org/shpo/glossary.html).

**Artifact:** “any object made, modified or used by people”.

**Biface:** “a stone tool which has been flaked on both surfaces or sides”; frequently made as roughed-out blanks or preforms intended for further reduction into finished tools such as projectile points or knives.

**Burin:** “from the French word *burin*, meaning cold chisel. A specialized engraving tool ... that is cut or ground [or flaked] diagonally downward to form a diamond-shaped point at the tip... In its most characteristic form, the working tip is a narrow transverse edge formed by the intersection of two flake scars produced by striking at an angle to the main axis of the blade... Burins were used to carve or engrave softer organic materials such as antler, bone... or wood”.

**Debitage:** “the by-products or waste materials left over from the manufacture of stone tools”.

**Diagnostic artifact:** “an item that is indicative of a particular time period or cultural group”.

**Drill:** “a tool used to drill holes through or into wood, stone or bone”.



**Ecofact:** “nonartifactual evidence that has not been technologically altered but that has cultural relevance.”

**Graver:** “a stone tool manufactured from a flake by chipping (pressure-flaking) it on two edges at one end so as to leave a sharp point. Gravers were used to cut or score organic materials such as bone, shell, wood and antler; perhaps for punching leather, and other purposes”.

**Lithic:** “stone, or made of stone”.

**Knife:** a purposefully formed cutting tool.

**Perforator:** “a flint [chert] tool for piercing holes”, or, “a small chipped stone implement with a rather long and slender point and usually a broad base, supposed to have been used for drilling or boring holes”. Perforators are sometimes referred to as borers.

**Projectile point:** “a general term for points [usually stone] that were hafted to darts, spears or arrows”; commonly referred to as either spearhead or arrowhead.

**Retouched flake:** “a flake that has had small flakes removed to blunt, sharpen, refine the outline or prepare the edge of the tool”.

**Scraper:** a stone tool formed by chipping [flaking] the end or side of a flake which can then be used to scrape animal hides or wood.

**Spokeshave:** “a stone tool with a semi-circular concavity on the edge, used for smoothing spear or arrow shafts; a drawknife or small transverse plane for planing convex surfaces”.

**Utilized flake:** “a piece of stone debitage that is used for cutting or slicing. The edge may be damaged from use, but not deliberately”.

**Wedge:** “an object used to split, force open or keep open another object; a tool used to split wood”.

**APPENDIX B**

# Artifact Catalogue

| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                | Function 1        | Function 2               | Object                   | Fragment  | Attribute 1        | Attribute 2       | Manufacture | Alteration | # of Artifacts | Notes |
|--------|---------|----------|---------|-----|------------|---------------------------|-------------------|--------------------------|--------------------------|-----------|--------------------|-------------------|-------------|------------|----------------|-------|
| 1      | 310     | 520      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary reduction flake  | complete  |                    |                   | chipped     |            | 1              |       |
| 2      | 310     | 520      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | complete  |                    |                   | chipped     |            | 1              |       |
| 3      | 310     | 520      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           | distal    |                    |                   | chipped     |            | 3              |       |
| 4      | 310     | 520      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragments | red                |                   |             |            | 4              |       |
| 5      | 310     | 520      | 1       | 1   | glass      | ind.                      | structural        | building component       | window pane glass        | fragments |                    | clear/ colourless |             |            | 1              |       |
| 6      | 305     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | bipolar flake            | complete  |                    |                   | chipped     |            | 1              |       |
| 7      | 305     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | complete  |                    |                   | chipped     |            | 1              |       |
| 8      | 305     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           | distal    |                    |                   | chipped     |            | 3              |       |
| 9      | 305     | 510      | 1       | 1   | stone      | till chert                | tools & equipment | debitage                 | biface thinning flake    | complete  |                    |                   | chipped     |            | 1              |       |
| 10     | 305     | 510      | 1       | 1   | stone      | chert: selkirk            | tools & equipment | debitage                 | biface thinning flake    | complete  |                    |                   | chipped     |            | 2              |       |
| 11     | 305     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete  |                    |                   | chipped     |            | 1              |       |
| 12     | 305     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | potlid                   | complete  |                    |                   | chipped     | burnt      | 1              |       |
| 13     | 305     | 510      | 1       | 1   | ceramic    | refined white earthenware | food & beverage   | tableware                | tableware; indeterminate | body      | plain/un-decorated |                   |             |            | 2              |       |
| 14     | 305     | 510      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragment  | red                |                   |             |            | 1              |       |
| 15     | 305     | 510      | 1       | 1   | glass      | ind.                      | indeterminate     | container; indeterminate | container; indeterminate | fragment  |                    | clear/ colourless |             |            | 1              |       |
| 16     | 305     | 510      | 1       | 2   | stone      | chert: selkirk            | tools & equipment | debitage                 | primary thinning flake   | complete  |                    |                   | chipped     |            | 1              |       |
| 17     | 305     | 510      | 1       | 2   | stone      | chert: onondaga           | tools & equipment | debitage                 | retouch flake            | complete  |                    |                   | chipped     |            | 1              |       |
| 18     | 310     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary reduction flake  | complete  |                    |                   | chipped     |            | 2              |       |
| 19     | 310     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete  |                    |                   | chipped     |            | 5              |       |

| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                  | Function 1        | Function 2               | Object                   | Fragment   | Attribute 1         | Attribute 2 | Manufacture | Alteration | # of Artifacts | Notes                          |
|--------|---------|----------|---------|-----|------------|-----------------------------|-------------------|--------------------------|--------------------------|------------|---------------------|-------------|-------------|------------|----------------|--------------------------------|
| 20     | 310     | 515      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | flake fragment           |            |                     |             | chipped     |            | 1              |                                |
| 21     | 310     | 515      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | biface thinning flake    | incomplete |                     |             | chipped     | burnt      | 1              |                                |
| 22     | 310     | 515      | 1       | 1   | stone      | chert: indeterminate        | tools & equipment | debitage                 | biface thinning flake    | complete   |                     |             | chipped     | burnt      | 1              | exhibits potlids               |
| 23     | 310     | 515      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | spall                    | complete   |                     |             | chipped     |            | 1              |                                |
| 24     | 305     | 520      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | primary thinning flake   | proximal   |                     |             | chipped     |            | 1              |                                |
| 25     | 305     | 520      | 1       | 1   | ceramic    | refined white earthenware   | food & beverage   | tableware                | tableware; indeterminate | body       | plain/un-decorated  |             |             |            | 2              |                                |
| 26     | 305     | 520      | 1       | 1   | ceramic    | vitrified white earthenware | food & beverage   | tableware                | tableware; indeterminate | body       | plain/ un-decorated |             |             |            | 1              |                                |
| 27     | 305     | 520      | 1       | 1   | glass      | ind.                        | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                     | green       |             |            | 2              |                                |
| 28     | 305     | 520      | 1       | 1   | glass      | ind.                        | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                     | brown       |             |            | 1              |                                |
| 29     | 305     | 520      | 1       | 1   | brick      | brick                       | structural        | building component       | brick                    | fragments  | red                 |             |             |            | 2              |                                |
| 30     | 310     | 505      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | primary thinning flake   | incomplete |                     |             | chipped     |            | 1              |                                |
| 31     | 310     | 505      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | biface thinning flake    | complete   |                     |             | chipped     |            | 2              |                                |
| 32     | 310     | 505      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | flake fragment           |            |                     |             | chipped     |            | 1              |                                |
| 33     | 310     | 505      | 1       | 1   | ceramic    | refined white earthenware   | food & beverage   | tableware                | tableware; indeterminate | body       | plain/undecorated   |             |             |            | 1              |                                |
| 34     | 310     | 505      | 1       | 1   | glass      | ind.                        | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                     | olive       |             |            | 3              |                                |
| 35     | 315     | 510      | 1       | 1   | stone      | chert: ancaster             | tools & equipment | debitage                 | primary thinning flake   | incomplete |                     |             | chipped     |            | 1              |                                |
| 36     | 315     | 510      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | biface thinning flake    | complete   |                     |             | chipped     |            | 5              | 2 of 5 pieces broken laterally |
| 37     | 315     | 510      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | flake fragment           | distal     |                     |             | chipped     |            | 3              |                                |
| 38     | 315     | 510      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage                 | biface thinning flake    |            |                     |             | chipped     | burnt      | 5              | all exhibit potlids            |
| 39     | 315     | 510      | 1       | 1   | ceramic    | yellowware                  | food & beverage   | tableware                | tableware; indeterminate | body       | banded              | brown       |             |            | 1              |                                |



| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2           | Function 1        | Function 2               | Object                   | Fragment   | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Notes                      |
|--------|---------|----------|---------|-----|------------|----------------------|-------------------|--------------------------|--------------------------|------------|-------------|-------------|-------------|------------|----------------|----------------------------|
| 40     | 315     | 510      | 1       | 1   | glass      | ind.                 | indeterminate     | container; indeterminate | container; indeterminate | fragment   |             | green       |             |            | 1              |                            |
| 41     | 315     | 510      | 1       | 1   | brick      | brick                | structural        | building component       | brick                    | fragments  | red         |             |             |            | 5              |                            |
| 42     | 315     | 515      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | primary thinning flake   | complete   |             |             | chipped     |            | 3              |                            |
| 43     | 315     | 515      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | biface thinning flake    | distal     |             |             | chipped     |            | 1              |                            |
| 44     | 315     | 515      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | bipolar flake            |            |             |             | chipped     |            | 1              |                            |
| 45     | 315     | 515      | 1       | 1   | stone      | chert: kettle point  | tools & equipment | debitage                 | primary thinning flake   | complete   |             |             | chipped     |            | 1              |                            |
| 46     | 315     | 515      | 1       | 2   | stone      | chert: indeterminate | tools & equipment | debitage                 | primary thinning flake   | complete   |             |             | chipped     | burnt      | 1              | exhibits potlids           |
| 47     | 315     | 520      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | flake fragment           | distal     |             |             | chipped     | burnt      | 1              | exhibits potlids           |
| 48     | 310     | 510      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | primary thinning flake   | proximal   |             |             | chipped     |            | 1              |                            |
| 49     | 310     | 510      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | biface thinning flake    | complete   |             |             | chipped     |            | 1              |                            |
| 50     | 310     | 510      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | retouch flake            | complete   |             |             | chipped     |            | 1              |                            |
| 51     | 310     | 510      | 1       | 1   | stone      | chert: selkirk       | tools & equipment | debitage                 | primary reduction flake  |            |             |             | chipped     |            | 2              | 1 complete, 1 distal       |
| 52     | 310     | 510      | 1       | 1   | stone      | chert: selkirk       | tools & equipment | debitage                 | primary thinning flake   | complete   |             |             | chipped     |            | 1              |                            |
| 53     | 310     | 510      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | flake fragment           | distal     |             |             | chipped     |            | 3              |                            |
| 54     | 310     | 510      | 1       | 2   | stone      | chert: selkirk       | tools & equipment | debitage                 | flake fragment           |            |             |             | chipped     |            | 1              | broken on both ends        |
| 55     | 320     | 520      | 1       | 1   | stone      | chert: selkirk       | tools & equipment | debitage                 | primary thinning flake   | distal     |             |             | chipped     |            | 1              |                            |
| 56     | 320     | 520      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | primary thinning flake   | proximal   |             |             | chipped     |            | 2              |                            |
| 57     | 320     | 520      | 1       | 1   | stone      | chert: indeterminate | tools & equipment | debitage                 | primary thinning flake   | incomplete |             |             | chipped     |            | 1              | broken laterally           |
| 58     | 320     | 520      | 1       | 1   | stone      | chert: selkirk       | tools & equipment | debitage                 | flake fragment           | distal     |             |             | chipped     |            | 1              |                            |
| 59     | 320     | 520      | 1       | 1   | stone      | chert: onondaga      | tools & equipment | debitage                 | flake fragment           |            |             |             | chipped     | burnt      | 2              | one exhibits potlids, both |

| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                | Function 1        | Function 2               | Object                   | Fragment   | Attribute 1        | Attribute 2       | Manufacture       | Alteration | # of Artifacts | Notes                                |
|--------|---------|----------|---------|-----|------------|---------------------------|-------------------|--------------------------|--------------------------|------------|--------------------|-------------------|-------------------|------------|----------------|--------------------------------------|
|        |         |          |         |     |            |                           |                   |                          |                          |            |                    |                   |                   |            |                | flakes broken on multiple ends/sides |
| 60     | 320     | 520      | 1       | 1   | glass      | ind.                      | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                    | clear/colourless  |                   |            | 1              |                                      |
| 61     | 320     | 520      | 1       | 1   | glass      | ind.                      | structural        | building component       | window pane glass        | fragments  |                    | clear/colourless  |                   |            | 1              |                                      |
| 62     | 325     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | incomplete |                    |                   | chipped           |            | 1              | broken laterally                     |
| 63     | 325     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           | distal     |                    |                   | chipped           |            | 1              |                                      |
| 64     | 325     | 510      | 1       | 1   | glass      | ind.                      | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                    | olive             |                   |            | 1              |                                      |
| 65     | 325     | 510      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragments  | red                |                   |                   |            | 3              |                                      |
| 66     | 330     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | incomplete |                    |                   | chipped           |            | 1              | broken laterally                     |
| 67     | 330     | 510      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragments  | red                |                   |                   |            | 6              |                                      |
| 68     | 330     | 510      | 1       | 2   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | incomplete |                    |                   | chipped           |            | 1              | broken laterally                     |
| 69     | 320     | 515      | 1       | 1   | stone      | chert: haldimand          | tools & equipment | debitage                 | biface thinning flake    | complete   |                    |                   | chipped           |            | 1              |                                      |
| 70     | 320     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete   |                    |                   | chipped           |            | 2              | one possibly burnt                   |
| 71     | 320     | 515      | 1       | 1   | stone      | chert: selkirk            | tools & equipment | debitage                 | flake fragment           |            |                    |                   | chipped           |            | 1              |                                      |
| 72     | 320     | 515      | 1       | 1   | stone      | chert: kettle point       | tools & equipment | debitage                 | flake fragment           |            |                    |                   | chipped           |            | 1              |                                      |
| 73     | 320     | 515      | 1       | 1   | ceramic    | refined white earthenware | food & beverage   | tableware                | tableware; indeterminate | body       | plain/un-decorated |                   |                   |            | 1              |                                      |
| 74     | 320     | 515      | 1       | 1   | glass      | ind.                      | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                    | maganese (purple) | maganese (purple) |            | 1              |                                      |
| 75     | 320     | 515      | 1       | 2   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | complete   |                    |                   | chipped           |            | 1              |                                      |
| 76     | 325     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | incomplete |                    |                   | chipped           |            | 1              | broken laterally                     |
| 77     | 325     | 505      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragments  | red                |                   |                   |            | 1              |                                      |
| 78     | 320     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete   |                    |                   | chipped           |            | 1              |                                      |

| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                | Function 1        | Function 2               | Object                   | Fragment   | Attribute 1              | Attribute 2             | Manufacture             | Alteration | # of Artifacts | Notes                                     |
|--------|---------|----------|---------|-----|------------|---------------------------|-------------------|--------------------------|--------------------------|------------|--------------------------|-------------------------|-------------------------|------------|----------------|-------------------------------------------|
| 79     | 320     | 510      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           | distal     |                          |                         | chipped                 |            | 3              |                                           |
| 80     | 320     | 510      | 1       | 1   | ceramic    | refined white earthenware | food & beverage   | tableware                | tableware; indeterminate | body       | indeterminate decoration | cobalt blue, light blue | cobalt blue, light blue |            | 1              |                                           |
| 81     | 320     | 510      | 1       | 1   | glass      | ind.                      | indeterminate     | container; indeterminate | container; indeterminate | fragment   |                          | clear/colourless        |                         |            | 1              |                                           |
| 82     | 320     | 510      | 1       | 1   | brick      | brick                     | structural        | building component       | brick                    | fragment   | red                      |                         |                         |            | 1              |                                           |
| 83     | 315     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | proximal   |                          |                         | chipped                 |            | 1              |                                           |
| 84     | 315     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete   |                          |                         | chipped                 |            | 4              |                                           |
| 85     | 315     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           |            |                          |                         | chipped                 |            | 5              | 2 distal, 3 broken on multiple ends/sides |
| 86     | 315     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete   |                          |                         | chipped                 | burnt      | 1              | broken laterally                          |
| 87     | 315     | 505      | 1       | 1   | plastic    | ind.                      | indeterminate     | indeterminate            | plastic fragment         |            |                          |                         |                         |            | 1              | 2 pieces refit                            |
| 88     | 320     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    |            |                          |                         | chipped                 |            | 2              | 1 proximal, 1 complete                    |
| 89     | 320     | 505      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | flake fragment           | distal     |                          |                         | chipped                 |            | 1              |                                           |
| 90     | 325     | 500      | 1       | 1   | stone      | chert: indeterminate      | tools & equipment | debitage                 | primary reduction flake  | complete   |                          |                         | chipped                 |            | 1              | all cortex                                |
| 91     | 325     | 515      | 1       | 1   | stone      | chert: ancaster           | tools & equipment | debitage                 | primary reduction flake  | incomplete |                          |                         | chipped                 |            | 1              |                                           |
| 92     | 325     | 515      | 1       | 1   | stone      | chert: indeterminate      | tools & equipment | debitage                 | primary reduction flake  | complete   |                          |                         | chipped                 |            | 1              | all cortex                                |
| 93     | 325     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | primary thinning flake   | distal     |                          |                         | chipped                 |            | 1              |                                           |
| 94     | 325     | 515      | 1       | 1   | stone      | chert: onondaga           | tools & equipment | debitage                 | biface thinning flake    | complete   |                          |                         | chipped                 |            | 2              |                                           |
| 95     | 325     | 515      | 1       | 1   | stone      | chert: selkirk            | tools & equipment | debitage                 | biface thinning flake    | complete   |                          |                         | chipped                 |            | 1              |                                           |
| 96     | 325     | 515      | 1       | 1   | stone      | chert: kettle point       | tools & equipment | debitage                 | biface thinning flake    | complete   |                          |                         | chipped                 |            | 1              |                                           |

| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                 | Function 1        | Function 2         | Object                      | Fragment                    | Attribute 1                 | Attribute 2       | Manufacture | Alteration | # of Artifacts | Notes            |
|--------|---------|----------|---------|-----|------------|----------------------------|-------------------|--------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|-------------|------------|----------------|------------------|
| 97     | 325     | 515      | 1       | 1   | ceramic    | yellowware                 | food & beverage   | tableware          | tableware; indeterminate    | body                        | plain/un-decorated          |                   |             |            | 1              |                  |
| 98     | 325     | 515      | 1       | 1   | ceramic    | vitified white earthenware | food & beverage   | tableware          | tableware; indeterminate    | body                        | plain/un-decorated          |                   |             |            | 1              |                  |
| 99     | 325     | 515      | 1       | 1   | brick      | brick                      | structural        | building component | brick                       | fragment                    | red                         |                   |             |            | 1              |                  |
| 100    | 305     | 505      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | biface thinning flake       | incomplete                  |                             |                   | chipped     |            | 2              | broken laterally |
| 101    | 305     | 505      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | flake fragment              | distal                      |                             |                   | chipped     |            | 1              |                  |
| 102    | 310     | 500      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | primary thinning flake      | distal                      |                             |                   | chipped     |            | 1              |                  |
| 103    | 310     | 500      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | biface thinning flake       | complete                    |                             |                   | chipped     |            | 1              |                  |
| 104    | 315     | 500      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | biface thinning flake       | complete                    |                             |                   | chipped     |            | 1              |                  |
| 105    | 315     | 500      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | flake fragment              | distal                      |                             |                   | chipped     |            | 1              |                  |
| 106    | 330     | 515      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | biface thinning flake       | complete                    |                             |                   | chipped     |            | 3              |                  |
| 107    | 330     | 515      | 1       | 1   | stone      | chert: kettle point        | tools & equipment | debitage           | biface thinning flake       | complete                    |                             |                   | chipped     |            | 3              |                  |
| 108    | 330     | 515      | 1       | 1   | stone      | chert: onondaga            | tools & equipment | debitage           | flake fragment              | distal                      |                             |                   | chipped     |            | 1              |                  |
| 109    | 330     | 515      | 1       | 1   | brick      | brick                      | structural        | building component | brick                       | fragments                   | red                         |                   |             |            | 2              |                  |
| 110    | 320     | 525      | 1       | 1   | stone      | chert: kettle point        | tools & equipment | debitage           | biface thinning flake       | complete                    |                             |                   | chipped     |            | 1              |                  |
| 111    | 320     | 525      | 1       | 1   | stone      | till chert                 | tools & equipment | debitage           | primary thinning flake      | proximal                    |                             |                   | chipped     |            | 1              |                  |
| 112    | 320     | 525      | 1       | 1   | glass      | ind.                       | structural        | building component | window pane glass           | fragments                   |                             | clear/ colourless |             |            | 1              |                  |
| 113    | 320     | 525      | 1       | 1   | plastic    | ind.                       | indeterminate     | indeterminate      | plastic fragment            |                             |                             |                   |             |            | 1              |                  |
| 114    | 320     | 525      | 1       | 1   | brick      | brick                      | structural        | building component | brick                       | fragment                    | red                         |                   |             |            | 1              |                  |
| 115    | 320     | 525      | 1       | 1   | fauna      | bone                       | ecological        | fauna              | medium to large mammal bone | long bone proximal fragment | long bone proximal fragment |                   |             |            | 1              |                  |



| Cat. # | Easting | Northing | Subunit | Lot | Material 1 | Material 2                  | Function 1        | Function 2         | Object                   | Fragment        | Attribute 1        | Attribute 2 | Manufacture | Alteration | # of Artifacts | Notes          |
|--------|---------|----------|---------|-----|------------|-----------------------------|-------------------|--------------------|--------------------------|-----------------|--------------------|-------------|-------------|------------|----------------|----------------|
| 116    | 300     | 510      | 1       | 1   | ceramic    | vitrified white earthenware | food & beverage   | tableware          | tableware; indeterminate | rim             | plain/un-decorated |             |             |            | 1              | 2 pieces refit |
| 117    | 300     | 510      | 1       | 1   | metal      | iron                        | structural        | building component | nail:common              | proximal        |                    |             | machine cut |            | 1              |                |
| 118    | 300     | 510      | 1       | 1   | brick      | brick                       | structural        | building component | brick                    | fragments       | red                |             |             |            | 2              |                |
| 119    | 305     | 500      | 1       | 1   | stone      | chert: onondaga             | tools & equipment | debitage           | bipolar flake            | complete        |                    |             |             |            | 1              |                |
| 120    | 305     | 500      | 1       | 1   | ceramic    | vitrified white earthenware | food & beverage   | tableware          | tableware; indeterminate | base, foot ring | plain/un-decorated |             |             |            | 1              |                |
| 121    | 305     | 500      | 1       | 1   | brick      | brick                       | structural        | building component | brick                    | fragments       | red                |             |             |            | 1              |                |
| 122    | 305     | 500      | 1       | 1   | glass      | ind.                        | structural        | building component | window pane glass        | fragments       |                    | aqua        |             |            | 1              |                |



**[golder.com](http://golder.com)**

**Ministry of Heritage, Sport, Tourism, Culture  
Industries**

Archaeology Program Unit  
Programs and Services Branch  
Heritage, Tourism and Culture Division  
401 Bay Street, Suite 1700  
Toronto ON M7A 0A7  
Tel.: (416) 314-2120  
Email: Andrea.Williams@ontario.ca

**Ministère des Industries du patrimoine, du sport, du  
tourisme et de la culture**

Unité des programmes d'archéologie  
Direction des programmes et des services  
Division du patrimoine, du tourisme et de la culture  
401, rue Bay, bureau 1700  
Toronto ON M7A 0A7  
Tél. : (416) 314-2120  
Email: Andrea.Williams@ontario.ca



Jun 30, 2020

Lafe Meicenheimer (P457)  
Golder Associates Ltd.  
1 - 309 Exeter London ON N6L 1C1

**RE: Review and Entry into the Ontario Public Register of Archaeological Reports:  
Archaeological Assessment Report Entitled, "Stage 3 Archaeological Assessment  
White Oak 1 Site (AfHh-926), W12A Landfill, Stockpile Expansion Area, 3899  
Scotland Drive, Part of Lot 20, Concession 6, Former Township of Westminster,  
Middlesex County, Now City of London, Ontario", Dated Jun 12, 2020, Filed with  
MTCS Toronto Office on Jun 26, 2020, MTCS Project Information Form Number  
P457-0071-2018, MTCS File Number 0008522**

Dear Mr. Meicenheimer:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.<sup>1</sup> This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Maps 1 and 7 and Supplementary Documentation Tile 1 of the above titled report as well as the Site Plan dated May 2, 2020 indicating the site and buffer and recommends the following:

Based on the results of the Stage 3 Archaeological Assessment, the White Oak 1 site (AfHh-926) is interpreted as a small, briefly occupied, Late Archaic campsite and it is concluded that the site has further cultural heritage value or interest and will require Stage 4 mitigation prior to development impacts. This recommendation is based on four Stage 3 test units that produced greater than 9 artifacts, all of which were lithic debitage. These findings satisfy standard conditions under Section 3.4.1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) that trigger a requirement for Stage 4 mitigation because they have cultural heritage value or interest. Section 3.4.1, Standard 1a, states that small or diffuse sites with one or more Stage 3 test units yielding 10 or more artifacts require Stage 4 mitigation.

The MTCS's preferred method of Stage 4 mitigation is through avoidance and protection. Through

discussions with the proponent and engagement with Indigenous communities, it has been determined that the White Oak 1 site (AfHh-926) can be avoided. As such, Stage 4 mitigation by long-term avoidance and protection is recommended for the White Oak 1 site (AfHh-926). Further records of the engagement between Golder, the proponent and interested First Nations communities are contained in the Supplementary Documentation.

As per Section 4.1.1 of the Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011a) the avoidance and protection strategy for the White Oak 1 site (AfHh-926) will involve the establishment of a “no-go” zone consisting of a 10-metre protective buffer around the extent of the site as defined by the results of the Stage 3 assessment (Map 7). A temporary fencing barrier will be erected to clearly delineate the 10-metre protective buffer around the site. A construction monitoring schedule will be established whereby a licensed archaeologist would be present to monitor any construction activities that extend to the edge of the protected area. The protected area and the location of the temporary barrier will be shown on all contract drawings and be labeled as a “no-go” zone where construction activities will not be permitted. Instructions will be provided to all construction staff to stay outside of this area and to ensure that it is appropriately monitored by a licensed archaeologist during any construction which takes place within 10 m of the protected area. After completion of construction, the area will be inspected and the effectiveness of the monitoring and avoidance strategy for the site will be reported on by the licensed consultant archaeologist. If any archaeological resources turn up during monitoring and construction, the archaeologist must be permitted sufficient time to assess these resources and mitigate as required.

Plans for the avoidance and long-term protection of the White Oak 1 site (AfHh-926) have been provided to the City of London as the proponent and approval authority of this project. These plans include a commitment that any ground alterations will avoid the archaeological site and its protective buffer area. As well, if the City of London or any other future land owner determines at a later date that the White Oak 1 site (AfHh-926) will be altered in any way, either temporarily or permanently, then Stage 4 mitigation will be required. This includes even minor forms of soil disturbance such as tree removal, minor landscaping, and utilities installation.

The City of London has agreed to the long-term avoidance and protection plan (see Supplementary Documentation).

There are no further concerns for impacts to archaeological sites in the remainder of the Study Area outside the 10 m buffer.

The MTCS is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry’s 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licencing.

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

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

Sincerely,

Andrea Williams  
Archaeology Review Officer



cc. Archaeology Licensing Officer  
Andre Joseph, City of London  
Michael Losee, City of London

<sup>1</sup>*In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

**ATTACHMENT C**

**C.01 Stage 1-2 Archaeological Assessment**  
**C.02 MHSTCI Review and Entry in Public Registry**



ORIGINAL REPORT

# Stage 1-2 Archaeological Assessment

*W12A Landfill Site, Cells 9 and 10*

*Part of Lot 20, Concession 6*

*Former Township of Westminster, Middlesex County,  
Now City of London, Ontario*

Submitted to:

**Michael Losee, B.Sc., Division Manager**

Solid Waste Management

City of London

300 Dufferin Avenue

N6A 4L9

Submitted by:

**Golder Associates Ltd.**

309 Exeter Road, Unit #1 London, Ontario, N6L 1C1 Canada

+1 519 652 0099

1783701-R01

September 18, 2018

**Licensee: Michael Teal, M.A.**

**PIF#: P364-0125-2018**

## Distribution List

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1 Pdf Copy - Ministry of Tourism, Culture and Sport

1 Pdf Copy - Golder Associates Ltd.

## Project Personnel

|                                |                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Project Director</b>        | Hugh Daechsel, M.A., Principal, Senior Archaeologist                                                 |
| <b>Project Manager</b>         | Michael Teal, M.A. (P364), Senior Archaeologist                                                      |
| <b>Archaeological Licensee</b> | Michael Teal, M.A. (P364)                                                                            |
| <b>Field Director</b>          | Rebecca Parry, M.A. (R1013)                                                                          |
| <b>Field Assistants</b>        | Ian Petty, Jocelynn Thomas, Kaitlyn Crow, Lafe Meicenheimer, M.A. (P457),                            |
| <b>Report Production</b>       | Lafe Meicenheimer, M.A. (P457), Staff Archaeologist<br>Liz Yildiz, Environmental Group Administrator |
| <b>Senior Review</b>           | Hugh Daechsel, M.A., Principal, Senior Archaeologist                                                 |

## Acknowledgements

|                           |                               |
|---------------------------|-------------------------------|
| <b>Proponent Contacts</b> | Michael Losee, City of London |
|                           | Andre Joseph, City of London  |



# Executive Summary

*The Executive Summary highlights key points from the report only; for complete information and finding the reader should examine the complete report.*

Golder Associates Ltd. ("Golder") was contracted by the Corporation of the City of London ("the City") to conduct a combined Stage 1 background study and Stage 2 property assessment for a portion of the City's W12A Landfill site located at 3502 Manning Drive, within part of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, now City of London, Ontario. The Study Area for the assessment includes two proposed cells (Cells 9 and 10) in the northeast corner of the landfill as well as a proposed laydown area immediately north of the W12A Landfill. Cells 9 and 10 will be used for future waste disposal while the laydown area will be used to temporarily stockpile soil during cell construction. Combined, the entire Study Area is approximately 30 hectares (ha) in size.

This Stage 1-2 Archaeological Assessment was conducted to meet the standard requirements of the *Environmental Assessment Act*, R.S.O 1990, c.E.18 (Government of Ontario 1990a), as required by the City of London prior to land disturbance.

The Stage 1 background study determined that the portions of the Study Area had archaeological potential, and as such, would require Stage 2 Archaeological Assessment to identify archaeological sites that may be present. The Stage 2 assessment, which involved a combination of pedestrian survey at 5 m intervals and shovel test pit survey at 5 m intervals, resulted in the identification of seven archaeological locations.

Location A (AfHh-929) consisted of 716 historical Euro-Canadian artifacts and 81 faunal elements from 42 positive test pits and two test units in an area measuring approximately 30 m east-west by 50 m north-south. Though the assemblage dates from the mid-19<sup>th</sup> century to the 20<sup>th</sup> century, its location in close proximity to berms created by the demolition of the farm complex in that area indicates that the artifacts here come from disturbed contexts. Thus, Location A (AfHh-929) has no further cultural heritage value or interest (CHVI) and has been sufficiently documented. No further archaeological assessment is required.

Location 1 (AfHh-928) consisted of one Late Archaic Innes projectile point and one piece of lithic debitage. The isolated nature of these artifacts suggests they are related to transient use of the area by Indigenous peoples that occurred during the Late Archaic Period. Given the isolated and non-diagnostic nature of the finds, Location 1 (AfHh-928) is concluded to have no further CHVI and has been sufficiently documented. No further archaeological assessment is required.

Location 2 consisted of four pieces of lithic debitage, while Locations 3, 5, and 6 are each represented by a single chert flake. The isolated nature of these artifacts suggests they are related to transient use of the area by Indigenous peoples that occurred during an unknown time period. Given the isolated and non-diagnostic nature of the finds, Locations 2, 3, 5, and 6 are concluded to have no further CHVI and have been sufficiently documented. No further archaeological assessment is required.

Location 4 (AfHh-926) consisted of six pre-contact Indigenous artifacts in an area measuring approximately 23 m east-west by 20 m north-south, including one projectile point, one scraper, and four pieces of lithic debitage. The quantity of the cultural material identified at Location 4 (AfHh-926) suggests that it may represent a campsite that was occupied during the Late Archaic Period and that lithic tool production and maintenance were carried out at this site. Based on the size and nature of the assembly, Location 4 (AfHh-926) is concluded to have further CHVI and further archaeological assessment is required.

Based on the results of the Stage 1 background study and Stage 2 property assessment, Location 4 (White Oak 1; AfHh-926) is considered to have cultural heritage value or interest, while Location A (AfHh-929), Location 1 (AfHh-928) and Locations 2, 3, 5, and 6 are not considered to have cultural heritage value or interest. These conclusions provide the basis for the following recommendations:

- 1) Location 4 (White Oak 1; AfHh-926) should be subject to Stage 3 site-specific assessment prior to any impacts. As this site is a small pre-contact Indigenous site where it is not clearly evident that Stage 4 mitigation of impacts will be required, the Stage 3 assessment should follow Standards 1 and 2 of Table 3.1 in the MTCS's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011:51). As a controlled surface pick-up (CSP) that met all requirements outlined in Section 3.2.1 of the *Standards and Guidelines for Consultant Archaeologists* was conducted at all locations as part of the Stage 2 Assessment, no further CSP work is required for Location 4 (White Oak 1; AfHh-926) prior to hand excavation.
- 2) All Stage 3 test units at Location 4 (White Oak 1; AfHh-926) should be excavated into the first 5 cm of subsoil, or until a cultural feature is uncovered. Any features identified should be recorded through photographs and plan drawings and then be covered with geotextile fabric prior to backfilling. All soil excavated from the test units should be screened through 6 mm hardware cloth to facilitate the recovery of artifacts that may be present. All recovered artifacts should be recorded, bagged, and catalogued according to their provenience.
- 3) Indigenous communities should be engaged when assessing the cultural heritage value or interest of Location 4 (White Oak 1; AfHh-926) and when formulating a Stage 4 strategy to mitigate impacts, if required.
- 4) Location A (AfHh-929), Location 1 (AfHh-928), and Locations 2, 3, 5, and 6 have been sufficiently assessed and documented, and no further archaeological assessment is required for these locations.

The Ontario Ministry of Tourism, Culture and Sport is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

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**APPENDICES****APPENDIX A**

Glossary of Pre-Contact Indigenous Terms and Definitions

**APPENDIX B**

Complete Artifact Catalogues

## 1.0 PROJECT CONTEXT

### 1.1 Development Context

Golder Associates Ltd. ("Golder") was contracted by the Corporation of the City of London ("the City") to conduct a combined Stage 1 background study and Stage 2 property assessment for a portion of the City's W12A Landfill site located at 3502 Manning Drive, within part of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, now City of London, Ontario. The Study Area for the assessment includes two proposed cells (Cells 9 and 10) in the northeast corner of the landfill as well as a proposed laydown area immediately north of the W12A Landfill. Cells 9 and 10 will be used for future waste disposal while the laydown area will be used to temporarily stockpile soil during cell construction. Combined, the entire Study Area is approximately 30 hectares (ha) in size. This Stage 1-2 Archaeological Assessment was conducted to meet the standard requirements of the Planning Act, R.S.O 1990, c.P.14 (Government of Ontario 1990a), as required by the City of London prior to land disturbance.

The Stage 1-2 assessment was conducted under professional archaeological licence P364, issued to Michael Teal of Golder by the MTCS (PIF# P364-0125-2018). Permission to enter the property to conduct all required archaeological fieldwork activities, including the recovery of artifacts, was granted by Michael Losee of the City of London.

### 1.2 Historical Context

Table 1 provides a general outline of the pre- and post-contact culture history for Middlesex County, drawn from Ellis and Ferris (1990), while Map 3 displays the pre-contact Indigenous culture history of Middlesex County.

**Table 1: Cultural Chronology for Middlesex County.**

| Period                             | Characteristics                | Time              | 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                       | Narrow Points                  | 2000 - 1800 BC    | increasing site size               |
| Late Archaic                       | Broad Points                   | 1800 - 1500 BC    | large chipped lithic tools         |
| Late Archaic                       | Small Points                   | 1500 - 1100BC     | introduction of bow hunting        |
| Terminal Archaic                   | Hind Points                    | 1100 - 950 BC     | emergence of true cemeteries       |
| Early Woodland                     | Meadowood Points               | 950 - 400 BC      | introduction of pottery            |
| Middle Woodland                    | Dentate/Pseudo-Scallop Pottery | 400 BC – A.D. 500 | increased sedentism                |
| Middle Woodland                    | Princess Point                 | A.D. 550 – 900    | introduction of corn               |
| Ontario Iroquoian<br>Late Woodland | Early Ontario Iroquoian        | A.D. 900 – 1300   | emergence of agricultural villages |
| Ontario Iroquoian<br>Late Woodland | Middle Ontario Iroquoian       | A.D. 1300 – 1400  | long longhouses (100m +)           |
| Ontario Iroquoian<br>Late Woodland | Late Ontario Iroquoian         | A.D. 1400 – 1650  | tribal warfare and displacement    |



| Period                         | Characteristics           | Time                | Comments                                            |
|--------------------------------|---------------------------|---------------------|-----------------------------------------------------|
| Western Basin<br>Late Woodland | Riviere au Vase           | A.D. 500 - 900      | introduction of corn                                |
| Western Basin<br>Late Woodland | Young Phase               | A.D. 900 - 1200     | dense storage pits, proto-settlements               |
| Western Basin<br>Late Woodland | Springwell Phase          | A.D. 1200 - 1400    | emergence of agricultural villages                  |
| Western Basin<br>Late Woodland | Wolf Phase                | A.D. 1400 - 1550    | palisaded villages, tribal warfare and displacement |
| Contact<br>Indigenous          | Various Algonquian Groups | A.D. 1700 – 1875    | early written records and treaties                  |
| Historical                     | Euro-Canadian             | A.D. 1796 – present | European settlement                                 |

### 1.2.1 Paleo Period

The first human occupation of the London area, known as the Paleo Period, begins 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 London 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 Indigenous groups that had been living south of the Great Lakes.

Our current understanding of Early Paleo settlement patterns suggest that small bands, that consisted of probably no more than 25 to 35 individuals followed a pattern of seasonal mobility extending over large territories. 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 6 ha. 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. 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, with all of southwestern Ontario being occupied by perhaps only 100 to 200 people (Ellis and Deller 1990:54). Because this is the case, Early Paleo sites are exceedingly rare, and within the limits of London only four locations are known. Three of these sites are isolated find spots of the distinctive fluted points or channel flakes, while one site, located near Dingman Creek, represents a rare occupation area with a good deal of potential for contributing to our knowledge of this period. To date, all of the known Early Paleo sites in Middlesex are located south of the Main and South branches of the Thames River.

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 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 as in the case of the mastodons and mammoths, become 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.

### **1.2.2 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). One of the more notable changes in the Early Archaic Period is the appearance of side and corner-notched projectile points. Their significant innovations include the introduction of ground stone tools such as celts and axes, suggesting the beginnings of a simple woodworking industry. 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 towards more diverse toolkits continued, as the presence of net-sinkers 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 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. This process resulted in a reorganization of Indigenous subsistence practices, as more people had to rely on resources from smaller areas. During the latter part of the 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, Kenyon and Spence 1990:66). By 3500 BC the local environment had stabilized in a near modern form (Ellis, Kenyon and Spence 1990:69).

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 definitely expanded. It is during the Late Archaic that the first true cemeteries appear. 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 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.

### 1.2.3 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 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, 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 poorly constructed, undecorated vessels had yet to assume a central position in the day-to-day lives of Early Woodland peoples.

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

The trade networks which were established in the Middle and Late Archaic also continued to function, although there does not appear to have been as much traffic in marine shell during the Early Woodland Period. 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 in the London area.

In terms of settlement and subsistence patterns, the Middle Woodland (400 BC-900 A.D.) 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 the 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 600 A.D. However, it did not become a dietary staple until at least three to four hundred years later.

The first agricultural villages in southwestern Ontario date to the 10th century A.D. 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" (900-1300 A.D.), 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 900 and 1300 A.D., 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 metres 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. 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.

The Middle Ontario Iroquoian Period (1300-1400 A.D.) 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 metres, while houses of up to 45 metres 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 1300 A.D. 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 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 Ontario Iroquoian 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 1300 A.D. 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 (1400-1650 A.D.) continues many of the trends which have been documented for the preceding century. For instance, between 1400 and 1450 A.D. 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 1450 A.D., house lengths begin to decrease, with houses dating between 1500-1580 A.D. averaging only 30 m in length.

Why house lengths decrease after 1450 A.D. 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 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 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 Ontario Iroquoian village expansion has been clearly documented in the London area. The ongoing excavations at the Lawson site, a large Late Iroquoian village located on the grounds of the Museum of Ontario Archaeology, has shown that the original village had expanded by at least twenty percent to accommodate the construction of nine additional longhouses (Anderson 2009).

The Ontario Iroquoian and Western Basin are two archaeological traditions that characterize pre-contact Indigenous communities living in the Middlesex County area of southwestern Ontario from about A.D. 500 to 1650. Peoples of the Western Basin Tradition lived throughout the southwestern-most portion of the province, from the present-day Sarnia/Windsor area to about London. Iroquoian peoples, on the other hand, appear to have lived from the present-day Chatham area east to Toronto. Each of these traditions are divided into distinct temporal phases (see Table 1) defined by material cultural attributes, and settlement and subsistence patterns that exhibit a shift towards larger and more permanent villages due to an increasing reliance on cultivated plants such as corn, beans, squash, sunflower, and tobacco (Dodd et al. 1990; Foreman 2011; Fox 1990; Lennox and Fitzgerald 1990; Murphy and Ferris 1990).

After 1525 A.D. communities of pre-contact Indigenous peoples 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 ongoing wars between the Huron and the League Iroquois located in upper New York State.

It has been satisfactorily demonstrated that the Late Ontario Iroquoian communities which were located in southwestern Ontario as far west as the Chatham area were ancestral to at least some of the Neutral Nation groups (Lennox and Fitzgerald 1990; Smith 1990:283). For this reason the Late Ontario Iroquoian groups which occupied southwestern Ontario prior to the arrival of the French are often identified as "Prehistorical Neutral". They occupied a large area extending along the Grand River and throughout the Niagara Peninsula as far east as Fort Erie and Niagara Falls (Lennox and Fitzgerald 1990:448).

#### **1.2.4 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 arrival of Algonkian-speaking groups from northern Ontario at the end of the 17<sup>th</sup> century and beginning of the 18<sup>th</sup> century (Schmalz 1991).

The nature of their settlement size, population distribution, and material culture shifted as European settlers encroached upon their territory. However, despite this shift, "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). First Nation peoples of Southern Ontario have left behind archaeologically significant resources throughout Southern Ontario which show continuity with past peoples, even if they have 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-17<sup>th</sup> 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).

The Study Area is located in an area that first entered the Euro-Canadian historical record as part of Treaty No. 2, which:

*... was made with the O[dawa], Chippew[a], Pottawatom[i] and Huro[n] May 19th, 1790, portions of which nations had established themselves on the Detroit River all of whom had been driven by the Iroquois from the northern and eastern parts of the Province, from the Detroit River easterly to Catfish Creek and south of the river La Tranche [Thames River] and Chenail Ecarte, and contains Essex County except Anderdon Township and Part of West Sandwich; Kent County except Zone Township, and Gores of Camden and Chatham; Elgin County except Bayham Township and parts of South Dorchester and Malahide. In Middlesex County, Del[a]ware and Westminster Townships and part of North Dorchester [are included].*

Morris 1943:17

## 1.2.5 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 lying to the west of a 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 Middlesex County and Westminster Township.

### 1.2.5.1 Westminster Township

In 1791, Colonel John Graves Simcoe became the first Lieutenant-Governor of the newly formed Province of Upper Canada. Simcoe was particularly concerned about the threat of American expansion northward and their ability to cross at Detroit into the area known as the Western District (DWTH 2006:32).

It was believed that the best way to defend the land was to populate the area; therefore, in 1793, Simcoe ordered the lands of the Thames River basin to be surveyed for habitation. Surveying and settlement of the Middlesex County area was arranged by Col. Thomas Talbot, who had been granted a 618,000 acre tract of land along the north shore of Lake Erie. He arranged for his settlement to be surveyed into various townships with networks of roads and concessions that were divided into 200 acre lots.

Westminster Township, in particular, was surveyed in three different segments (DWTH 2006:33-34). The first segment along the North Branch of the Talbot Road (NBTR) was surveyed according to the single front survey system by Deputy Provincial Surveyor Simon T. Z. Watson in 1809. The second segment, which included Concessions A, B, 1 and 2, was also surveyed according to the single front survey system by Deputy Provincial Surveyor Watson and Deputy Surveyor John Bostwick in 1810. The remainder of the township (Concessions 3 to 9 and the Gore Concession between the NBTR and Delaware Township) was surveyed according to the double front survey system by Colonel Mahlon Burwell and John Bostwick in 1820.

The first land patents for Westminster Township were issued as early as 1812 (Brock and Moon 1972). Settlement in the area began in the southwest corner of the Township along NBTR. This was followed by later

settlements along Commissioners Road, with the southeast portion of the Township being settled last (Wilson and Horne 1995). By 1817, the Township contained 107 houses and 428 people, and the first meeting of the Westminster Council was held. Two school houses, one grist mill and one saw mill were the only public buildings present in the Township at this time (Brock and Moon 1972:566). By 1842, the population had grown to 3,376 and four grist and two saw mills were operating in the Township (Smith 1846). By 1850, the population had grown to 4,525 residents, and the industries present included three grist mills, two carding machines, and a fulling mill (Brock and Moon 1972:566). The London and Port Stanley Railway line, which runs north-south through the township, was fully operational by 1856 (Brock and Moon 1972:566). Several small hamlets also developed within the Township, including Byron, Lambeth, Hall Mills, Pond Mills, and Glanworth; these communities were settled over the course of the 19th century (Brock and Moon 1972:577-581). Residents were undoubtedly attracted to the fertile soils and plethora of natural resources (e.g., rivers and streams, game animals, fish, fruit trees, limestone) that the area boasted (H.R. Page and Co. 1878).

### **1.2.5.2 Study Area Specific Historical Context**

Prior to its annexation by the City of London in 1993, the Study Area fell within the northern half of Lot 20, Concession 6 in the former geographic Township of Westminster, Middlesex County, Ontario. Several maps of the Study Area exist through online resources and publications, dating as far back as the Patent Plan of Westminster Township from 1857. The Patent Plan states that the land was owned by the Canada Company at the time of the map's creation (Heritage Property Index 2018), however, the Abstract Index to Deeds records obtained from the Land Registry Office in London indicate that the Canada Company obtained the 200 acre lot from the Crown in 1835. Edward Jarman (illegible) and wife had obtained the north half and part of the south half of the lot totalling 168 acres a few years later in 1839.

The 1862 Tremaine Map of Middlesex County shows that the Ezekiel Burley owned the north half of the Lot, while a G. Smith resided in the south half (Map 4). Burley's property shows a house or other structure just south of centre, adjacent to a jog in the road which is no longer present. Burley had obtained the north portion of the lot in 1854, and subsequently held mortgages on the land from several individuals, suggesting that he had tenants on the land.

In 1869, Peter Johnson obtained the north half and a portion of the south half of Lot 20, totalling 108 acres, from Samuel St. Lewis. He further subdivided the property, selling the west half and part of the south portion to George Johnson in 1873. The 1878 *Illustrated Historical Atlas* map of Westminster Township indicates that George Johnson was residing on the west half of the north half of Lot 20, while W & D Johnson held the east half of the north (Map 5; Page and Co. 1878). A house and garden are illustrated on this map just north of center on George Johnson's property. The Johnson Family had resided in the area, on the south half of Lot 19 Concession 6 primarily, since approximately 1834/35 (Murray 1987), and had obtained land on several adjacent lots, as is evident in the historical records. Assessment rolls indicate a property value of £1,250 while Burley owned the land, rising to £1,670 in 1873 after George Johnson had taken over the property, and £2,700 in 1885, suggesting the development of the land and likely the construction of a new house or outbuildings.

Topographic maps from 1961 indicate that a barn and house are present on the property where they stood until sometime between 2008 and 2014 (Map 6) (Department of Energy, Mines, and Resources 1961). An aerial photo from 1971 confirms that a barn is present on the property, oriented east/west and located to the southeast of a residential structure and surrounded by several trees adjacent to the roadway (Image 1). This location is further confirmed by a 1973 topographic map (Map 6) (Department of Energy, Mines and Resources 1973) and a photo from 2005 (Image 2).

Based on available aerial photography, the barn appears to have been still standing until 2008, and was demolished sometime between 2008 and 2014 ahead of landfill construction in that area (Map 7). The area has seen several iterations of structures including one domestic residences, at least one barn, and several small outbuildings.

## 1.3 Archaeological Context

### 1.3.1 Study Area Overview and Physical Setting

The Study Area is approximately 30 ha in size, consisting of Cells 9 and 10 within the existing landfill and a stockpile laydown area immediately to the north just outside of the landfill. Through available aerial images and discussions with the City, it is our understanding that Cell 9 largely consists of an open field that was formerly cultivated land prior to becoming part of the landfill. A significant portion of the eastern side of both Cells 9 and 10 has been disturbed by landfill construction (Image 3). The eastern half of Cell 9 has recently been subject to topsoil stripping in preparation for future landfill use, and has also been used as a training ground for heavy equipment operators (Image 4). Cell 10 is also a former agricultural field. Its southeastern half is occupied by a large clay stockpile (Image 5), which also extends into Cell 9 to the south. Cell 10 is bordered to the south by Cell 9, to the west by a large drainage feature and soil berm, and to the north by another soil berm. Although portions of Cells 9 and 10 have been impacted by activities such as berm construction, drainage feature construction, and soil stockpiling, there appear to be areas, particularly the open former agricultural fields in both cells that are relatively undisturbed. The stockpile area to the north of Cells 9 and 10 consists mainly of ploughed agricultural fields, as well as a small overgrown grassy lot and its access road and a small overgrown brush area along the southern border. The entire Study Area is identified as having archaeological potential in the City of London's Archaeological Master Plan (Wilson and Horne 1995).

The Study Area is situated within the "Mount Elgin Ridges" physiographic region (Chapman and Putnam 1984: 144-146).

*Between the Thames Valley and the Norfolk sand plain lies a succession of ridges and vales which are called the Mount Elgin Ridges....South of the Westminster and St. Thomas Moraines the country drains to Lake Erie by means of the tributaries of Kettle, Catfish and Otter Creeks....The two major landform components of this region provide obviously contrasting soils. The ridges are well drained while imperfect and even poor drainage characterize the hollows. The ridges are formed from clay till similar to that of the Wyoming Moraine and the Stratford plain.*

Chapman and Putnam 1984:145

The localized topography of the Study Area is generally flat, sloping down to a shallow drainage located in the northern portion of Cells 9 and 10. The stockpile area is generally flat with mildly undulating terrain. Elevation for the Study Area ranges between 270 and 280 metres above sea level. The soils of the Study Area are comprised of the Muriel Association, which include silty clay loams, silty clays, and clay loams. Muriel soils are moderately well to imperfectly drained and are used today for common field crops, include corn and soybeans (Hagerty and Kingston 1992). The closest potable water source is an unnamed tributary of Dodd Creek, which flows through the northern portion of the Cells 9 and 10. Dodd Creek is located in the Kettle Creek Watershed and is Kettle Creek's largest tributary, joining it in St. Thomas before continuing to flow south and ultimately draining into Lake Erie at Port Stanley, Ontario.

The bedrock deposits in the vicinity date to the Middle Devonian Period and consist of the Hamilton Group and Dundee Formations (Hewitt 1972). Selkirk chert, a moderate quality raw material, outcrops from the Dundee

formation from the mouth of the Grand River along the north shore of Lake Erie, and as far west as the Chatham area (Eley and von Bitter 1989; Fox 2010).

The Study Area lies within the Mixed-wood Plains ecozone of Ontario (The Canadian Atlas Online 2015). 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. Smith (1850:90) confirms that the timber present in the vicinity of Westminster Township during the first half of the 19<sup>th</sup> century included oak, beech, maple and chestnut, among other varieties.

Currently, Cells 9 and 10 of the Study Area are comprised of open, fallow fields, while the stockpile area consists of ploughed agricultural fields and unploughed overgrown areas.

### 1.3.2 Previous Archaeological Work

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 (MTCS 2018).

According to MTCS records, one assessment has taken place within 50 m of the Study Area, including the current Study Area. In 2006, Archaeologix Inc. conducted a Stage 1 archaeological assessment and built heritage assessment of a 397 ha study area from Scotland Drive to Manning Drive between White Oak Road and Wellington Road. This Stage 1 assessment determined areas within the 397 ha study area to have archaeological potential and recommended that those areas be subject to Stage 2 archaeological assessment should they be developed (Archaeologix 2005).

To the best of our knowledge, no additional archaeological assessments have been conducted within 50 m of the current Study Area.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. For this reason maps and data that provide information on archaeological site locations are provided as supplementary documentation and do not form part of this public report.

The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

### 1.3.3 Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present within a property. In accordance with the MTCS's 2011 *Standards and Guidelines for Consultant Archaeologists* the following are features or characteristics that indicate archaeological potential:

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



- Features indicating past water sources (e.g. glacial lake shorelines indicated by the presence of raised gravel, sand, or beach ridges; relic river or stream channels indicated by clear dip or swale in the topography; 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 (there may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings);
- 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, mining, logging);
  - Areas of Euro-Canadian settlement; and
  - Early historical transportation routes.

In recommending a Stage 2 property survey based on determining archaeological potential for a Study Area, the MTCS stipulates the following:

- No areas within 300 m of a previously identified site; water sources; areas of early Euro-Canadian Settlement; or locations identified through local knowledge or informants can be recommended for exemption from further assessment;
- No areas within 100 m of early transportation routes can be recommended for exemption from further assessment; and
- No areas within the property containing an elevated topography; pockets of well-drained sandy soil; distinctive land formations; or resource areas can be recommended for exemption from further assessment.

### 1.3.4 Pre-Contact Indigenous Archaeological Resources

Based on the criteria outlined in Section 2.1 above, the Study Area was determined to have archaeological potential for both pre-contact Indigenous and historical Euro-Canadian sites. This determination is based on the proximity of an unnamed tributary of Dodd Creek, which flows through the northern portion of Cells 9 and 10, as well as the presence of well-drained soils, and the fact that the Study Area is located in an area within Westminster Township with a history of Euro-Canadian occupation dating back to the mid-19th century. This conclusion is consistent with the *City of London Archaeological Master Plan*, which indicates that the majority of the Study Area exhibits archaeological potential (Wilson and Horne 1995).

### 1.3.5 Features Indicating the Removal of Archaeological Potential

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 1.3.1 above, portions of Cells 9 and 10 have been impacted by activities such as berm construction, drainage feature construction, and soil stockpiling. The construction of these features may have resulted in extensive land disturbance that would have removed any archaeological potential associated with these portions of the Study Area. These areas were surveyed and documented accordingly to confirm the presence and extent of possible disturbance (see Section 2.1 below).

## 2.0 FIELD METHODS

The Stage 2 archaeological survey of the Study Area was conducted on May 22-25, May 29, 31, and June 4, 2018, under archaeological consulting license P364, issued to Michael Teal of Golder by the Ministry of Tourism, Culture and Sport (P364-0125-2018). Rebecca Parry (R1013), delegated licensed field supervisor for Golder, assumed responsibility of undertaking the archaeological fieldwork within the Study Area as per Section 12 of the MTCS 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 weather during the assessment was variable with temperatures varying from 15°C to 30°C. At no time were the conditions detrimental to the observation or recovery of archaeological material. Photo locations are illustrated on Map 8A and Map 8B. All activities undertaken during the assessment were in compliance with the *Ontario Heritage Act* (Government of Ontario 1990b) and the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

As outlined in Section 1.3.1 above, the Study Area is composed of ploughed agricultural fields and open, overgrown areas, naturally separated into two areas; Cells 9 and 10 and the stockpile area.

All GPS points were recorded with a Trimble Nomad GPS unit using its internal receiver, achieving a minimal accuracy of 3 m.

### 2.1 Stage 2 Archaeological Assessment

Areas which could be ploughed were assessed using the standard pedestrian survey method at 5 m intervals (Image 6 to Image 8). All areas were recently ploughed and weathered, surface visibility was excellent, and at no time were the conditions detrimental to the recovery of artifacts (Image 9 to Image 11). When an artifact was encountered during the pedestrian survey, the initial artifact was marked and survey intervals intensified to 1 m within at least a 20 m radius of the find. Any additional artifacts identified while conducting the intensified survey were also marked. This process continued until the full extent of the surface scatter was defined (Image 12). To take advantage of good site conditions at the time, a controlled surface pick-up (CSP) that met all requirements outlined in Section 3.2.1 of the MTCS's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) was conducted at all locations as part of the Stage 2 assessment. Once the full extent of a location was defined, the position of all of the artifacts identified in the scatter was documented with a Trimble Nomad GPS unit and the artifacts retained for laboratory analysis.

Areas that could not be ploughed were assessed using the standard shovel test method (Image 13 to Image 15). Test pits were dug by hand and spaced at a 5 m intervals. Each test pit was at least 30 cm in diameter and was excavated to either a minimum depth of 5 cm into subsoil in undisturbed areas, or until clear evidence of deep fill deposits were identified. All soil was screened through 6 mm hardware cloth to facilitate the recovery of any cultural material present (Image 15 and Image 16). Each test pit was examined for stratigraphy, cultural features and fill. The stratigraphy encountered across the Study Area during the test pit survey consisted of dark brown clay loam topsoil over yellow-brown clay subsoil (Image 17 and Image 18). Test pits ranged from 10 to 40 cm in depth, and were excavated to within 1 m of built structures or until test pits showed evidence of recent ground disturbance or poor drainage. Each test pit was back filled upon completion. When an artifact was encountered, as with Location A (AfHh-929) (see Section 3.0 below), test pit excavations continued on the survey grid to determine the extent of additional positive test pits in the area, as per Section 2.1.3, Standard 1 of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). At Location A (AfHh-929), since the additional grid excavations did not result in sufficient archaeological resources to recommend Stage 3

Archaeological Assessment, infill test pits were dug at a maximum of 2.5 m intervals within a radius of all positive grid test pits and two 1 m<sup>2</sup> test units were excavated over two of the positive test pits (Image 19 and Image 20), as per Section 2.1.3, Standard 2 of the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Areas of disturbance were systematically inspected and documented. Where appropriate, disturbed areas were test pitted at 10 m intervals to confirm disturbance, as per *Standards and Guidelines* Section 2.1.8 (Government of Ontario 2011)

One archaeological location, Location A, was discovered within Cells 9 and 10, immediately north of where the farm complex used to stand, as well as six archaeological locations, Locations 1-6, in the stockpile area.

### 3.0 RECORD OF FINDS

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0. Map 8A and Map 8B illustrate the areas assessed and techniques employed, while Image 3 to Image 26 illustrate the Stage 2 survey conditions. The Stage 2 archaeological assessment resulted in the identification of seven locations producing archaeological material. Each location is discussed below.

For a list of terms and definitions regarding the pre-contact Indigenous cultural material discussed in the present report, see Appendix A.

Material culture recovered from the Stage 2 Archaeological Assessment is contained in one banker's box and will be stored at Golder's London office at 309 Exeter Road, London, Ontario. Table 2 provides an inventory of the documentary record generated in the field, while all artifact catalogues may be found in Appendix B.

**Table 2: Inventory of Documentary Record.**

| Document Type           | Current Location of Document | Additional Comments                                                                                             |
|-------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Field Notes             | Golder Office in London      | Total of 20 pages from original field book. Hard copies stored in project folder and digitally in project file. |
| Hand Drawn Maps         | Golder Office in London      | Seven in total from original field book. Hard copies stored in project folder and digitally in project file.    |
| Maps provided by Client | Golder Office in London      | Two maps in total stored in project folder and stored digitally in project file.                                |
| Digital Photographs     | Golder Office in London      | A total of 226 photos stored in project folder and stored digitally in project file.                            |

Areas of perceived disturbance were inspected and documented as outlined in Section 2.1 above. Disturbed areas within Cells 9 and 10 included areas of landfill construction (the large berms surrounding Cells 9 and 10 to the west and north, landfill construction along the eastern portion of Cells 9 and 10 (see Image 3), the heavy equipment training ground (see Image 4), the large stockpile in the centre of Cells 9 and 10 (see Image 5), and a gravel access road along the northeast border of Cell 10 accessing two stormwater ponds (Image 21), as well as an area disturbed from the demolition of the farmhouse, shed, and barn that used to stand near the western boundary of Cell 9 (Image 22). The areas of landfill construction were visually surveyed to confirm disturbance. Aerial imagery shows that the farm complex was demolished between 1998 and 2008, with major construction disturbances in that area taking place between 2008 and 2014 (Map 7). The farmhouse used to stand where the large landfill berm is currently located, while the barn and shed were partially within the area of the berm as well as an area accessible for test pitting. The area where these two structures used to be has been disturbed, as the soil has been partially stripped here, with small berms evident along the southeast and north of this area (Image 22); this area was test pitted at 5m intervals.

One area of disturbance was documented in the centre of the stockpile area, measuring approximately 0.36 ha. The stratigraphy in this area exhibited signs of disturbance down to the subsoil, and a concrete foundation and several concrete footings were found in this area (Image 23). This area was test pitted at 10 m intervals to confirm



disturbance, as per *Standards and Guidelines* Section 2.1.8 (Government of Ontario 2011) (Image 24 and Image 25).

In addition to the disturbed areas, one small permanently wet area was found in the test pitting area along the southern boundary of the stockpile area (Image 26).

### 3.1 Location A (AfHh-929)

Location A (AfHh-929) was identified in the northwest corner of Cell 9 while test pitting. A total of 716 historical Euro-Canadian artifacts and 81 faunal elements were recovered from 42 positive test pits and two test units. Based on the locations of positive test pits, Location A measures approximately 30 m east-west by 50 m north-south.

The artifact assemblage from Location A (AfHh-929) includes 287 fragments of glass, 97 ceramic sherds, 249 metal fragments, 65 fragments of building materials, and 19 artifacts of other materials, as well as 81 faunal elements. Each artifact class will be discussed below in detail. Table 3 presents a summary of the recovered Stage 2 artifacts by material type and function.

**Table 3: Location A (AfHh-929) Artifact Summary.**

| Artifact Group    | Freq.      | %            |
|-------------------|------------|--------------|
| <b>Glass</b>      | <b>287</b> | <b>36.0%</b> |
| Food & Beverage   | 229        | 28.7%        |
| Structural        | 56         | 7.0%         |
| Furnishing        | 2          | 0.3%         |
|                   |            |              |
| <b>Ceramics</b>   | <b>97</b>  | <b>12.2%</b> |
| Food & Beverage   | 97         | 12.2%        |
|                   |            |              |
| <b>Metal</b>      | <b>249</b> | <b>31.2%</b> |
| Indeterminate     | 198        | 24.8%        |
| Structural        | 50         | 6.3%         |
| Tools & Equipment | 1          | 0.1%         |
|                   |            |              |

| <b>Artifact Group</b>            | <b>Freq.</b> | <b>%</b>     |
|----------------------------------|--------------|--------------|
| <b><i>Building Materials</i></b> | <b>65</b>    | <b>8.2%</b>  |
| Brick                            | 63           | 7.9%         |
| Mortar                           | 1            | 0.1%         |
| Concrete                         | 1            | 0.1%         |
|                                  |              |              |
| <b><i>Other Artifacts</i></b>    | <b>18</b>    | <b>2.3%</b>  |
| Stone                            | 7            | 0.9%         |
| Coal                             | 6            | 0.8%         |
| Plastic                          | 2            | 0.3%         |
| Rubber                           | 2            | 0.3%         |
| Leather                          | 1            | 0.1%         |
|                                  |              |              |
| <b>Euro-Canadian Subtotal</b>    | <b>716</b>   | <b>89.8%</b> |
|                                  |              |              |
| <b><i>Faunal</i></b>             | <b>81</b>    | <b>10.2%</b> |
|                                  |              |              |
| <b>Grand Total</b>               | <b>797</b>   | <b>100%</b>  |

### 3.1.1 Ceramics

A total of 97 ceramic sherds were collected from Location A (AfHh-929). Table 4 provides a breakdown of the ceramic assemblage by ware type, while Table 5 provides a summary of the decorative styles present on the tableware portion of the assemblage.

**Table 4: Location A (AfHh-929) Ceramic Assemblage by Ware Type.**

| <b>Ceramic Ware Type</b>    | <b>Freq.</b> | <b>%</b>      |
|-----------------------------|--------------|---------------|
| Vitrified White Earthenware | 58           | 59.8%         |
| Porcelain                   | 29           | 29.9%         |
| Coarse Red Earthenware      | 7            | 7.2%          |
| Stoneware                   | 3            | 3.1%          |
| <b>Total</b>                | <b>97</b>    | <b>100.0%</b> |

**Table 5: Location A (AfHh-929) Ceramic Tableware Assemblage by Decorative Style.**

| <b>Ceramic Artifact</b>      | <b>Freq.</b> | <b>%</b>      |
|------------------------------|--------------|---------------|
| VWE, Plain/Undecorated       | 51           | 58.6%         |
| VWE, Transfer Print          | 6            | 6.9%          |
| VWE, Edged                   | 1            | 1.1%          |
| Porcelain, Plain/Undecorated | 20           | 23.0%         |
| Porcelain, Transfer Print    | 4            | 4.6%          |
| Porcelain, Lithographed      | 4            | 4.6%          |
| Porcelain, Orange Glaze      | 1            | 1.1%          |
| <b>Total</b>                 | <b>87</b>    | <b>100.0%</b> |

### ***Vitrified White Earthenware***

Vitrified white earthenware (VWE), also known as white granite, graniteware, white stone ironstone, or simply ironstone is a variety of white bodied earthenware with a white to greyish-white fabric that is usually thick and heavy beneath a thick, hard clear glaze with a white, greyish or bluish tint. Vitrified white earthenware was first developed in the 1840s, but did not become popular until the second half of the 19<sup>th</sup> century. Its popularity continued into the 20<sup>th</sup> century and it is still in use to some extent today.

A total of 58 VWE sherds were recovered during the Stage 2 Assessment of Location A (AfHh-929), including 51 plain/undecorated sherds, six transfer-printed sherds, and one blue edged sherd (Image 27).

During the 19<sup>th</sup> century, the technique of transfer printing designs to the underglaze surface of clay ceramics revolutionized the British ceramic industry. Manufacturers were now able to apply intricate patterns quickly and rather inexpensively, allowing for more uniformity between vessels (Samford 1997). Prior to 1829, most transfer printed wares were blue, but after 1830, colours such as light blue, brown, black, sepia, green, red and mulberry

became more common (Collard 1967; Coysh and Henrywood 1982:10). From about 1850 to 1890 only the colours blue, black, and brown are common, while in the 1890s and later a wide variety of colours were in use (Adams *et al.* 1994). Brown transfers are considered very common and were the least expensive of all the colours. Common transfer printed RWE motifs include Chinese inspired themes, landscapes, and romantic views. The six sherd of VWE with transfer printing on it from Location A (AfHh-929) included four sherds with dark green printing and two with blue, though it is not possible to discern specific motifs.

White earthenware plates and other tableware were often decorated with moulded rim motifs that were usually painted under the glaze in blue or green, and occasionally red (Miller 1991). This method of decoration, simply referred to as 'edged' by 19<sup>th</sup> century potters, was first introduced in the 1770s. By the 1840s, green edged wares became rare, while blue edged wares remained popular into the 1860s and continued to be available for purchase well into the 1890s and possibly later (Miller 1991). The moulded motifs present on edged wares changed through time with scalloped or undulating rims occurring prior to 1840 and unscalloped rims occurring after 1840. Unscalloped edged wares remained popular until the 1870s (Adams *et al.* 1994:102; Miller 1987). The one VWE edged sherd recovered from Location A (AfHh-929) is unscalloped and blue with a moulded design, however it is very small and thus it is not possible to discern the specific moulded pattern.

## Porcelain

Porcelain is made from a mixture of china clay (kaolin) and china stone (petuntse). Porcelaneous ware was first made in China, hence its common name *china*. Chinese porcelain is less vitrified (and therefore softer) than its modern European counterpart, which was developed in Germany in the early 18<sup>th</sup> century. Porcelain is a highly vitrified pottery with a white, fine-grained body that is usually translucent, as distinguished from earthenware, which is porous, opaque, and coarser (MACL 2016). Though there was a large amount of porcelain produced in England and Europe as early as the 18<sup>th</sup> century, on North American archaeological sites, it is most often found in post-1850 contexts (MACL 2016). A total of 29 porcelain sherds were recovered from the Stage2 of Location A (AfHh-929), including 20 plain/undecorated sherds, four transfer printed sherds, four lithographed sherds, and one sherd with an opalescent orange glaze (Image 28).

The lithographic decorative process for ceramics entails applying a design in the form of a paper-backed sheet to the surface of a vessel that has first been covered in a layer of tacky varnish. The backing paper is then sponged off. There were endless assortments of lithographic patterns, which were generally many different colours and often included much shading. This type of decoration became popular during the late 19<sup>th</sup> century (1890s) and early 20<sup>th</sup> century and is in common use still today (Savage and Newman 1974). Decals remained the most common technique for decorating ceramics well into the 1950s (Majewski and O'Brien 1987:147).

## Stoneware

Stoneware is a non-porous, stone-like ware whose paste includes enough silica that when fired at a high temperature, partial vitrification occurs (MACL 2015). Paste colours vary from grey to brown and though it does not require glazing to prevent leaking, it was generally glazed for easy cleaning and a better appearance (Greer 1981). Two of the stoneware sherds from Location A (AfHh-929) are salt glazed on the exterior with Albany slip on the interior, while the third sherd has Albany slip on both surfaces (Image 29).

Salt glaze is a type of glaze only used on stoneware, characterized by its stippled, "orange peel" appearance. Common salt is added to the kiln when it is at its highest temperature, where it vaporizes and combines with the silica on the surface of the vessel being fired to create a glossy, hard glaze (MACL 2015). Albany slip is a generally chocolate brown slip which came into use during the early 19<sup>th</sup> century in the Albany, NY area before

becoming widespread in North America by the mid-19<sup>th</sup> century (Guilland 1971). Used on both the exterior and interior of stoneware vessels, it was especially popular during the late-19<sup>th</sup> to early-20<sup>th</sup> Centuries (Greer 1981). Salt glaze combined with Albany slip is the most common type of North American stoneware decoration (MACL 2015).

### **Coarse Earthenware**

Coarse earthenware was manufactured throughout the late 18<sup>th</sup> and 19<sup>th</sup> centuries. It was the most common utilitarian ware during the first half of the 19<sup>th</sup> century and continues to be produced today (Adams *et al.* 1994). This ware type is generally somewhat porous and hard, and orange to red in colour. As it is quite porous, glaze is needed in order for the vessel to hold liquid contents. All but three of the coarse earthenware sherds from Location A (AfHh-929) have slip and/or glaze; these three sherds are exfoliated (Image 30).

### **3.1.2 Glass**

A total of 287 shards of glass were recovered from Location A (AfHh-929), including 229 indeterminate container shards, 56 shards of window glass, and two pieces of lamp chimney.

#### **Glass Containers**

The assemblage of container glass from Location A (AfHh-929) includes 195 indeterminate container shards, 31 bottle shards, and 3 jar shards. Two of the bottle fragments are screw finishes and one basal shard with a maker's mark (Image 31 and Image 32). The three jar fragments are all screw finishes (Image 33).

Screw finishes have some type of raised external ridge or ridges that accept an appropriately-shaped cap, which seals the bottle when twisted (Lindsay 2014). Both are continuous external thread finishes and are mould-made. One is manufactured from lime green glass while the other was found with a plastic cap still attached. The jar finishes are also mould-made continuous external thread finishes. Wide-mouthed external thread finishes are mostly found on canning and other food storage jars dating back to the late 1850s; they are still in use today (Lindsay 2014).

The maker's mark on the bottle base is the "D" in a diamond mark of the Dominion Glass Company, which was used from 1928 to the early 1970s (Miller and Jorgensen 1986:3). It is accompanied by letters and numbers, which are date codes used by Dominion Glass in the 1940s. Letter codes were replaced by the progressive box dating system in the early 1950s (Miller and Jorgensen 1986; Lockhart *et al.* 2015).

The remainder of the container glass assemblage consists of body shards in a variety of colours, including: clear/colourless, amber, aqua, dark green, green, light pink, lime green, manganese tinted, olive, and white. Typically the colour of bottle glass has limitations with regard to providing dates of manufacture (Lindsey 2014; Jones and Sullivan 1989); however, there are a few colours that are of limited use. One study suggests that most manganese tinted glass, which occurs in various shades of purple, typically dates between 1875 and 1920 (Lockhart 2006). During this time, manganese was often added during the manufacturing process to produce colourless glass. However, due to the presence of the manganese, the glass would turn purple in colour over time when exposed to sunlight. White glass, or milk glass, was produced by adding tin or zinc oxides, fluorides, phosphates, and calcium to the glass batch. It was used in a wide range of different container types from around the 1870s to the mid-20<sup>th</sup> century (Lindsay 2014). Another useful diagnostic glass colour is lime green, also known as "7-Up green," which began to be produced in the 1940s (Lindsay 2014).



## **Pane Glass**

A total of 56 fragments of pane glass were recovered from Location A (AfHh-929) (Image 34). During the 19<sup>th</sup> century, window glass was produced by the cylinder glass technique. A molten ball of glass was blown into a sphere, and then swung into a cylinder shape. While the glass was still workable, the cylinder's ends were cut off, and the cylinder was cut along its length forming two curved panes, which were then flattened, cooled and cut into smaller panes (Weiland 2009:29). Over the course of the 19<sup>th</sup> century, the demand for larger windows increased resulting in thicker windows. The chronological variability in the thickness of window glass has been applied as a dating method for archaeological sites; however, it has been determined that the accuracy of this dating method is largely dependent upon the presence of relatively large sample sizes and the availability of regionally developed chronological models (Jones and Sullivan 1989:172). The relatively small size of the window glass assemblage collected from Location A (AfHh-929) combined with the absence of a chronological model developed in Ontario suggests that any analysis of window glass would not produce a statistically significant result.

### **3.1.3 Metal**

A total of 249 pieces of metal were recovered from Location A (AfHh-929), including 198 indeterminate function metal fragments, 50 structural artifacts, and one section of machinery drive chain (Image 35 and Image 36). Structural artifacts included 36 common nails, four bolts, two spikes, two handles, one bracket, one flange, one hinge, one nut, one pipe fragment, and one staple. Of the 36 nails, 14 were machine cut, while the other 22 were wire drawn.

Cut nails were machine cut from flat sheets of iron creating a nail that is of even thickness when viewed from the side, not tapered on all sides like hand-made nails, with a square and flat head. Invented about 1790, cut nails were in common use from the 1830s until the 1890s (Adams et al. 1994: 94). Wire drawn nails are identical to the type of nails in current use today, with a flat, round head and a wire shaft. Wire drawn nails were developed in the 1850s but did not become popular until the 1890s (Adams et al. 1994).

The indeterminate metal fragments consist mainly of wire (n=137), with smaller amounts of indeterminate artifacts (n=55), strapping (n=4), one bracket, and one metal ring.

### **3.1.4 Building Materials**

A total of 65 fragments of building materials were recovered from the Stage 2 of Location A (AfHh-929), including 63 brick fragments, one piece of concrete, and once piece of mortar (Image 37).

### **3.1.5 Other Artifacts**

Other artifacts recovered from Location A (AfHh-929) included seven slate fragments, six pieces of coal, two pieces of plastic, two pieces of rubber, and one leather shoe fragment.

### **3.1.6 Faunal Remains**

A total of 80 faunal elements were recovered from Location A (AfHh-929), including 60 bone fragments and 21 tooth fragments. The majority of the bone fragments came from indeterminate mammals, with a smaller amount of avian bone (Image 38). Due to the highly fragmented condition of the faunal material identification of specific species was not possible. One bone fragment was butchered using a saw. Mammal teeth recovered from Location A (AfHh-929) are from a cow (*Bos Taurus*), horse (*Equus f. Cabellus*), sheep (*Ovis*), and pig (*Sus Scrofa*) (Image 39).

### **3.2 Location 1 (AfHh-928)**

Location 1 (AfHh-928) was identified in the southwest corner of the proposed stockpile area while conducting pedestrian survey. A total of two pre-contact Indigenous artifacts were recovered approximately 7 m apart. The artifact assemblage from Location 1 (AfHh-928) consists of one projectile point and one chert flake (Image 40). The projectile point is manufactured from Bois Blanc chert and measures 34.01 mm long, 21.88 mm wide, and 8.12 mm thick. It is missing its tang, but appears to be an expanding stemmed point, and is likely a Late Archaic Innes projectile point (ca. 2,000 – 1,000 B.C.) (Lennox 1982). The single piece of lithic debitage is a primary thinning flake of Onondaga chert.

### **3.3 Location 2**

Location 2 was identified along the southern edge of the western half on the proposed stockpile area during pedestrian survey. A total of four pieces of lithic debitage, including two primary thinning flakes and two biface thinning flakes (Image 41), were recovered from an area measuring approximately 23 m east-west and 13 m north-south. In terms of raw materials, the flakes include two pieces of Onondaga chert, one piece of Selkirk chert, and one piece of Kettle Point chert.

### **3.4 Location 3**

Location 3 was identified in the northeastern corner of the proposed stockpile area during the pedestrian survey. It consists of one isolated primary thinning flake of Onondaga chert (Image 42).

### **3.5 Location 4 (AfHh-926)**

Location 4 (AfHh-926) was identified in the proposed stockpile area during the pedestrian survey. It is approximately 50 m northwest of Location 2. A total of six pre-contact Indigenous artifacts were recovered from an area measuring approximately 23 m east-west by 20 m north-south. The artifact assemblage includes one projectile point, one scraper, and four pieces of lithic debitage (Image 43). The projectile point is nearly complete corner-notch example that is missing its tip and a small portion of its tang. It is manufactured from Kettle Point chert and measures 33.66 mm long, 17.9 mm wide, and 6.25 mm thick. It appears to be stylistically similar to Late Archaic Crawford Knoll projectile points (ca. 1,500 – 500 B.C.) (Kenyon 1980). The scraper is manufactured from Kettle Point chert and measures 28.22 mm long, 18.48 mm wide, and 8.4 mm thick. The lithic debitage consists of one primary thinning flake and three biface thinning flakes. Two of the flakes are Kettle Point chert, while the other two are Onondaga chert.

### **3.6 Location 5**

Location 5 was identified during the pedestrian survey of the stockpile area. It is approximately 55 m north of Location 2 and consists of one isolated primary reduction flake of Onondaga chert (Image 44).

### **3.7 Location 6**

Location 6 was identified during the pedestrian survey of the stockpile area and is located approximately 75 m northeast of Location 4 (AfHh-926). It is represented by one isolated biface thinning flake of Bois Blanc chert (Image 45).

## 4.0 ANALYSIS AND CONCLUSIONS

The Stage 1 background study indicated that the Study Area had archaeological potential. As a result, it was determined that a Stage 2 Archaeological Assessment would be required. The Stage 2 Assessment, which involved pedestrian survey at 5m intervals and test pit survey at 5m intervals, is discussed below.

### 4.1 Location A (AfHh-929)

The Stage 2 Archaeological Assessment of Location A (AfHh-929) resulted in the recovery of 717 historical Euro-Canadian artifacts and 80 faunal elements from 42 positive test pits and two test units across an area measuring roughly 30 m east-west by 50 m north-south. The historical Euro-Canadian material includes 287 shards of glass, 97 ceramic sherds, 249 metal fragments, 65 fragments of building materials, and 19 artifacts of other materials.

While there is some material present at Location A (AfHh-929) that dates to the mid-19<sup>th</sup> century, such as vitrified white earthenware (plain/undecorated and blue transfer printed), glass wide-mouth external thread jar finishes, and cut nails, the majority of the material, including dark green transfer-printed vitrified white earthenware, lithographed porcelain, stoneware with Albany slip, and wire-drawn nails dates to the late-19<sup>th</sup> century. As well, several modern 20<sup>th</sup> century artifacts were found, including lime green bottle glass, a bottle base with a Dominion Glass Company maker's mark, and several plastic artifacts.

Functional categories with the most representation in the artifact assemblage of Location A (AfHh-929) include food & beverage (n=328, 41.15%), indeterminate (n=207, 25.97%), structural (n=171, 21.46%), and ecological (n=80, 10.04%), with smaller amounts of fuel (n=6, 0.75%), furnishing (n=3, 0.38%), personal/societal (n=1, 0.13%), and tools & equipment (n=1, 0.13%). The functional group proportions found in the Location A (AfHh-929) artifact assemblage are consistent with what is typically expected for a domestic refuse deposit where food and beverage related artifacts predominate rather than material often found in and around abandoned root cellars, wells, or privies where structurally related items predominate and food and beverage artifacts appear to be under represented (MacDonald 1997). The functional group proportions found in the artifact assemblage of Location A (AfHh-929) are consistent with what is typically expected for a domestic refuse deposit where food and beverage-related artifacts predominate rather than material often found in and around abandoned root cellars, wells, or privies where structurally related items predominate and food and beverage artifacts appear to be under represented (MacDonald 1997). There is, however, a large amount of structural debris in the assemblage, which could indicate that Location A (AfHh-929) may also be related to building demolition or construction.

Location A (AfHh-929) is in an area of disturbance associated with the demolition of the house, barn, and shed that existed prior to the creation of the W12A landfill site (see Section 1.2.5.2, Map 7, and Image 22). From available aerial photography, it is apparent that the house was demolished first. Following that, the barn and sheds stood on the abandoned lot until at least 2008. Between 2008 and 2014, the remaining structures were demolished and the large landfill berm completed, closing the area off from public access. Inspection of that area reveals that when the barn and shed were demolished and during landfill construction, soil was partially removed from that area and re-deposited further to the north. This is demonstrated by topsoil stripping and berms present in this area, most notably where Location A (AfHh-929) begins (Image 22). The highest concentrations of artifacts were found surrounding these berms, with artifacts counts dropping heading north away from the berms, downhill along a path which becomes the gravel access road for the stormwater ponds there. From this, it is evident that the artifacts recovered from Location A (AfHh-929) were removed from their original context in close proximity to the former buildings and re-deposited as a result of demolition activities and the construction of the landfill. Therefore Location A (AfHh-929) represents artifacts in disturbed context. Because of this, Location A (AfHh-929) is concluded to have no further cultural heritage value or interest. Because Location A (AfHh-929) contained ten

or more 19<sup>th</sup> century artifacts within a 10 m radius, the site was registered as White Oak 3 and received the Borden number AfHh-929, as per Section 7.12 Standard 1b of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

## 4.2 Location 1 (AfHh-928)

Location 1 (AfHh-926) consisted of one Late Archaic Innes projectile point and one piece of lithic debitage. Despite intensification, no additional archaeological material was recovered.

All of the artifacts from Location 1 (AfHh-928) were collected and retained for laboratory analysis (see Section 3.0 above). Innes projectile points date to the Late Archaic Period (ca. 1,000 – 2,000 B.C.) (Lennox 1982). The isolated nature of these artifacts suggests they are related to transient use of the area by Indigenous peoples that occurred during the Late Archaic Period.

Given the isolated and non-diagnostic nature of the finds, Location 1 (AfHh-928) is concluded to have no further cultural heritage value or interest as the site does not meet the criteria identified in Section 2.2, Standard 1a of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) for determining the need for Stage 3 site-specific assessment. As the projectile point is considered a diagnostic artifact, Location 1 was registered as White Oak 2 and received the Borden number AfHh-928, as per Section 7.12 Standard 1c of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

## 4.3 Locations 2, 3, 5, and 6

Location 2 consisted of four pieces of lithic debitage, while Locations 3, 5, and 6 are each represented by a single chert flake. Despite intensified survey at each location, no additional archaeological material was recovered.

All of the artifacts from Locations 2, 3, 5, and 6 were collected and retained for laboratory analysis (see Section 3.0 above). Lithic debitage is not typically diagnostic, therefore the age or cultural affiliation of Locations 2, 3, 5, and 6 could not be determined. The isolated nature of these artifacts suggests they are related to transient use of the area by Indigenous peoples that occurred during an unknown time period.

Given the isolated and non-diagnostic nature of the finds, Locations 2, 3, 5, and 6 are concluded to have no further cultural heritage value or interest as the sites do not meet the criteria identified in Section 2.2, Standard 1a of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) for determining the need for Stage 3 site-specific assessment.

## 4.4 Location 4 (AfHh-926)

The Stage 2 Archaeological Assessment of Location 4 (AfHh-926) resulted in the recovery and documentation of six pre-contact Indigenous artifacts in an area measuring approximately 23 m east-west by 20 m north-south, including one projectile point, one scraper, and four pieces of lithic debitage. The projectile point is a Late Archaic Crawford Knoll projectile point, dating to ca. 1,500 – 500 B.C. (Kenyon 1980). The quantity of the cultural material identified at Location 4 (AfHh-926) suggests that it may represent a campsite that was occupied during the Late Archaic Period. Lithic tools and lithic debitage suggest tool production and maintenance were carried out at this site.

Based on the recovery of six pre-contact Indigenous artifacts, including one diagnostic projectile point, one scraper, and four pieces of lithic debitage, Location 4 (AfHh-926) is concluded to have further cultural heritage value or interest as the site meets the criteria identified in Section 2.2, Standards 1.a.(ii) of the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) for determining the need for Stage 3 site-specific assessment. It is unclear at the present time whether Stage 4 mitigation of impacts will ultimately be required for Location 4 (AfHh-926). Location 4 has been registered as White Oak 1 and recieved the Borden number AfHh-926).



## 5.0 RECOMMENDATIONS

Based on the results of the Stage 1 background study and Stage 2 property assessment, Location 4 (White Oak 1; AfHh-926) is considered to have cultural heritage value or interest, while Location A (AfHh-929), Location 1 (AfHh-928) and Locations 2, 3, 5, and 6 are not considered to have cultural heritage value or interest. These conclusions provide the basis for the following recommendations:

- 1) Location 4 (White Oak 1; AfHh-926) should be subject to Stage 3 site-specific assessment prior to any impacts. As this site is a small pre-contact Indigenous site where it is not clearly evident that Stage 4 mitigation of impacts will be required, the Stage 3 assessment should follow Standards 1 and 2 of Table 3.1 in the MTCS's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011:51). As a controlled surface pick-up (CSP) that met all requirements outlined in Section 3.2.1 of the *Standards and Guidelines for Consultant Archaeologists* was conducted at all locations as part of the Stage 2 Assessment, no further CSP work is required for Location 4 (White Oak 1; AfHh-926) prior to hand excavation.
- 2) All Stage 3 test units at Location 4 (White Oak 1; AfHh-926) should be excavated into the first 5 cm of subsoil, or until a cultural feature is uncovered. Any features identified should be recorded through photographs and plan drawings and then be covered with geotextile fabric prior to backfilling. All soil excavated from the test units should be screened through 6 mm hardware cloth to facilitate the recovery of artifacts that may be present. All recovered artifacts should be recorded, bagged, and catalogued according to their provenience.
- 3) Indigenous communities should be engaged when assessing the cultural heritage value or interest of Location 4 (White Oak 1; AfHh-926) and when formulating a Stage 4 strategy to mitigate impacts, if required.
- 4) Location A (AfHh-929), Location 1 (AfHh-928), and Locations 2, 3, 5, and 6 have been sufficiently assessed and documented, and no further archaeological assessment is required for these locations.

The Ontario Ministry of Tourism, Culture and Sport is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licencing.

## 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 1990b). 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 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 1990b).

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 1990b).

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.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence (Government of Ontario 1990b).

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## 8.0 IMAGES



Image 1: Aerial photograph from 1971 showing the farm complex.



Image 2: 2005 photo of the house located on Lot 20, Concession 6; facing southeast, unknown date, 2005 (Map 8A).



**Image 3: Cells 9 and 10; Landfill construction along eastern boundary of Cells 9 and 10; facing south, May 22, 2018 (Map 8A).**



**Image 4: Cells 9 and 10; Heavy equipment training ground (stripped of topsoil); facing northeast, May 22, 2018 (Map 8A).**





**Image 5: Cells 9 and 10; Stockpile from landfill construction; facing east, May 22, 2018 (Map 8A).**



**Image 6: Cells 9 and 10; Pedestrian survey, facing northwest, May 22, 2018 Map 8A).**





**Image 7: Stockpile Area; Pedestrian survey; facing southwest, May 22, 2018 (Map 8B).**



**Image 8: Stockpile Area; Pedestrian survey; facing northwest, June 4, 2018 (Map 8B).**





**Image 9: Cells 9 and 10; Pedestrian survey soil conditions; facing north, May 22, 2018 (Map 8A).**



**Image 10: Stockpile Area; Pedestrian survey conditions; facing east, May 22, 2018 (Map 8B).**





**Image 11: Stockpile Area; Pedestrian survey conditions; facing north, June 4, 2018 (Map 8B).**



**Image 12: Stockpile Area; Pedestrian survey intensification; facing southeast, May 22, 2018 (Map 8B).**





**Image 13: Stockpile Area; Test pit survey area in centre of stockpile area; facing northwest, May 29, 2018 (Map 8B).**



**Image 14: Stockpile Area; Test pit survey area along southern border of stockpile area; facing east, May 29, 2018 (Map 8B).**





**Image 15: Cells 9 and 10; Test pit survey; facing south, May 24, 2018 (Map 8A).**



**Image 16: Stockpile Area; Test pit survey at 5 m intervals; facing south, May 29, 2018 (Map 8B).**





**Image 17: Cells 9 and 10; A representative example of typical test pit stratigraphy; facing south, May 25, 2018 (Map 8A).**



**Image 18: Stockpile Area; A representative example of a test pit; facing east, May 29, 2018 (Map 8B).**





**Image 19: Cells 9 and 10; Location A intensification; facing northwest, May 31, 2018 (Map 8A).**



**Image 20: Cells 9 and 10; Location A test unit stratigraphy; facing north, May 31, 2018 (Map 8A).**





**Image 21: Cells 9 and 10; Gravel access road and stormwater ponds; facing northwest, May 22, 2018 (Map 8A).**



**Image 22: Cells 9 and 10; Disturbed ground from demolition of farm complex; facing south, May 31, 2018 (Map 8A).**





**Image 23: Stockpile Area; Concrete footings; facing southeast, May 29, 2018.**



**Image 24: Stockpile Area; Test pit survey at 10 m intervals to confirm disturbance; facing southwest, May 29, 2018.**





**Image 25: Stockpile Area; A representative example of a disturbed test pit from the central area; facing east, May 29, 2018.**



**Image 26: Stockpile Area; Permanently wet area; facing west, May 29, 2018.**





Image 27: Location A (AfHh-929) Vitrified white earthenware; (left) transfer print, (right) edged.



Image 28: Location A (AfHh-929) Porcelain; (left to right) lithographed (x2), transfer print, opalescent glaze.



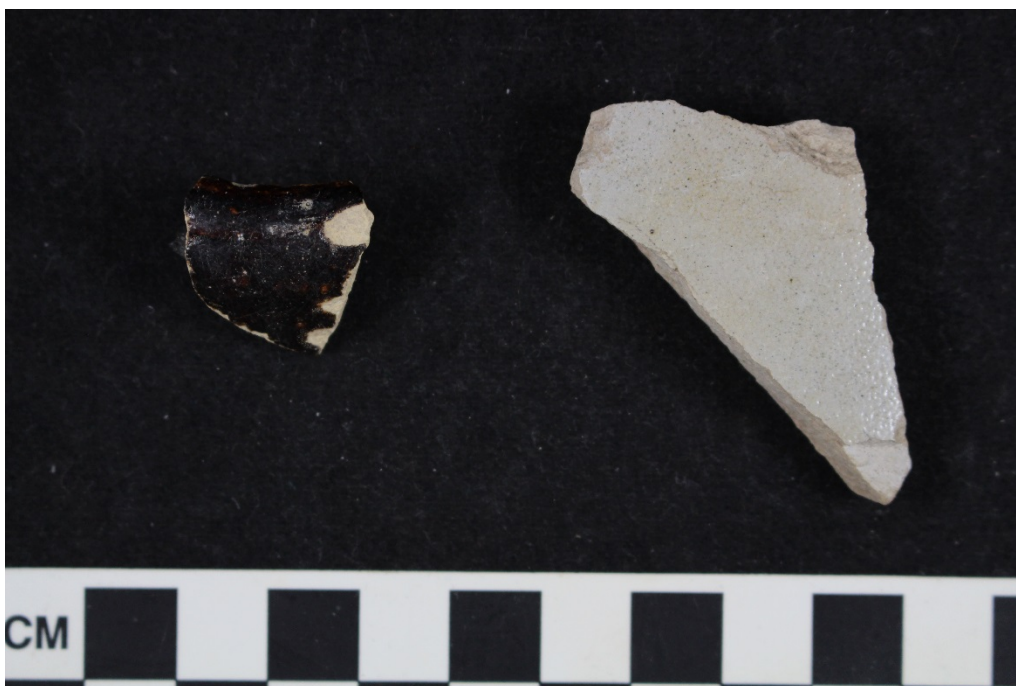


Image 29: Location A (AfHh-929) Stoneware.



Image 30: Location A (AfHh-929) Coarse red earthenware.



**Image 31: Location A (AfHh-929) Glass external threaded bottle finishes.**

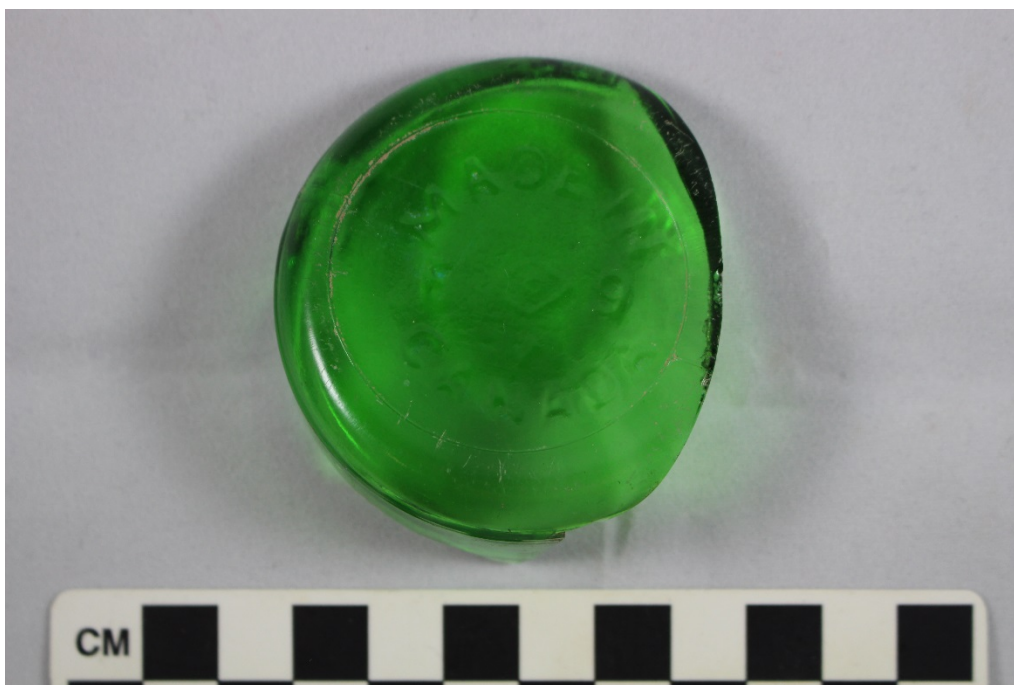


**Image 32: Location A (AfHh-929) Dominion Glass Company bottle base.**



**Image 33: Location A (AfHh-929) Glass external threaded jar finishes.**



**Image 34: Location A (AfHh-929) Windowpane glass.**





Image 35: Location A (AfHh-929) Metal artifacts; (left to right) machine cut nails (x2), wire drawn nails (x2), bolt, staple, spike.



Image 36: Location A (AfHh-929) Metal handle and machine drive chain.





**Image 37: Location A (AfHh-929) Building materials; (top left) mortar, (bottom left) concrete, (right) brick.**



**Image 38: Location A (AfHh-929) Faunal elements; (left) mammal bone, (right) avian bone.**



Image 39: Location A (AfHh-929) Mammal teeth; (left to right) cow, horse, sheep.



Image 40: Location 1 (AfHh-928) artifact assemblage; (left to right) Innes projectile point and flake.



Image 41: Location 2 artifact assemblage; (left to right) primary thinning flake (x2), biface thinning flake (x2).



Image 42: Location 3 artifact assemblage.





Image 43: Location 4 (AfHh-926) artifact assemblage; (top left) projectile point, (bottom left) scraper, (centre) primary thinning flake, (right) biface thinning flake (x3).



Image 44: Location 5 artifact assemblage.





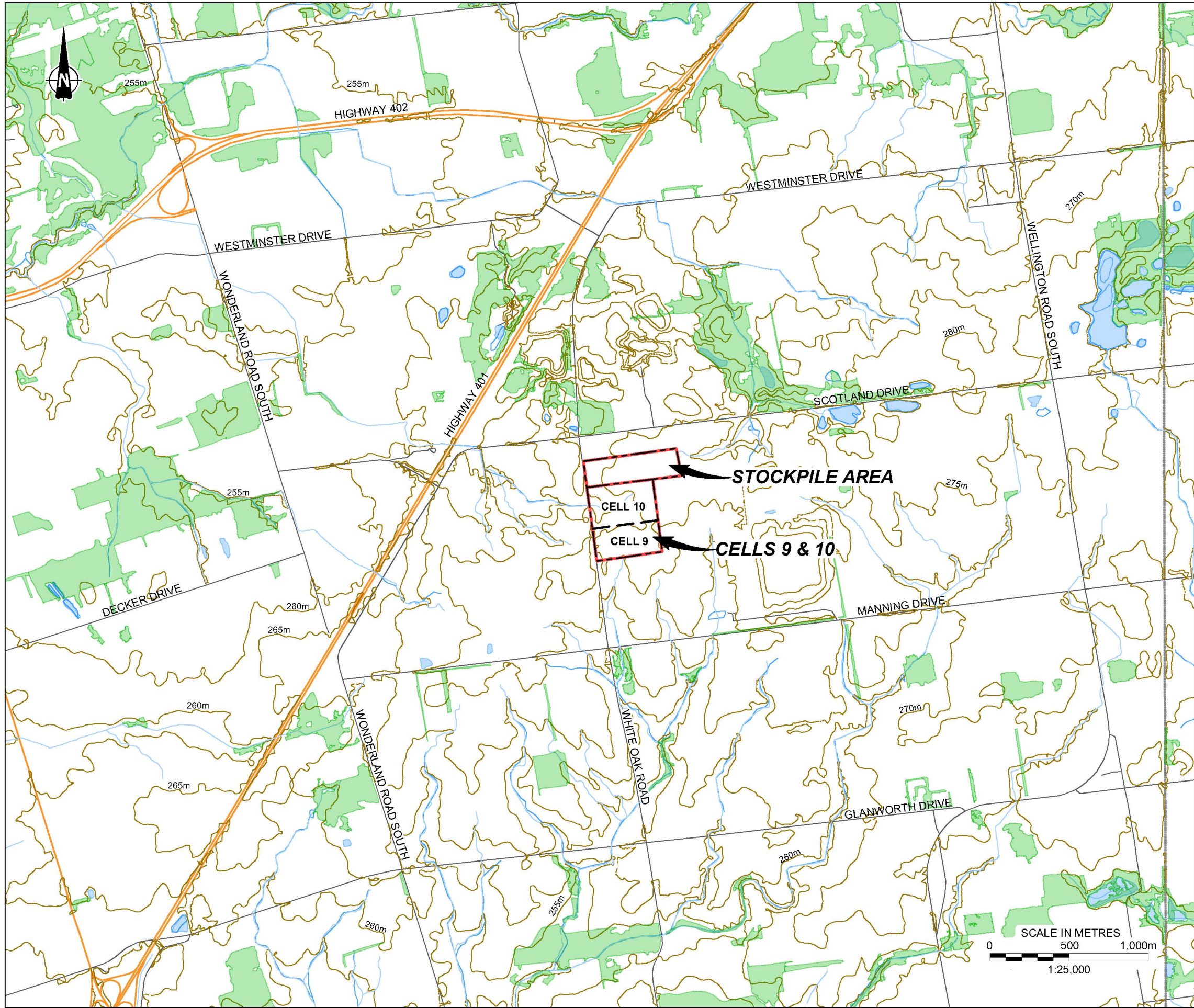
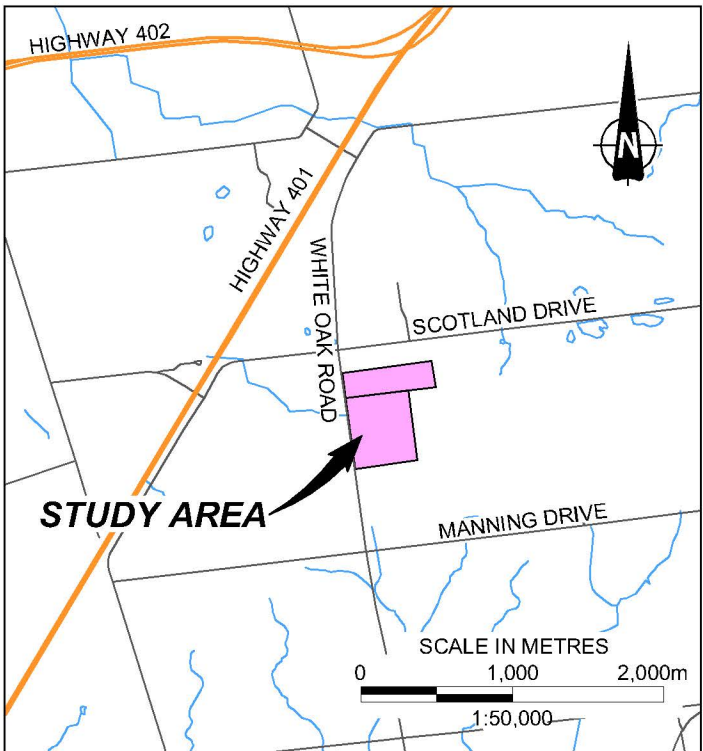
Image 45: Location 6 artifact assemblage.

## **9.0 MAPS**

All maps follow on the succeeding pages.



Client: Corporation of the City of London  
Drawing file: 1783701-1000-R01001.dwg  
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Jul 04, 2018 - 9:01am



REGIONAL MAP

#### LEGEND

--- APPROXIMATE LOCATION OF STUDY AREA

#### REFERENCE

DRAWING BASED ON MNR LIO, OBTAINED 2017  
PRODUCED BY GOLDER ASSOCIATES LTD UNDER  
LICENCE FROM ONTARIO MINISTRY OF NATURAL  
RESOURCES, © QUEENS PRINTER 2017; AND  
CANMAP STREETFILES V2008.4.

#### NOTES

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| PROJECT | STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO |         |           |                     |
| TITLE   | LOCATION OF STUDY AREA                                                              |         |           |                     |
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|         | CADD                                                                                | ZJB/DCH | July 4/18 | SCALE AS SHOWN REV. |
|         | CHECK                                                                               |         |           |                     |
|         |                                                                                     |         |           | MAP 1               |





LEGEND

----- APPROXIMATE LOCATION OF STUDY AREA

REFERENCE

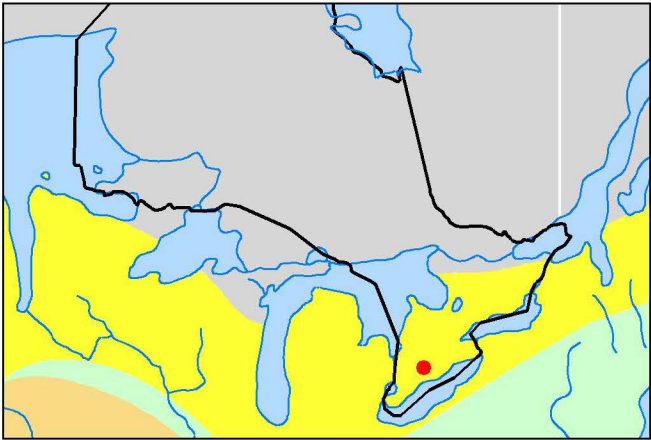
DRAWING BASED ON 2014 AERIAL IMAGE FROM THE CITY OF LONDON CITYCD.2014.

NOTES

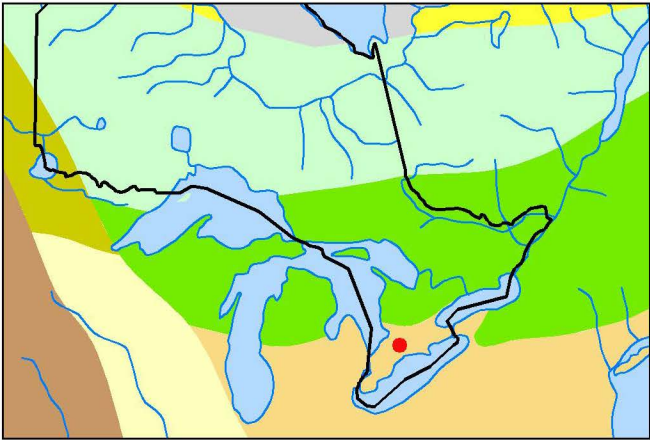
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| PROJECT                                                                               |  | STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO |  |                                                                                       |         |                     |                              |  |
| TITLE                                                                                 |  | DETAIL OF STUDY AREA                                                                |  |                                                                                       |         |                     |                              |  |
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|                                                                                       |  |                                                                                     |  |                                                                                       |         | MAP 2               |                              |  |
|                                                                                       |  |                                                                                     |  |                                                                                       |         |                     |                              |  |

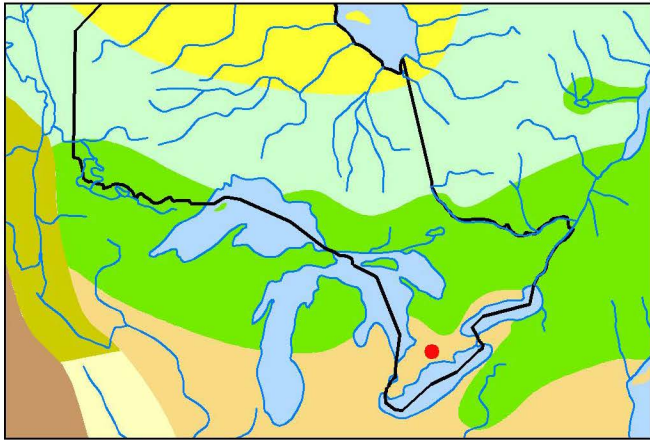




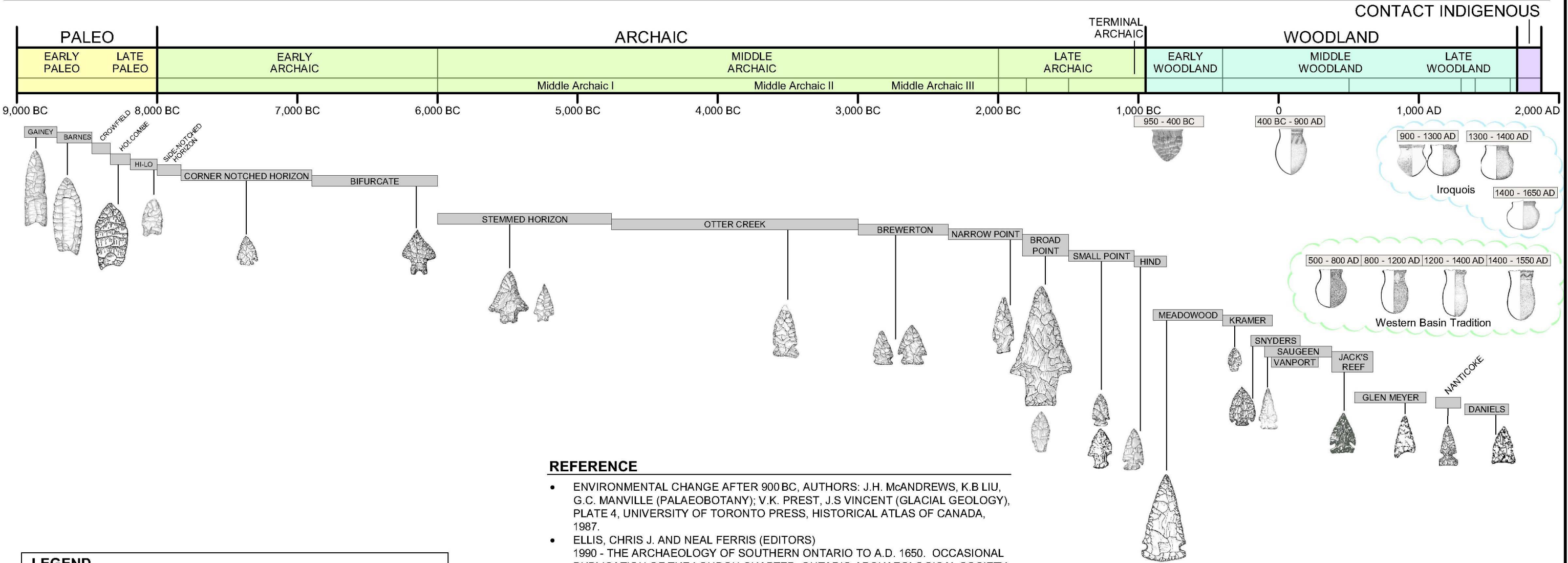
9,000 BC



5,000 BC



1,000 AD



REFERENCE

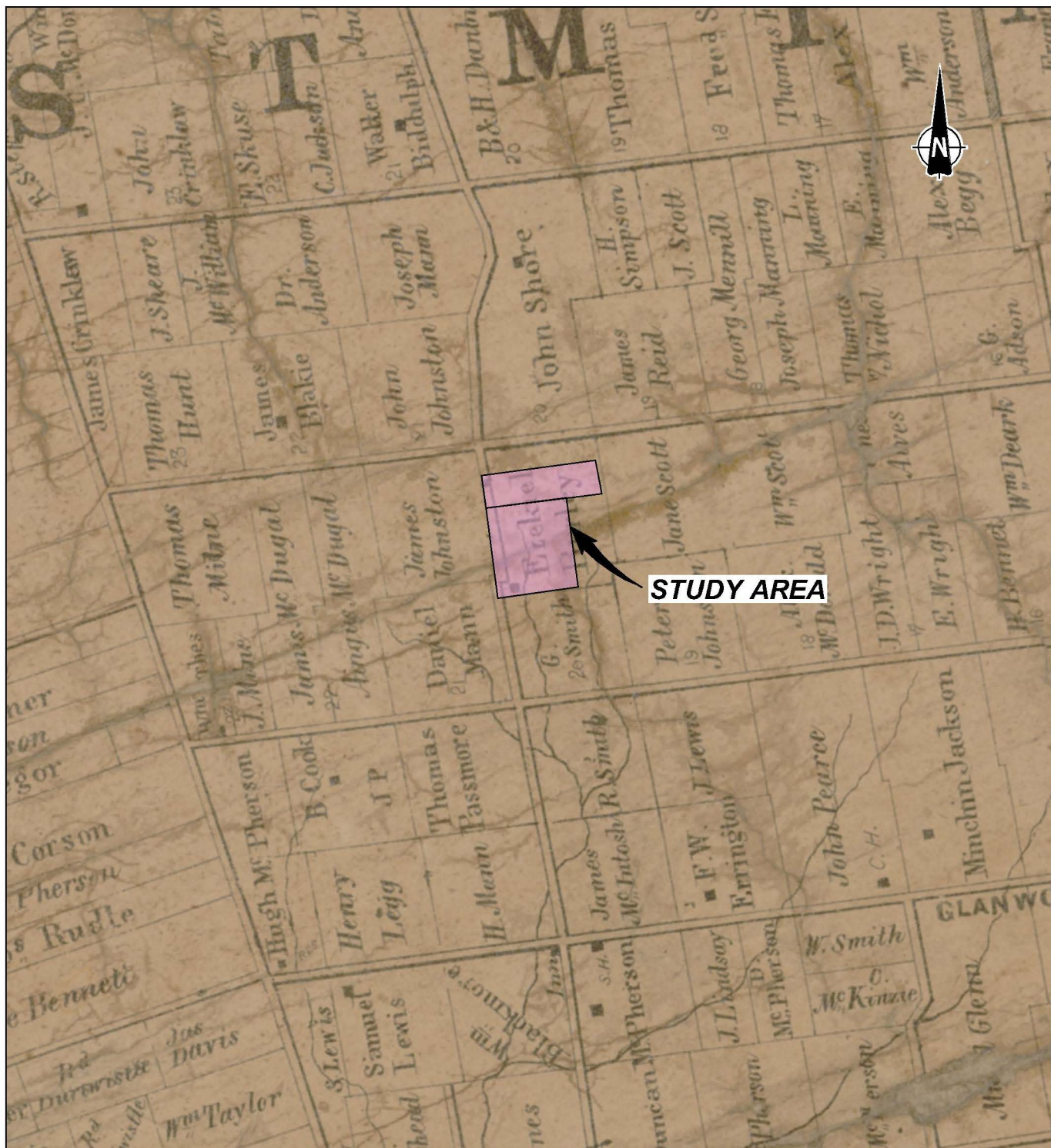
- ENVIRONMENTAL CHANGE AFTER 900 BC, AUTHORS: J.H. McANDREWS, K.B LIU, G.C. MANVILLE (PALAEOBOTANY); V.K. PREST, J.S VINCENT (GLACIAL GEOLOGY), PLATE 4, UNIVERSITY OF TORONTO PRESS, HISTORICAL ATLAS OF CANADA, 1987.
- ELLIS, CHRIS J. AND NEAL FERRIS (EDITORS) 1990 - THE ARCHAEOLOGY OF SOUTHERN ONTARIO TO A.D. 1650. OCCASIONAL PUBLICATION OF THE LONDON CHAPTER, ONTARIO ARCHAEOLOGICAL SOCIETY, NUMBER 5.
- ADAMS, NICK, IAN KENYON, DENA DOROSZENKO 1994 - FIELD MANUAL FOR AVOCATIONAL ARCHAEOLOGISTS IN ONTARIO. ONTARIO ARCHAEOLOGICAL SOCIETY INC., ARCHAEOLOGICAL STEWARDSHIP PROJECT.
- KENYON, I. - 1980 MEADOWOOD POINTS. KEWA 80-5.
- MURPHY, C. - 1988 SNYDERS POINTS. KEWA 88-3.
- KENYON, I. - 1979 SAUGEEN POINTS. KEWA 79-9.
- RITCHIE, WM. 1971. A TYPOLOGY AND NOMENCLATURE FOR NEW YORK PROJECTILE POINTS. ALBANY, NEW YORK: THE UNIVERSITY OF THE STATE OF NEW YORK, THE STATE EDUCATION DEPARTMENT.
- FOX, W.A. - 1982 GLEN MEYER TANGED-TRIANGULAR. KEWA 82-1.
- FOX, W.A. - 1981 NANTICOKE NOTCHED POINTS. KEWA 81-3.
- FOX, W.A. - 1981 DANIELS TRIANGULAR POINTS. KEWA 81-1.

LEGEND

- PROJECT AREA
- VEGETATION COVERAGE:
- |                                 |                     |
|---------------------------------|---------------------|
| Tundra                          | Deciduous Woodlands |
| Boreal Forest                   | Grassland           |
| Great Lakes-St. Lawrence Forest | Lichen Woodland     |
| Deciduous Forest                | Parkland            |

|         |                                                                                     |         |            |                     |
|---------|-------------------------------------------------------------------------------------|---------|------------|---------------------|
| PROJECT | STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO |         |            |                     |
| TITLE   | PRE-CONTACT INDIGENOUS CULTURE<br>HISTORY OF MIDDLESEX COUNTY                       |         |            |                     |
| GOLDER  | PROJECT No.                                                                         | 1783701 | FILE No.   | 1783701-1000-R01003 |
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|         | CHECK                                                                               |         |            | MAP 3               |





## LEGEND



### APPROXIMATE LOCATION OF STUDY AREA

## REFERENCE

TREMAINE GEORGE R., 1862, TREMAINE'S MAP OF THE  
COUNTY OF MIDDLESEX. GEORGE C. TREMAINE.,  
TORONTO.

## NOTES

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PROJECT

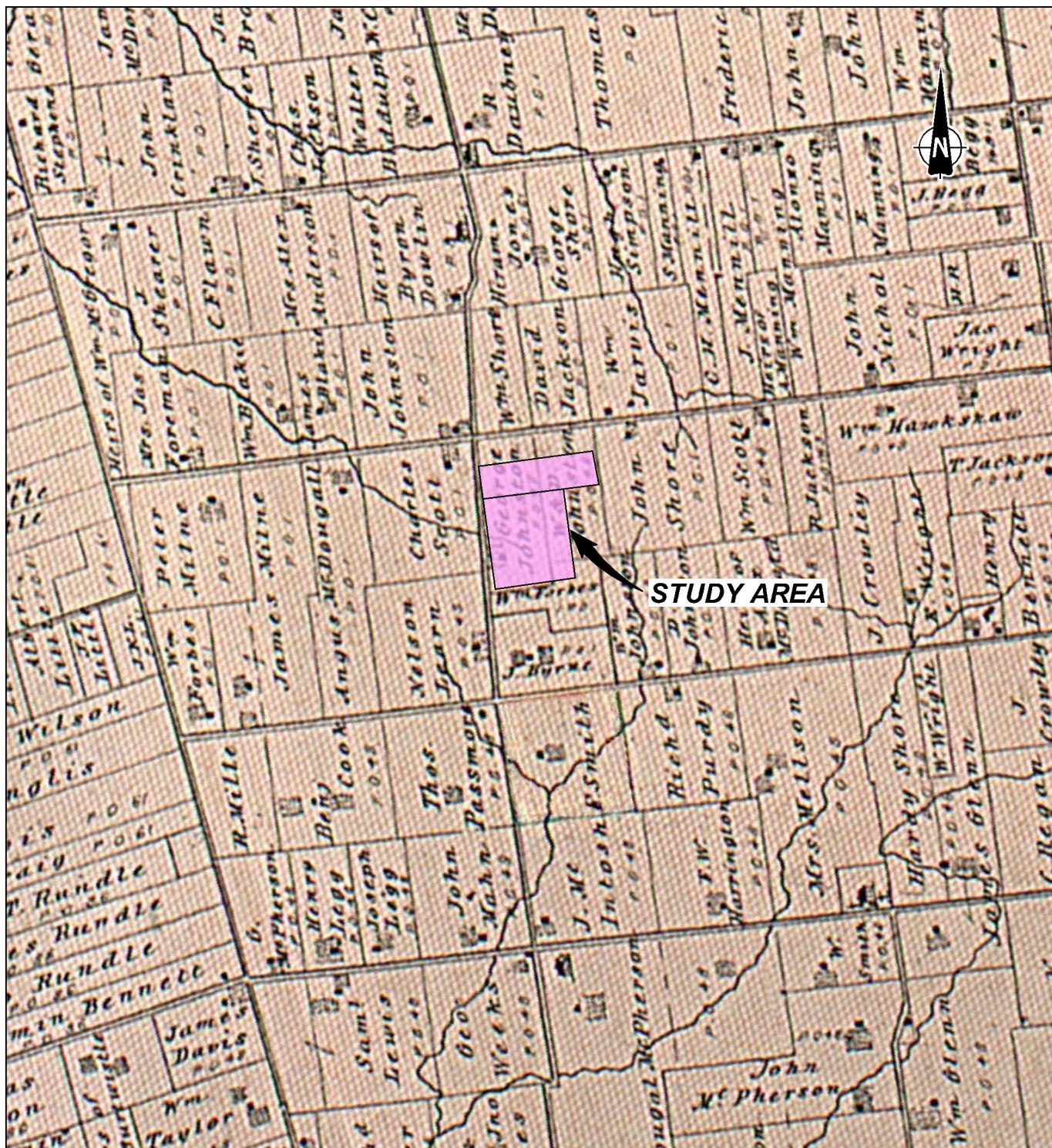
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W12A LANDFILL, CELLS 9-10  
LONDON, ONTARIO**

TITLE

**A PORTION OF TREMAINE'S 1862 MAP OF  
THE COUNTY OF MIDDLESEX**

|                                                                                                   |             |             |           |                              |
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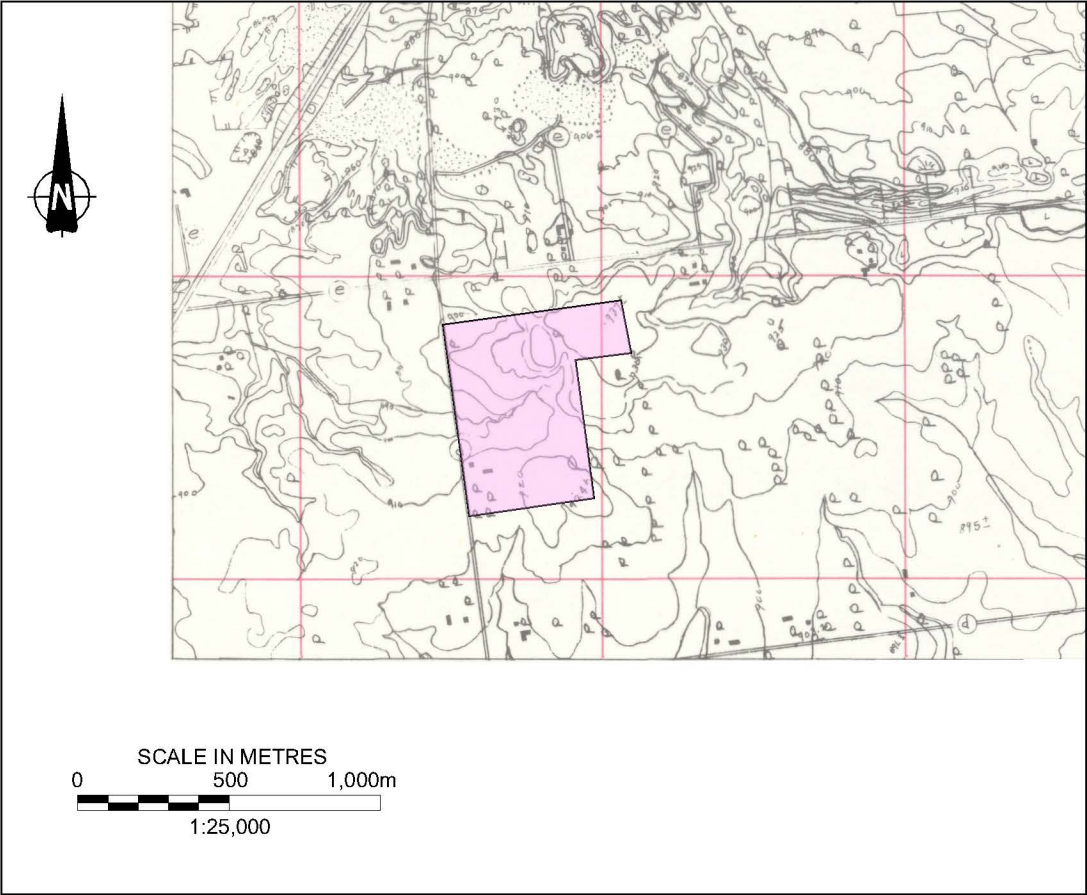


ALL LOCATIONS ARE APPROXIMATE ONLY.

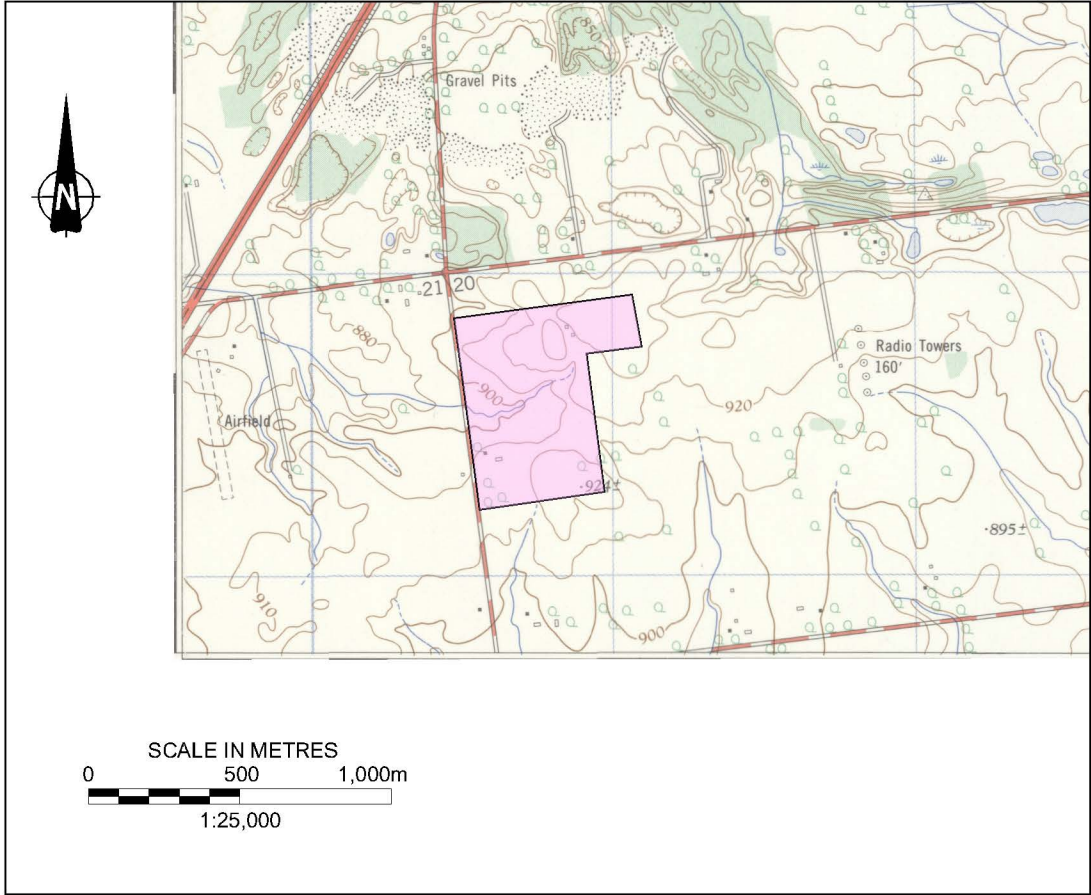
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|                                                                                                   | CHECK                      | <i>[Signature]</i> |                                     | <b>MAP 5</b>             |
|                                                                                                   |                            |                    |                                     |                          |



1961



1973



**LEGEND**

 APPROXIMATE LOCATION OF STUDY AREA

**REFERENCE**

DEPARTMENT OF ENERGY, MINES, AND RESOURCES  
1961 LONDON AREA, POND MILLS  
40 I/14G, EDITION 1. 1:25,000  
1973 POND MILLS, MIDDLESEX COUNTY, ONTARIO  
40 I/14G, EDITION 3 1:25,000

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| PROJECT                                                                               |             | STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO   |           |  |                              |  |
| TITLE                                                                                 |             | HISTORICAL TOPOGRAPHIC MAPS OF<br>STUDY AREA<br>1961 AND 1973                         |           |  |                              |  |
|  | PROJECT No. |                                                                                       | 1783701   |  | FILE No. 1783701-1000-R01006 |  |
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|                                                                                       | CHECK       |  |           |  |                              |  |



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1998



2008



2014



**LEGEND**

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**REFERENCE**

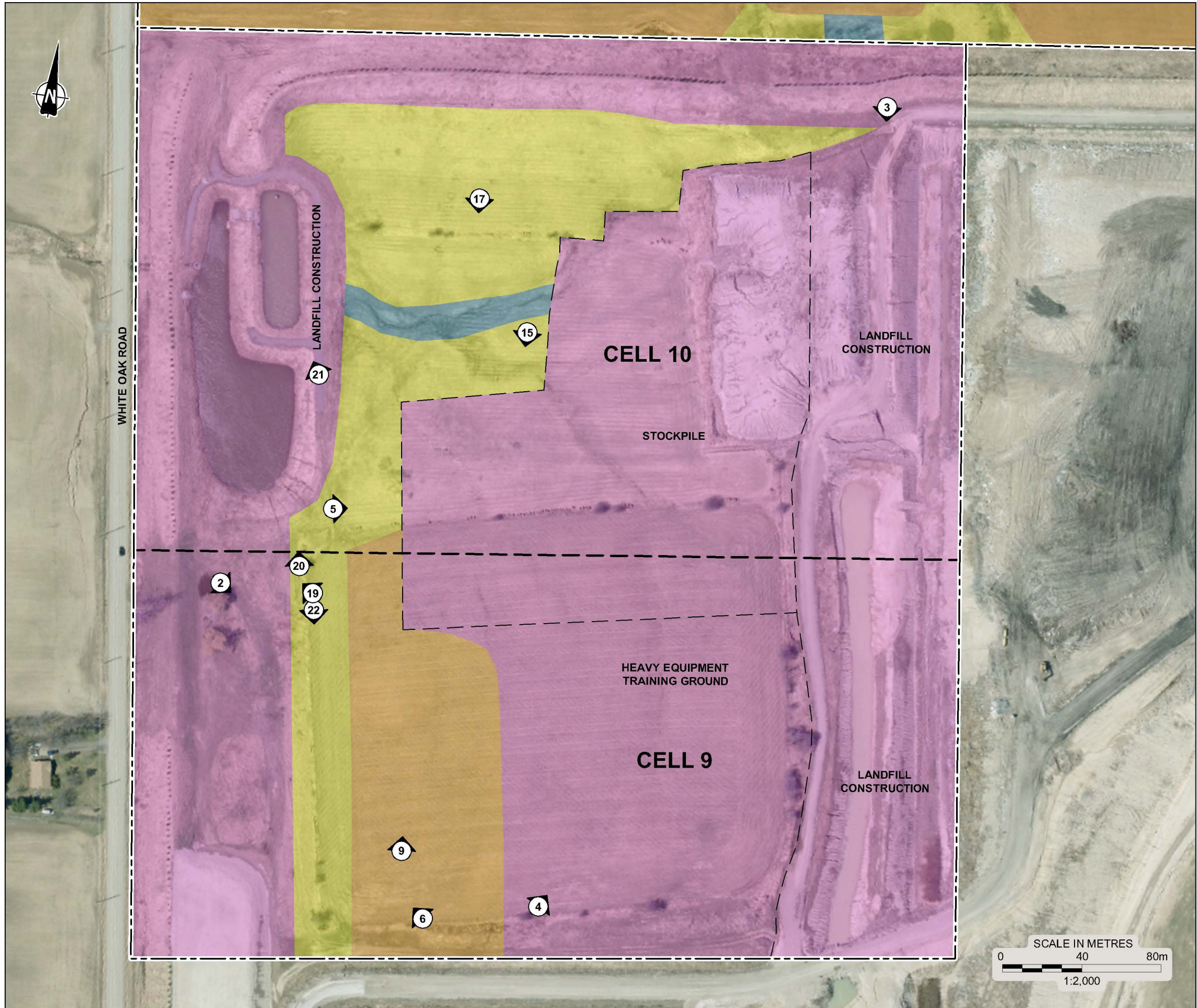
DRAWING BASED ON 1998 AERIAL IMAGE FROM THE CITY OF LONDON;  
2008 AERIAL IMAGE FROM THE CITY OF LONDON CITYCD.2008; AND  
2014 AERIAL IMAGE FROM THE CITY OF LONDON CITYCD.2014.

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| PROJECT                                                                             |             |          |                              |
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| TITLE                                                                               |             |          |                              |
| AERIAL PHOTOGRAPHY SHOWING<br>DEMOLITION OF HOUSE AND<br>LANDFILL CONSTRUCTION      |             |          |                              |
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|                                                                                     | SCALE       | AS SHOWN | REV.                         |
| MAP 7                                                                               |             |          |                              |





**LEGEND**

- APPROXIMATE LOCATION OF STUDY AREA
- TEST PITTED AT 5m INTERVALS
- PEDESTRIAN SURVEY AT 5m INTERVAL
- PREVIOUSLY DISTURBED, NOT SURVEYED
- PERMANENTLY WET, NOT SURVEYED
- 1 PHOTOGRAPH LOCATION, VIEWING DIRECTION, AND PLATE NUMBER

**REFERENCE**

DRAWING BASED ON 2014 AERIAL IMAGE FROM THE CITY OF LONDON CITYCD.2014.

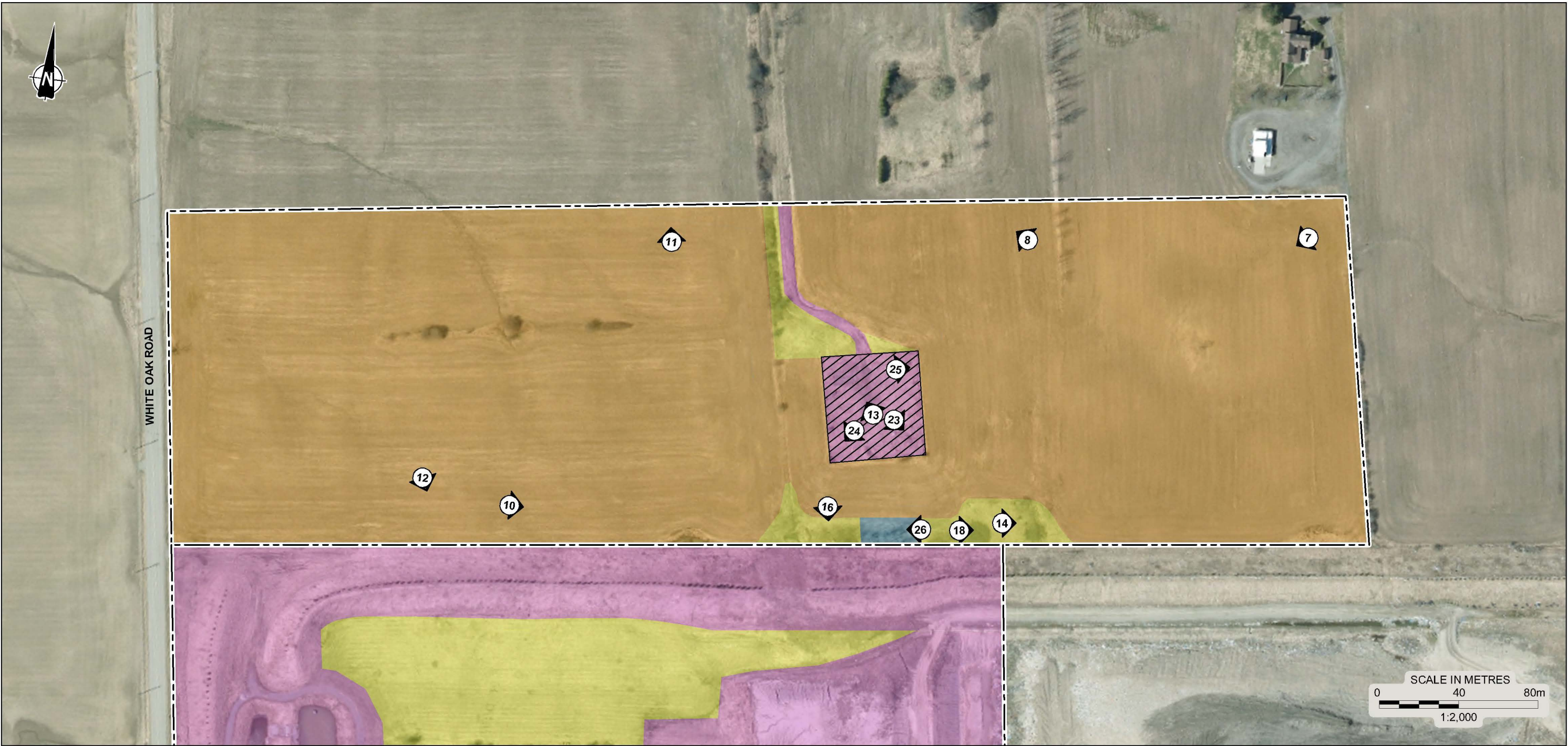
**NOTES**

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| PROJECT                                                                             |             |          |                             |
| STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO |             |          |                             |
| TITLE                                                                               |             |          |                             |
| STAGE 2 METHODS AND RESULTS<br>CELLS 9 AND 10                                       |             |          |                             |
|                                                                                     | PROJECT No. | 1783701  | FILE N:1783701-1000-R01008A |
|                                                                                     | CADD        | ZB/DH/AS | July 4/18                   |
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|                                                                                     |             |          | MAP 8A                      |



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**LEGEND**

- APPROXIMATE LOCATION OF STUDY AREA
- TEST PITTED AT 5m INTERVALS
- PEDESTRIAN SURVEY AT 5m INTERVAL
- PREVIOUSLY DISTURBED, NOT SURVEYED
- PREVIOUSLY DISTURBED; TEST PITTED AT 10m INTERVAL
- PERMANENTLY WET, NOT SURVEYED
- 12 PHOTOGRAPH LOCATION, VIEWING DIRECTION, AND PLATE NUMBER

**REFERENCE**

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| PROJECT                                                                             |             |          |                               |
| STAGE 1-2 ARCHAEOLOGICAL ASSESSMENT<br>W12A LANDFILL, CELLS 9-10<br>LONDON, ONTARIO |             |          |                               |
| TITLE                                                                               |             |          |                               |
| STAGE 2 METHODS AND RESULTS<br>STOCKPILE AREA                                       |             |          |                               |
|                                                                                     | PROJECT No. | 1783701  | FILE No. 1783701-1000-R01008B |
|                                                                                     | CADD        | ZB/DH/AS | July 4/18                     |
|                                                                                     | CHECK       |          |                               |
|                                                                                     | SCALE       | AS SHOWN | REV.                          |
| MAP 8B                                                                              |             |          |                               |

## 10.0 IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Golder has prepared this report in a manner consistent with the level of care and skill ordinary 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 the City of London (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 others is prohibited and is without responsibility to Golder. The report, all plans, data, drawings 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 Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party 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 or 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 investigations 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 comply with those identified in the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultants Archaeologists* (Government of Ontario 2011).



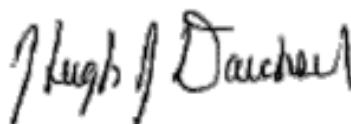
## 11.0 CLOSURE

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.**



Lafe Meicenheimer, M.A.  
*Staff Archaeologist*



Hugh Daechsel, M.A.  
*Principal, Senior Archaeologist*

LCM/MT/HCD/ly

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**APPENDIX A**

# Glossary of Pre-Contact Indigenous Terms and Definitions

## Debitage

Chipped lithic tools anddebitage were found at the site (or sites) described in this report. Some of the more common chert types found on pre-contact Indigenous sites in southern Ontario are described below.

**Kettle Point chert:** a relatively high quality raw material found within the Upper Devonian age Kettle Point Formation that outcrops between Kettle Point and Ipperwash, on Lake Huron. Currently, Kettle Point occurs as submerged outcrops extending for approximately 1,350 metres into Lake Huron. Secondary deposits of Kettle Point chert have been reported in Essex County and in the Ausable River watershed (Eley and von Bitter 1989; Fox 2009:362).

**Onondaga chert:** a high quality raw material found within the Onondaga Formation that outcrops along the north shore of Lake Erie west of the mouth of the Grand River as far west as Nanticoke, east of the mouth of the Grand River as far east as Fort Erie, and along the Onondaga Escarpment between Cayuga and Hagersville (Telford and Tarrant 1975). This material can also be recovered from secondary, glacial deposits across much of southwestern Ontario, east of Chatham (Eley and von Bitter 1989; Fox 2009:361-362).

**Selkirk chert:** a moderate to relatively high quality raw material that occurs within the Dundee Formation; it outcrops along Sandusk Creek and its tributaries just west of the village of Selkirk (Telford and Tarrant 1975). The chert ranges in colour from mottled or banded grey to a predominantly brown colour, the latter of which being of relatively more vitreous fabric than the former. Its distribution as a secondary source material is similar to Onondaga chert and it is frequently encountered as far west as the Chatham area (Eley and von Bitter 1989; Fox 2009:362).

**Non-chert:** some materials other than chert were occasionally used for the manufacture of chipped tools, and consequently some pieces of non-chertdebitage may occur on some sites. Materials in the non-chert category may include quartzite, quartz-like materials, schist and slate or shale.

All chert types discussed herein were identified visually by comparison to reference materials located in Golder's London offices. The flake assemblage was subject to morphological analysis following the classification scheme described by Lennox et al. (1986) and expanded upon by Fisher (1997), with the exception that no attempt was made to distinguish "primary" from "primary bipolar" flakes.

With reference to the analysis of lithicdebitage, the following overview provides descriptions of the various types of cores anddebitage commonly found on pre-contact Indigenous sites.

**Cores:** Pieces of stone (usually chert) from which flakes or blades have been removed. A core may be uni-facetted (flake removed from one surface or edge only) or multi-facetted (flakes removed from two or more surfaces or edges. A core may retain a segment of its exterior, weathered surface.

**Primary Reduction Flakes:** are by-products of the initial stages of the reduction of lithic material, they are derived from cores and are generally attributed to direct hard hammer percussion. Primary flakes may exhibit a large cortical striking platform. This platform may appear on an otherwise unmodified flake scar or a crushed flake margin. Where measureable the striking platform – ventral surface angle is approximately 90 degrees, usually unfacetted and large. Ventral surface attributes are usually well pronounced while the dorsal surface consists of 50-100% cortex, implying little or no modification of the core prior to the removal of the primary flake.

**Primary Thinning Flake:** a large, thick flake with an unprepared striking platform and few to no flake scars on its dorsal (exterior) surface. These flakes are typically thinner than Primary Reduction Flakes. Their platform is



usually large, flat or minimally faceted, and close to 90 degrees. A Large bulb of percussion is common on the ventral side. Primary Thinning Flakes are typically associated with the hard hammer percussion method from the initial stage of chipped stone tool production.

**Biface Thinning Flake:** a moderately thick to thin flake with a small platform that can be ground and/or faceted to some degree. The platform angle is usually acute or less than 90 degree. The dorsal side of the flake often has several shallow intersecting scars with no cortex material remaining. Biface Thinning Flakes are associated with the medial stage of biface reduction where a stone tool is thinned through the removal of flakes from opposing surfaces.

**Retouch Flakes:** small, thin flakes removed from the edge of a stone tool or larger flake through pressure flaking. These flakes tend to have a small, lipped platform that may exhibit crushing or part of a dulled bifacial edge. The dorsal surface typically displays flake scars from previous removals and lacks cortex material. They are associated with the final stage of chipped stone tool production when edges are sharpened and notches for hafting are created. They are also associated with maintenance activities where tools are re-sharpened and broken edges rejuvenated.

**Shatter:** usually consists of thick, blocky pieces of chert which lack striking platforms and ventral flake surface attributes. This category of debitage is thought to be a by-product of the initial stages of reduction through the uncontrolled breakage of the raw material along structural faults or irregularities. They commonly result from the use of horizontally and vertically flawed material, these flaws apparently a result of stresses occurring to the material while still within its primary deposit. A relatively high incidence of shatter is usually associated with the bipolar reduction strategy.

**Flake Fragments:** are broken flakes with no platform or proximal end. They cannot be convincingly linked to any particular lithic activity. As such, they have very little analytical value.

**Micro flake:** Very small broken flakes are classed as micro flakes, less than 3mm in size. These flakes are small and generally only recovered from floatation samples.

#### **Stages of Reduction for Chert Bifaces** (based on Fisher 1997:25-29)

There have been several different approaches to the definition of the stages of biface reduction, in both Eurasia (Andrefsky 2005:32) and North America (i.e. Callahan 1979: 30-31). Many Ontario-based researchers have adopted the classification scheme used by Fisher (1997: 25-29), which was based largely on Callahan (1979: 30-31). Fisher's definitions of Stage 1 (initial) through Stage 4 (final) bifaces take into consideration characteristics such as number and size of flakes removed, length and depth of flake scars, cross-section, length-width ratio, and edge configuration.

Stage 1: During this initial stage of biface reduction specimens are only roughly shaped. The biface cross-section is hexagonal, irregular to thick lenticular, and is not plano-convex at all (Callahan 1979:36). Biface thinning flake scars are deep, large and generally do not cross half of the biface width, leaving remnants of the original material surface. From a lateral view, the edge of the biface is jagged and highly irregular.

Stage 2: At this stage the biface is still relatively thick compared to its width, with more lateral flake removals crossing over half the biface width, leaving less of the original surface present. As well, thinning flakes are more numerous and smaller. The edge of the biface is still irregular, but less jagged.

**Stage 3:** This stage of reduction produces a biface with a lenticular cross-section, thinning flakes are shallow and are consistently greater than half the biface width. Also, there is a greater regularity to the edge, and bases may be formed, if only incipiently, on some specimens.

**Stage 4:** Stage 4 is represented by an almost finished projectile point with a relatively high width to thickness ratio, a relatively regular or even edge, some retouch, and a shaped base. Some items classed as Stage 4 specimens may have been finished projectile points. However, they are not so finely crafted as the definitive finished projectile points, perhaps due to material or knapping flaws, or skills of knappers.

### Other Artifacts

The following glossary defines some of the terms for some of the formal and informal chipped lithic tools from the sites discussed in this report. All of the definitions are derived from reputable online sources such as [www.archaeologywordsmith.com](http://www.archaeologywordsmith.com) and [www.wvculture.org/shpo/glossary.html](http://www.wvculture.org/shpo/glossary.html).

**Artifact:** “any object made, modified or used by people”.

**Biface:** “a stone tool which has been flaked on both surfaces or sides”; frequently made as roughed-out blanks or preforms intended for further reduction into finished tools such as projectile points or knives.

**Burin:** “from the French word *burin*, meaning cold chisel. A specialized engraving tool ... that is cut or ground [or flaked] diagonally downward to form a diamond-shaped point at the tip... In its most characteristic form, the working tip is a narrow transverse edge formed by the intersection of two flake scars produced by striking at an angle to the main axis of the blade... Burins were used to carve or engrave softer organic materials such as antler, bone... or wood”.

**Debitage:** “the by-products or waste materials left over from the manufacture of stone tools”.

**Diagnostic artifact:** “an item that is indicative of a particular time period or cultural group”.

**Drill:** “a tool used to drill holes through or into wood, stone or bone”.

**Ecofact:** “nonartifactual evidence that has not been technologically altered but that has cultural relevance.”

**Graver:** “a stone tool manufactured from a flake by chipping (pressure-flaking) it on two edges at one end so as to leave a sharp point. Gravers were used to cut or score organic materials such as bone, shell, wood and antler; perhaps for punching leather, and other purposes”.

**Lithic:** “stone, or made of stone”.

**Knife:** a purposefully formed cutting tool.

**Perforator:** “a flint [chert] tool for piercing holes”, or, “a small chipped stone implement with a rather long and slender point and usually a broad base, supposed to have been used for drilling or boring holes”. Perforators are sometimes referred to as borers.

**Projectile point:** “a general term for points [usually stone] that were hafted to darts, spears or arrows”; commonly referred to as either spearhead or arrowhead.

**Retouched flake:** “a flake that has had small flakes removed to blunt, sharpen, refine the outline or prepare the edge of the tool”.

**Scraper:** a stone tool formed by chipping [flaking] the end or side of a flake which can then be used to scrape animal hides or wood.

**Spokeshave:** “a stone tool with a semi-circular concavity on the edge, used for smoothing spear or arrow shafts; a drawknife or small transverse plane for planing convex surfaces”.

**Utilized flake:** “a piece of stone debitage that is used for cutting or slicing. The edge may be damaged from use, but not deliberately”.

**Wedge:** “an object used to split, force open or keep open another object; a tool used to split wood”.

**APPENDIX B**

# Complete Artifact Catalogues



Table 6: Location A (AfHh-929) Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                  | Fragment   | Attribute 1       | Attribute 2  | Manufacture | Alteration | # of Artifacts | # of Objects | Note                                   |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|-------------------------|------------|-------------------|--------------|-------------|------------|----------------|--------------|----------------------------------------|
| 1      | A    | TP3   | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Yellow            | Frog         |             |            | 3              |              |                                        |
| 2      | A    | TP16  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                    | Incomplete |                   |              |             |            | 1              |              |                                        |
| 3      | A    | TP10  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 1              |              |                                        |
| 4      | A    | TP17  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 1              |              |                                        |
| 5      | A    | TP6   | Faunal     | Bone                        | Food & Beverage | Food                     | Bone                    | Incomplete | Mammal, Large     |              |             | Butchered  | 1              |              |                                        |
| 6      | A    | TP23  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 1              |              |                                        |
| 7      | A    | TP8   | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 1              |              |                                        |
| 8      | A    | TP15  | Metal      | Ferrous Alloy               | Structural      | Building Component       | Nail, Common            | Complete   |                   |              | Wire Drawn  |            | 2              |              |                                        |
| 9      | A    | TP19  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                    | Incomplete |                   |              |             |            | 1              |              |                                        |
| 10     | A    | TP19  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 1              |              |                                        |
| 11     | A    | TP11  | Glass      | Indeterminate               | Food & Beverage | Beverage Container       | Bottle                  | Incomplete | Lime Green        | Maker's Mark |             |            | 1              | 10           | Dominion D in diamond "MADE IN CANADA" |
| 12     | A    | TP13  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 9              |              |                                        |
| 13     | A    | TP21  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 6              |              |                                        |
| 14     | A    | TP14  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red               |              |             |            | 7              |              |                                        |
| 15     | A    | TP1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate | Body       | Plain/Undecorated |              |             |            | 1              |              |                                        |
| 16     | A    | TP1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate | Footring   | Plain/Undecorated |              |             |            | 1              |              |                                        |
| 17     | A    | TP1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate | Rim        | Plain/Undecorated |              |             |            | 3              | 4            |                                        |
| 18     | A    | TP1   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate | Body       | Plain/Undecorated |              |             |            | 1              |              |                                        |
| 19     | A    | TP1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container               | Body       | Clear/Colourless  |              |             |            | 2              |              |                                        |
| 20     | A    | TP9   | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                    | Incomplete |                   |              |             |            | 3              |              |                                        |
| 21     | A    | TP21  | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane              | Incomplete | Clear/Colourless  |              |             |            | 1              |              |                                        |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1       | Attribute 2     | Manufacture | Alteration | # of Artifacts | # of Objects | Note                       |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|-------------------|-----------------|-------------|------------|----------------|--------------|----------------------------|
| 22     | A    | TP2   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |                 |             |            | 1              |              |                            |
| 23     | A    | TP2   | Metal      | Iron                        | Structural      | Building Component       | Nail, Common             | Complete   |                   |                 | Machine Cut |            | 1              |              |                            |
| 24     | A    | TP18  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |                 |             |            | 2              |              |                            |
| 25     | A    | TP22  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |                 |             |            | 4              |              |                            |
| 26     | A    | TP20  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |                 |             |            | 1              |              |                            |
| 27     | A    | TP5   | Glass      | Indeterminate               | Food & Beverage | Beverage Container       | Bottle                   | Body       | Clear/Colourless  |                 | Mould       |            | 1              |              |                            |
| 28     | A    | TP5   | Ceramic    | Stoneware                   | Food & Beverage | Container, Food          | Container, Indeterminate | Body       | Salt Glaze Ext    | Albany Slip Int |             |            | 1              |              |                            |
| 29     | A    | TP4   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |                 |             |            | 1              |              |                            |
| 30     | A    | TP4   | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Yellow            | Frog            |             |            | 3              |              |                            |
| 31     | A    | TP4   | Metal      | Ferrous Alloy               | Indeterminate   | Indeterminate            | Indeterminate            | Incomplete |                   |                 |             |            | 3              |              |                            |
| 32     | A    | TP12  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               | Solid           |             |            | 3              |              |                            |
| 33     | A    | TP12  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete |                   |                 |             | Burnt      | 1              |              | Fireplace?                 |
| 34     | A    | IT12  | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |                 |             |            | 2              |              |                            |
| 35     | A    | IT12  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |                 |             |            | 2              |              | 1 stippled                 |
| 36     | A    | IT12  | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                   | Body       | Amber             |                 |             |            | 3              |              |                            |
| 37     | A    | IT12  | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                   | Body       | Lime Green        |                 |             |            | 2              |              |                            |
| 38     | A    | IT12  | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |                 |             |            | 4              |              |                            |
| 39     | A    | IT12  | Metal      | Ferrous Alloy               | Structural      | Building Component       | Nail, Common             | Incomplete |                   |                 | Wire Drawn  |            | 2              |              |                            |
| 40     | A    | IT12  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Indeterminate            | Incomplete |                   |                 |             |            | 5              |              |                            |
| 41     | A    | IT12  | Metal      | Indeterminate               | Structural      | Building Component       | Pipe                     | Incomplete |                   |                 |             |            | 1              |              | 23.51 mm interior diameter |
| 42     | A    | IT12  | Metal      | Iron                        | Structural      | Building Component       | Handle                   | Complete   |                   |                 |             |            | 1              |              | ~42 cm long                |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1       | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note        |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|-------------------|-------------|-------------|------------|----------------|--------------|-------------|
| 43     | A    | IT12  | Coal       | Coal                        | Fuel            | Indeterminate            | Coal                     | Incomplete |                   |             |             |            | 2              |              |             |
| 44     | A    | IT9   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |             |             |            | 2              |              |             |
| 45     | A    | IT9   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Body       | Transfer Print    | Blue        |             |            | 1              |              |             |
| 46     | A    | IT9   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Rim        | Plain/Undecorated |             |             |            | 1              |              |             |
| 47     | A    | IT9   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Light Olive       |             |             |            | 2              |              |             |
| 48     | A    | IT9   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Green             |             | Mould       |            | 1              |              | Ridges      |
| 49     | A    | IT9   | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                   | Body       | Amber             |             |             |            | 1              |              |             |
| 50     | A    | IT9   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |             |             |            | 5              |              |             |
| 51     | A    | IT9   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |             |             |            | 4              |              |             |
| 52     | A    | IT9   | Metal      | Iron                        | Structural      | Building Component       | Nail, Common             | Incomplete |                   |             | Machine Cut |            | 1              |              |             |
| 53     | A    | IT9   | Metal      | Ferrous Alloy               | Structural      | Building Component       | Bolt                     | Incomplete |                   |             |             |            | 1              |              |             |
| 54     | A    | IT9   | Metal      | Iron                        | Structural      | Hardware                 | Bracket                  | Incomplete |                   |             |             |            | 1              |              | ~33 cm long |
| 55     | A    | IT9   | Metal      | Iron                        | Structural      | Hardware                 | Handle                   | Incomplete |                   |             |             |            | 1              |              |             |
| 56     | A    | IT9   | Metal      | Iron                        | Structural      | Hardware                 | Flange                   | Incomplete |                   |             |             |            | 1              |              |             |
| 57     | A    | IT9   | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Indeterminate            | Incomplete |                   |             |             |            | 2              |              |             |
| 58     | A    | IT9   | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |             |             |            | 1              |              |             |
| 59     | A    | IT9   | Coal       | Coal                        | Fuel            | Indeterminate            | Coal                     | Incomplete |                   |             |             |            | 1              |              |             |
| 60     | A    | IT4   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |             |             |            | 5              |              |             |
| 61     | A    | IT4   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  | Moulded     |             |            | 6              |              |             |
| 62     | A    | IT4   | Glass      | Indeterminate               | Furnishing      | Lighting                 | Lamp Chimney             | Body       | Clear/Colourless  |             |             |            | 2              |              |             |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                  | Fragment   | Attribute 1           | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note                                 |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|-------------------------|------------|-----------------------|-------------|-------------|------------|----------------|--------------|--------------------------------------|
| 63     | A    | IT4   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane              | Incomplete | Clear/Colourless      |             |             |            | 2              |              |                                      |
| 64     | A    | IT4   | Metal      | Ferrous Alloy               | Indeterminate   | Hardware                 | Indeterminate           | Incomplete |                       |             |             |            | 1              |              | Ring, bracket/U-bolt, clevis, D-ring |
| 65     | A    | IT4   | Faunal     | Bone                        | Ecological      | Fauna                    | Bone                    | Incomplete | Mammal, Indeterminate |             |             |            | 2              |              |                                      |
| 66     | A    | IT4   | Faunal     | Bone                        | Ecological      | Fauna                    | Bone                    | Incomplete | Avian, Indeterminate  | Long Bone   |             |            | 1              |              |                                      |
| 67     | A    | IT2   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate | Body       | Plain/Undecorated     |             |             |            | 2              |              |                                      |
| 68     | A    | IT2   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container               | Body       | Clear/Colourless      |             |             |            | 3              |              |                                      |
| 69     | A    | IT2   | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                  | Base       | Clear/Colourless      |             | Mould       |            | 1              |              | "[CA]NADA"                           |
| 70     | A    | IT2   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane              | Incomplete | Clear/Colourless      |             |             |            | 2              |              |                                      |
| 71     | A    | IT2   | Metal      | Iron                        | Structural      | Building Component       | Nail, Common            | Incomplete |                       |             | Machine Cut |            | 2              |              |                                      |
| 72     | A    | IT2   | Metal      | Ferrous Alloy               | Structural      | Building Component       | Nail, Common            | Incomplete |                       |             | Wire Drawn  |            | 1              |              |                                      |
| 73     | A    | IT2   | Metal      | Indeterminate               | Indeterminate   | Hardware                 | Strapping               | Incomplete |                       |             |             |            | 4              |              |                                      |
| 74     | A    | IT2   | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                    | Incomplete |                       |             |             |            | 2              |              |                                      |
| 75     | A    | IT2   | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Indeterminate           | Incomplete |                       |             |             |            | 3              |              |                                      |
| 76     | A    | IT2   | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red                   |             |             |            | 1              |              |                                      |
| 77     | A    | IT2   | Faunal     | Bone                        | Ecological      | Fauna                    | Bone                    | Incomplete | Mammal, Indeterminate | Long Bone   |             |            | 1              |              |                                      |
| 78     | A    | IT2   | Faunal     | Dentition                   | Ecological      | Fauna                    | Tooth                   | Incomplete | Mammal, Indeterminate |             |             |            | 1              |              |                                      |
| 79     | A    | IT18  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container               | Body       | Manganese             |             |             |            | 1              |              |                                      |
| 80     | A    | IT18  | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                  | Body       | Lime Green            |             |             |            | 1              |              |                                      |
| 81     | A    | IT18  | Brick      | Brick                       | Structural      | Building Component       | Brick                   | Incomplete | Red                   |             |             |            | 2              |              |                                      |



| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1          | Attribute 2  | Manufacture | Alteration | # of Artifacts | # of Objects | Note  |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|----------------------|--------------|-------------|------------|----------------|--------------|-------|
| 82     | A    | IT1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Rim        | Plain/Undecorated    |              |             |            | 1              |              |       |
| 83     | A    | IT1   | Ceramic    | Coarse Red Earthenware      | Food & Beverage | Container, Indeterminate | Holloware, Indeterminate | Body       | Exfoliated           |              |             |            | 1              | 2            |       |
| 84     | A    | IT6   | Glass      | Indeterminate               | Food & Beverage | Tableware                | Holloware, Indeterminate | Rim        | White (Milk)         |              |             |            | 1              |              |       |
| 85     | A    | IT6   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Amber                |              |             |            | 3              |              |       |
| 86     | A    | IT6   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless     |              |             |            | 2              |              |       |
| 87     | A    | IT14  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless     |              |             |            | 2              |              |       |
| 88     | A    | IT14  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red                  |              |             |            | 1              |              |       |
| 89     | A    | IT14  | Coal       | Coal                        | Fuel            | Indeterminate            | Coal                     | Incomplete |                      |              |             |            | 1              |              |       |
| 90     | A    | IT19  | Glass      | Indeterminate               | Food & Beverage | Container                | Bottle                   | Body       | Lime Green           |              |             |            | 1              |              |       |
| 91     | A    | IT19  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Indeterminate            | Incomplete |                      |              |             |            | 5              |              |       |
| 92     | A    | IT3   | Glass      | Indeterminate               | Food & Beverage | Container                | Jar                      | Finish     | Clear/Colourless     | Screw Finish | Mould       |            | 1              |              |       |
| 93     | A    | IT3   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless     |              |             |            | 3              |              |       |
| 94     | A    | IT3   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless     |              |             |            | 1              |              |       |
| 95     | A    | IT3   | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red                  |              |             |            | 1              |              |       |
| 96     | A    | IT3   | Metal      | Ferrous Alloy               | Structural      | Building Component       | Nail, Common             | Incomplete |                      |              | Wire Drawn  |            | 1              |              |       |
| 97     | A    | IT15  | Faunal     | Bone                        | Ecological      | Fauna                    | Radius/Ulna              | Complete   | Avian, Indeterminate |              |             |            | 1              |              | fused |
| 98     | A    | IT20  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Footring   | Plain/Undecorated    |              |             |            | 1              |              |       |
| 99     | A    | IT7   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless     |              |             |            | 1              |              |       |
| 100    | A    | IT13  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Rim        | Plain/Undecorated    |              |             |            | 1              |              |       |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1       | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|-------------------|-------------|-------------|------------|----------------|--------------|------|
| 101    | A    | IT13  | Metal      | Iron                        | Structural      | Building Component       | Nail, Common             | Incomplete |                   |             | Machine Cut |            | 1              |              |      |
| 102    | A    | IT13  | Metal      | Ferrous Alloy               | Structural      | Building Component       | Nail, Common             | Incomplete |                   |             | Wire Drawn  |            | 1              |              |      |
| 103    | A    | IT13  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |             |             |            | 1              |              |      |
| 104    | A    | IT8   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |             |             |            | 2              |              |      |
| 105    | A    | IT8   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |             |             |            | 1              |              |      |
| 106    | A    | IT8   | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |             |             |            | 1              |              |      |
| 107    | A    | IT8   | Brick      | Brick                       | Structural      | Fence                    | Wire                     | Incomplete | 2-strand, twisted |             |             |            | 1              |              |      |
| 108    | A    | IT10  | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |             |             |            | 1              |              |      |
| 109    | A    | IT10  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |             |             |            | 1              |              |      |
| 110    | A    | IT10  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |             |             |            | 3              |              |      |
| 111    | A    | IT10  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                     | Incomplete |                   |             |             |            | 1              |              |      |
| 112    | A    | IT17  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |             |             |            | 1              |              |      |
| 113    | A    | IT17  | Faunal     | Bone                        | Ecological      | Fauna                    | Bone                     | Incomplete | Mammal, Large     | Long Bone   |             |            | 3              |              |      |
| 114    | A    | IT16  | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Transfer Print    | Dark Green  |             |            | 2              |              |      |
| 115    | A    | IT16  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Transfer Print    | Blue        |             |            | 1              |              |      |
| 116    | A    | IT16  | Ceramic    | Coarse Red Earthenware      | Food & Beverage | Container, Indeterminate | Holloware, Indeterminate | Body       | Exfoliated        |             |             |            | 2              |              |      |
| 117    | A    | IT16  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Manganese         |             |             |            | 1              |              |      |
| 118    | A    | IT16  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |             |             |            | 1              |              |      |
| 119    | A    | IT16  | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |             |             |            | 3              |              |      |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1           | Attribute 2     | Manufacture | Alteration | # of Artifacts | # of Objects | Note             |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|-----------------------|-----------------|-------------|------------|----------------|--------------|------------------|
| 120    | A    | IT16  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete |                       |                 |             |            | 2              |              | 1 Red, 1 Yellow  |
| 121    | A    | IT16  | Metal      | Iron                        | Structural      | Building Component       | Nail, Common             | Incomplete |                       |                 | Machine Cut |            | 2              |              |                  |
| 122    | A    | IT11  | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated     |                 |             |            | 1              |              |                  |
| 123    | A    | IT11  | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Footring   | Lithographed          |                 |             |            | 1              |              | Floral           |
| 124    | A    | IT11  | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless      |                 |             |            | 3              |              |                  |
| 125    | A    | IT11  | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red                   |                 |             |            | 1              |              |                  |
| 126    | A    | IT11  | Metal      | Ferrous Alloy               | Structural      | Building Component       | Bolt                     | Complete   | Square Head           |                 |             |            | 1              |              |                  |
| 127    | A    | IT11  | Metal      | Indeterminate               | Indeterminate   | Indeterminate            | Wire                     | Incomplete |                       |                 |             |            | 2              |              |                  |
| 128    | A    | IT11  | Coal       | Coal                        | Fuel            | Indeterminate            | Coal                     | Incomplete |                       |                 |             |            | 1              |              |                  |
| 129    | A    | IT11  | Faunal     | Dentition                   | Ecological      | Fauna                    | Tooth                    | Incomplete | Mammal, Indeterminate |                 |             |            | 1              |              |                  |
| 130    | A    | IT11  | Faunal     | Bone                        | Ecological      | Fauna                    | Bone                     | Incomplete | Mammal, Indeterminate |                 |             |            | 4              |              |                  |
| 131    | A    | IT11  | Faunal     | Bone                        | Ecological      | Fauna                    | Rib                      | Incomplete | Mammal, Large         |                 |             |            | 1              |              |                  |
| 132    | A    | IT5   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated     |                 |             |            | 19             |              |                  |
| 133    | A    | IT5   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Holloware, Indeterminate | Base       | Plain/Undecorated     |                 |             |            | 1              | 2            |                  |
| 134    | A    | IT5   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Body       | Orange Glaze          |                 |             |            | 1              |              | Opalescent glaze |
| 135    | A    | IT5   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Body       | Transfer Print        | Blue            |             |            | 1              |              |                  |
| 136    | A    | IT5   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated     |                 |             |            | 4              |              |                  |
| 137    | A    | IT5   | Ceramic    | Coarse Red Earthenware      | Food & Beverage | Container, Indeterminate | Holloware, Indeterminate | Rim        | Clear glaze ext       | White glaze int |             |            | 1              |              |                  |
| 138    | A    | IT5   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless      |                 |             |            | 7              |              |                  |

| Cat. # | Loc. | CSP # | Material 1 | Material 2                  | Function 1      | Function 2               | Object                   | Fragment   | Attribute 1       | Attribute 2     | Manufacture | Alteration | # of Artifacts | # of Objects | Note |
|--------|------|-------|------------|-----------------------------|-----------------|--------------------------|--------------------------|------------|-------------------|-----------------|-------------|------------|----------------|--------------|------|
| 139    | A    | IT5   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Amber             |                 |             |            | 1              |              |      |
| 140    | A    | IT5   | Glass      | Indeterminate               | Structural      | Building Component       | Windowpane               | Incomplete | Clear/Colourless  |                 |             |            | 2              |              |      |
| 141    | A    | IT5   | Brick      | Brick                       | Structural      | Building Component       | Brick                    | Incomplete | Red               |                 |             |            | 1              |              |      |
| 142    | A    | IT5   | Metal      | Iron                        | Structural      | Building Component       | Spike                    | Incomplete |                   |                 | Machine Cut |            | 1              |              |      |
| 143    | A    | TU1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Body       | Plain/Undecorated |                 |             |            | 3              |              |      |
| 144    | A    | TU1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Holloware, Indeterminate | Handle     | Plain/Undecorated |                 |             |            | 1              |              |      |
| 145    | A    | TU1   | Ceramic    | Vitrified White Earthenware | Food & Beverage | Tableware                | Flatware, Indeterminate  | Rim        | Transfer Print    | Dark Green      |             |            | 1              |              |      |
| 146    | A    | TU1   | Ceramic    | Porcelain                   | Food & Beverage | Tableware                | Holloware, Indeterminate | Body       | Transfer Print    | Blue            |             |            | 1              |              |      |
| 147    | A    | TU1   | Ceramic    | Stoneware                   | Food & Beverage | Container, Indeterminate | Container                | Body       | Salt Glaze Ext    | Albany Slip Int |             |            | 1              |              |      |
| 148    | A    | TU1   | Ceramic    | Stoneware                   | Food & Beverage | Container, Indeterminate | Container                | Rim        | Albany Slip       |                 |             |            | 1              |              |      |
| 149    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Clear/Colourless  |                 |             |            | 3              |              |      |
| 150    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Aqua              |                 |             |            | 2              |              |      |
| 151    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Manganese         |                 |             |            | 1              |              |      |
| 152    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Light Olive       |                 |             |            | 1              |              |      |
| 153    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Light Pink        |                 |             |            | 1              |              |      |
| 154    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Olive             |                 |             |            | 1              |              |      |
| 155    | A    | TU1   | Glass      | Indeterminate               | Food & Beverage | Container, Indeterminate | Container                | Body       | Amber             |                 |             |            | 4              |              |      |



| Cat. # | Loc. | CSP #   | Material 1 | Material 2                  | Function 1        | Function 2         | Object                   | Fragment   | Attribute 1           | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note                 |
|--------|------|---------|------------|-----------------------------|-------------------|--------------------|--------------------------|------------|-----------------------|-------------|-------------|------------|----------------|--------------|----------------------|
| 156    | A    | TU1     | Glass      | Indeterminate               | Food & Beverage   | Container          | Bottle                   | Body       | Lime Green            |             |             |            | 4              |              |                      |
| 157    | A    | TU1     | Glass      | Indeterminate               | Structural        | Building Component | Windowpane               | Incomplete | Clear/Colourless      |             |             |            | 8              |              |                      |
| 158    | A    | TU1     | Brick      | Brick                       | Structural        | Building Component | Brick                    | Incomplete |                       |             |             |            | 2              |              | 1 Red, 1 Yellow      |
| 159    | A    | TU1     | Metal      | Ferrous Alloy               | Structural        | Building Component | Nail, Common             | Complete   |                       |             | Wire Drawn  |            | 1              |              |                      |
| 160    | A    | TU1     | Metal      | Indeterminate               | Structural        | Building Component | Hinge                    | Incomplete |                       |             |             |            | 1              |              | Likely door hinge    |
| 161    | A    | TU1     | Metal      | Indeterminate               | Indeterminate     | Indeterminate      | Wire                     | Incomplete |                       |             |             |            | 4              |              |                      |
| 162    | A    | TU1     | Metal      | Indeterminate               | Tools & Equipment | Agricultural       | Drive Chain              | Incomplete |                       |             |             |            | 1              |              | Tractor?             |
| 163    | A    | TU1     | Metal      | Iron                        | Indeterminate     | Indeterminate      | Indeterminate            | Incomplete |                       |             |             |            | 2              |              |                      |
| 164    | A    | TU1     | Metal      | Lead                        | Indeterminate     | Indeterminate      | Indeterminate            | Incomplete |                       |             |             |            | 1              |              |                      |
| 165    | A    | TU1     | Faunal     | Bone                        | Ecological        | Fauna              | Bone                     | Incomplete | Mammal, Indeterminate | Long Bone   |             |            | 1              |              |                      |
| 166    | A    | TU1     | Faunal     | Dentition                   | Ecological        | Fauna              | Tooth                    | Incomplete | <i>Bos Taurus</i>     | Premolar    |             |            | 1              |              |                      |
| 167    | A    | TU2:L 1 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Rim        | Edged                 | Blue        |             |            | 1              |              | Unscalloped, moulded |
| 168    | A    | TU2:L 1 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Body       | Transfer Print        | Blue        |             |            | 1              |              |                      |
| 169    | A    | TU2:L 1 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Body       | Transfer Print        | Dark Green  |             |            | 1              |              |                      |
| 170    | A    | TU2:L 1 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Body       | Plain/Undecorated     |             |             |            | 12             |              |                      |
| 171    | A    | TU2:L 1 | Ceramic    | Porcelain                   | Food & Beverage   | Tableware          | Holloware, Indeterminate | Base       | Plain/Undecorated     |             |             |            | 2              | 3            |                      |
| 172    | A    | TU2:L 1 | Ceramic    | Porcelain                   | Food & Beverage   | Tableware          | Holloware, Indeterminate | Rim        | Plain/Undecorated     |             |             |            | 1              |              |                      |
| 173    | A    | TU2:L 1 | Ceramic    | Porcelain                   | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Body       | Plain/Undecorated     |             |             |            | 6              |              |                      |
| 174    | A    | TU2:L 1 | Ceramic    | Porcelain                   | Food & Beverage   | Tableware          | Flatware, Indeterminate  | Body       | Lithographed          |             |             |            | 3              |              |                      |

| Cat. # | Loc. | CSP #      | Material 1 | Material 2             | Function 1      | Function 2               | Object        | Fragment   | Attribute 1      | Attribute 2    | Manufacture | Alteration | # of Artifacts | # of Objects | Note                        |
|--------|------|------------|------------|------------------------|-----------------|--------------------------|---------------|------------|------------------|----------------|-------------|------------|----------------|--------------|-----------------------------|
| 175    | A    | TU2:L<br>1 | Ceramic    | Coarse Red Earthenware | Food & Beverage | Container, Indeterminate | Container     | Body       | Salt Glaze Ext   | Salt Glaze Int |             |            | 1              |              |                             |
| 176    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container                | Bottle        | Body       | Olive            |                | Mould       |            | 1              |              |                             |
| 177    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Light Olive      |                |             |            | 14             |              |                             |
| 178    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container                | Bottle        | Body       | Dark Green       |                | Mould       |            | 8              | 9            |                             |
| 179    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Manganese        |                | Mould       |            | 5              |              |                             |
| 180    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Aqua             |                |             |            | 1              |              |                             |
| 181    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Clear/Colourless |                | Mould       |            | 17             |              |                             |
| 182    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Clear/Colourless |                |             |            | 59             |              |                             |
| 183    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container                | Jar           | Finish     | Clear/Colourless | Screw Finish   | Mould       |            | 2              | 3            |                             |
| 184    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Amber            |                |             |            | 19             |              |                             |
| 185    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container, Indeterminate | Container     | Body       | Lime Green       |                | Mould       |            | 4              |              | Ridges                      |
| 186    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container                | Bottle        | Finish     | Lime Green       | Screw Finish   | Mould       |            | 1              |              |                             |
| 187    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Structural      | Building Component       | Windowpane    | Incomplete | Clear/Colourless |                |             |            | 23             |              |                             |
| 188    | A    | TU2:L<br>1 | Glass      | Indeterminate          | Food & Beverage | Container                | Bottle        | Finish     | Clear/Colourless | Screw Finish   | Mould       |            | 1              |              | Found/packed together w/189 |
| 189    | A    | TU2:L<br>1 | Plastic    | Indeterminate          | Food & Beverage | Container                | Bottle Cap    | Complete   | White            | Screw Closure  |             |            | 1              |              | Found/packed together w/188 |
| 190    | A    | TU2:L<br>1 | Stone      | Slate                  | Indeterminate   | Indeterminate            | Indeterminate | Incomplete |                  |                |             |            | 6              |              | Roof tiles/Writing tablets? |
| 191    | A    | TU2:L<br>1 | Brick      | brick                  | Structural      | Building Component       | Brick         | Incomplete |                  |                |             |            | 3              |              | 1 Red, 2 Yellow             |

| Cat. # | Loc. | CSP #      | Material 1   | Material 2    | Function 1    | Function 2         | Object              | Fragment   | Attribute 1              | Attribute 2 | Manufacture    | Alteration | # of Artifacts | # of Objects | Note                        |
|--------|------|------------|--------------|---------------|---------------|--------------------|---------------------|------------|--------------------------|-------------|----------------|------------|----------------|--------------|-----------------------------|
| 192    | A    | TU2:L<br>1 | Mortar       | Mortar        | Structural    | Building Component | Mortar              | Incomplete |                          |             |                |            | 1              |              |                             |
| 193    | A    | TU2:L<br>1 | Concret<br>e | Concrete      | Structural    | Building Component | Concrete            | Incomplete |                          |             |                |            | 1              |              |                             |
| 194    | A    | TU2:L<br>1 | Metal        | Iron          | Structural    | Building Component | Nail, Common        | Incomplete |                          |             | Machine<br>Cut |            | 7              |              |                             |
| 195    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Nail, Common        | Incomplete |                          |             | Wire<br>Drawn  |            | 13             |              |                             |
| 196    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Spike               | Complete   |                          |             | Wire<br>Drawn  |            | 1              |              |                             |
| 197    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Staple              | Complete   |                          |             |                |            | 1              |              |                             |
| 198    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Bolt                | Complete   | Round Head               |             |                |            | 1              |              | Bolt, washer x2, square nut |
| 199    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Bolt                | Incomplete | Square Head              |             |                |            | 1              |              |                             |
| 200    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Structural    | Building Component | Nut                 | Complete   | Square                   |             |                |            | 1              |              |                             |
| 201    | A    | TU2:L<br>1 | Metal        | Indeterminate | Indeterminate | Indeterminate      | Wire                | Incomplete |                          |             |                |            | 87             |              |                             |
| 202    | A    | TU2:L<br>1 | Metal        | Indeterminate | Indeterminate | Indeterminate      | Indeterminate       | Incomplete |                          |             |                |            | 15             |              |                             |
| 203    | A    | TU2:L<br>1 | Metal        | Brass         | Indeterminate | Indeterminate      | Ring                | Complete   |                          |             |                |            | 1              |              |                             |
| 204    | A    | TU2:L<br>1 | Metal        | Ferrous Alloy | Indeterminate | Indeterminate      | Bracket             | Complete   |                          |             |                |            | 1              |              |                             |
| 205    | A    | TU2:L<br>1 | Rubber       | Indeterminate | Indeterminate | Indeterminate      | Indeterminate       | Incomplete |                          |             |                |            | 1              |              |                             |
| 206    | A    | TU2:L<br>1 | Rubber       | Indeterminate | Indeterminate | Indeterminate      | Hose                | Incomplete |                          |             |                |            | 1              |              |                             |
| 207    | A    | TU2:L<br>1 | Plastic      | Indeterminate | Furnishing    | Temperature        | Thermometer<br>Face | Incomplete |                          |             |                |            | 1              |              |                             |
| 208    | A    | TU2:L<br>1 | Faunal       | Bone          | Ecological    | Fauna              | Bone                | Incomplete | Mammal,<br>Indeterminate |             |                |            | 26             |              |                             |

| Cat. # | Loc. | CSP #      | Material 1 | Material 2                  | Function 1        | Function 2               | Object                  | Fragment   | Attribute 1              | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note                        |
|--------|------|------------|------------|-----------------------------|-------------------|--------------------------|-------------------------|------------|--------------------------|-------------|-------------|------------|----------------|--------------|-----------------------------|
| 209    | A    | TU2:L<br>1 | Faunal     | Bone                        | Ecological        | Fauna                    | Phalanx                 | Complete   | Mammal, Small            |             |             |            | 3              |              |                             |
| 210    | A    | TU2:L<br>1 | Faunal     | Bone                        | Ecological        | Fauna                    | Distal Phalanx          | Complete   | <i>Sus Scrofa</i>        |             |             |            | 2              |              | Likely same foot            |
| 211    | A    | TU2:L<br>1 | Faunal     | Dentition                   | Ecological        | Fauna                    | Teeth                   | Incomplete | <i>Equus f. Cabellus</i> |             |             |            | 10             |              |                             |
| 212    | A    | TU2:L<br>2 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware                | Flatware, Indeterminate | Body       | Transfer Print           | Blue        |             |            | 1              |              |                             |
| 213    | A    | TU2:L<br>2 | Ceramic    | Vitrified White Earthenware | Food & Beverage   | Tableware                | Flatware, Indeterminate | Body       | Plain/Undecorated        |             |             |            | 1              |              |                             |
| 214    | A    | TU2:L<br>2 | Ceramic    | Porcelain                   | Food & Beverage   | Tableware                | Flatware, Indeterminate | Body       | Plain/Undecorated        |             |             |            | 1              |              |                             |
| 215    | A    | TU2:L<br>2 | Ceramic    | Coarse Red Earthenware      | Food & Beverage   | Container, Indeterminate | Container               | Body       | Salt Glaze Ext           |             |             |            | 2              |              |                             |
| 216    | A    | TU2:L<br>2 | Glass      | Indeterminate               | Food & Beverage   | Container, Indeterminate | Container               | Body       | Manganese                |             |             |            | 1              |              |                             |
| 217    | A    | TU2:L<br>2 | Glass      | Indeterminate               | Food & Beverage   | Container, Indeterminate | Container               | Body       | Clear/Colourless         |             |             |            | 6              |              |                             |
| 218    | A    | TU2:L<br>2 | Glass      | Indeterminate               | Food & Beverage   | Container                | Bottle                  | Body       | Dark Green               |             |             |            | 4              |              |                             |
| 219    | A    | TU2:L<br>2 | Glass      | Indeterminate               | Food & Beverage   | Container                | Bottle                  | Body       | Lime Green               |             |             |            | 1              |              |                             |
| 220    | A    | TU2:L<br>2 | Glass      | Indeterminate               | Structural        | Building Component       | Windowpane              | Incomplete | Clear/Colourless         |             |             |            | 2              |              |                             |
| 221    | A    | TU2:L<br>2 | Brick      | Brick                       | Structural        | Building Component       | Brick                   | Incomplete | Red                      |             |             |            | 1              |              |                             |
| 222    | A    | TU2:L<br>2 | Stone      | Slate                       | Indeterminate     | Indeterminate            | Indeterminate           |            |                          |             |             |            | 1              |              | Roof tiles/Writing tablets? |
| 223    | A    | TU2:L<br>2 | Leather    | Indeterminate               | Personal/Societal | Footwear                 | Shoe Sole               | Incomplete |                          |             |             |            | 1              |              |                             |
| 224    | A    | TU2:L<br>2 | Metal      | Ferrous Alloy               | Structural        | Building Component       | Nail, Common            | Incomplete |                          |             | Wire Drawn  |            | 1              |              |                             |
| 225    | A    | TU2:L<br>2 | Metal      | Indeterminate               | Indeterminate     | Indeterminate            | Wire                    | Incomplete |                          |             |             |            | 36             |              |                             |



| Cat. # | Loc. | CSP #      | Material 1 | Material 2    | Function 1    | Function 2    | Object        | Fragment   | Attribute 1              | Attribute 2 | Manufacture | Alteration | # of Artifacts | # of Objects | Note                |
|--------|------|------------|------------|---------------|---------------|---------------|---------------|------------|--------------------------|-------------|-------------|------------|----------------|--------------|---------------------|
| 226    | A    | TU2:L<br>2 | Metal      | Indeterminate | Indeterminate | Indeterminate | Indeterminate | Incomplete |                          |             |             |            | 18             |              |                     |
| 227    | A    | TU2:L<br>2 | Coal       | Coal          | Fuel          | Indeterminate | Coal          | Incomplete |                          |             |             |            | 1              |              |                     |
| 228    | A    | TU2:L<br>2 | Faunal     | Bone          | Ecological    | Fauna         | Phalanx       | Complete   | Mammal, Small            |             |             |            | 1              |              |                     |
| 229    | A    | TU2:L<br>2 | Faunal     | Bone          | Ecological    | Fauna         | Bone          | Incomplete | Mammal, Indeterminate    |             |             |            | 10             |              |                     |
| 230    | A    | TU2:L<br>2 | Faunal     | Bone          | Ecological    | Fauna         | Bone          | Incomplete | Avian, Indeterminate     | Long Bone   |             |            | 3              |              |                     |
| 231    | A    | TU2:L<br>2 | Faunal     | Dentition     | Ecological    | Fauna         | Tooth         | Incomplete | <i>Equus f. Cabellus</i> | Premolar    |             |            | 3              |              |                     |
| 232    | A    | TU2:L<br>2 | Faunal     | Dentition     | Ecological    | Fauna         | Tooth         | Incomplete | <i>Ovis/Capra</i>        |             |             |            | 4              |              | Premolar and molar  |
| 233    | A    | TU2:L<br>2 | Faunal     | Dentition     | Ecological    | Fauna         | Tooth         | Incomplete | <i>Sus Scrofa</i>        |             |             |            | 1              |              | Canine and premolar |

Table 7: Location 1 (AfHh-928) Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2        | Function 1        | Function 2 | Object                 | Fragment   | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note                                  |
|--------|------|-------|------------|-------------------|-------------------|------------|------------------------|------------|-------------|-------------|-------------|------------|----------------|---------------------------------------|
| 1      | 1    | 1     | Stone      | chert: Bois Blanc | Tools & Equipment | Tool       | Projectile Point       | Incomplete |             |             | Chipped     |            | 1              | LA Innes; 34.01mm x 21.88mm x 8.12 mm |
| 2      | 1    | 2     | Stone      | chert: Onondaga   | Tools & Equipment | Debitage   | Primary Thinning Flake | Complete   |             |             | Chipped     |            | 1              |                                       |

Table 8: Location 2 Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2          | Function 1        | Function 2 | Object                 | Fragment | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note |
|--------|------|-------|------------|---------------------|-------------------|------------|------------------------|----------|-------------|-------------|-------------|------------|----------------|------|
| 1      | 2    | 1     | Stone      | chert: Onondaga     | Tools & Equipment | Debitage   | Primary Thinning Flake | Complete |             |             | Chipped     |            | 1              |      |
| 2      | 2    | 2     | Stone      | chert: Kettle Point | Tools & Equipment | Debitage   | Primary Thinning Flake | Proximal |             |             | Chipped     |            | 1              |      |
| 3      | 2    | 3     | Stone      | chert: Onondaga     | Tools & Equipment | Debitage   | Biface Thinning Flake  | Complete |             |             | Chipped     |            | 1              |      |
| 4      | 2    | 4     | Stone      | chert: Selkirk      | Tools & Equipment | Debitage   | Biface Thinning Flake  | Complete |             |             | Chipped     |            | 1              |      |

Table 9: Location 3 Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2      | Function 1        | Function 2 | Object                 | Fragment | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note |
|--------|------|-------|------------|-----------------|-------------------|------------|------------------------|----------|-------------|-------------|-------------|------------|----------------|------|
| 1      | 3    | 1     | Stone      | chert: Onondaga | Tools & Equipment | Debitage   | Primary Thinning Flake | Complete |             |             | Chipped     |            | 1              |      |

Table 10: Location 4 (AfHh-926) Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2          | Function 1        | Function 2 | Object                 | Fragment   | Attribute 1    | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note                                            |
|--------|------|-------|------------|---------------------|-------------------|------------|------------------------|------------|----------------|-------------|-------------|------------|----------------|-------------------------------------------------|
| 1      | 4    | 1     | Stone      | chert: Kettle Point | Tools & Equipment | Tool       | Projectile Point       | Incomplete | Corner Notched |             | Chipped     |            | 1              | LA Crawford Knoll; 33.66 mm x 17.9 mm x 6.25 mm |
| 2      | 4    | 2     | Stone      | chert: Kettle Point | Tools & Equipment | Debitage   | Primary Thinning Flake | Complete   |                |             | Chipped     |            | 1              |                                                 |
| 3      | 4    | 3     | Stone      | chert: Onondaga     | Tools & Equipment | Debitage   | Biface Thinning Flake  | Complete   |                |             | Chipped     |            | 1              |                                                 |
| 4      | 4    | 4     | Stone      | chert: Kettle Point | Tools & Equipment | Debitage   | Biface Thinning Flake  | Complete   |                |             | Chipped     |            | 1              |                                                 |
| 5      | 4    | 5     | Stone      | chert: Onondaga     | Tools & Equipment | Debitage   | Biface Thinning Flake  | Complete   |                |             | Chipped     |            | 1              |                                                 |
| 6      | 4    | 6     | Stone      | chert: Kettle Point | Tools & Equipment | Debitage   | Scraper                | Incomplete | Thumbnail      |             | Chipped     |            | 1              | 28.22 mm x 18.48 mm x 8.4 mm                    |

Table 11: Location 5 Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2      | Function 1        | Function 2 | Object                  | Fragment | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note |
|--------|------|-------|------------|-----------------|-------------------|------------|-------------------------|----------|-------------|-------------|-------------|------------|----------------|------|
| 1      | 5    | 1     | Stone      | chert: Onondaga | Tools & Equipment | Debitage   | Primary Reduction Flake | Complete |             |             | Chipped     |            | 1              |      |

Table 12: Location 6 Artifact Catalogue

| Cat. # | Loc. | CSP # | Material 1 | Material 2        | Function 1        | Function 2 | Object                | Fragment | Attribute 1 | Attribute 2 | Manufacture | Alteration | # of Artifacts | Note |
|--------|------|-------|------------|-------------------|-------------------|------------|-----------------------|----------|-------------|-------------|-------------|------------|----------------|------|
| 1      | 6    | 1     | Stone      | chert: Bois Blanc | Tools & Equipment | Debitage   | Biface Thinning Flake | Complete |             |             | Chipped     |            | 1              |      |



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**Ministry of Tourism, Culture and Sport**

Archaeology Programs Unit  
Programs and Services Branch  
Culture Division  
401 Bay Street, Suite 1700  
Toronto ON M7A 0A7  
Tél.: (416) 314-2120  
Email: Andrea.Williams@ontario.ca

**Ministère du Tourisme, de la Culture et du Sport**

Unité des programmes d'archéologie  
Direction des programmes et des services  
Division de culture  
401, rue Bay, bureau 1700  
Toronto ON M7A 0A7  
Tél. : (416) 314-2120  
Email: Andrea.Williams@ontario.ca



Nov 2, 2018

Michael Teal (P364)  
Golder Associates Ltd.  
1 - 309 Exeter London ON N6L 1C1

**RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1-2 Archaeological Assessment W12A Landfill Site, Cells 9 and 10 Part of Lot 20, Concession 6 Former Township of Westminster, Middlesex County, Now City of London, Ontario", Dated Sep 24, 2018, Filed with MTCS Toronto Office on Sep 27, 2018, MTCS Project Information Form Number P364-0125-2018, MTCS File Number 0008522**

Dear Mr. Teal:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.<sup>1</sup> This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Maps 8A and 8B and Tiles 1 and 2 of the above titled report and recommends the following:

Based on the results of the Stage 1 background study and Stage 2 property assessment, Location 4 (White Oak 1; AfHh-926) is considered to have cultural heritage value or interest, while Location A (AfHh-929), Location 1 (AfHh-928) and Locations 2, 3, 5, and 6 are not considered to have cultural heritage value or interest. These conclusions provide the basis for the following recommendations:

1) Location 4 (White Oak 1; AfHh-926) should be subject to Stage 3 site-specific assessment prior to any impacts. As this site is a small pre-contact Indigenous site where it is not clearly evident that Stage 4 mitigation of impacts will be required, the Stage 3 assessment should follow Standards 1 and 2 of Table 3.1 in the MTCS's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011:51). As a controlled surface pick-up (CSP) that met all requirements outlined in Section 3.2.1 of the Standards and Guidelines for Consultant Archaeologists was conducted at all locations as part of the Stage 2 Assessment, no further CSP work is required for Location 4 (White Oak 1; AfHh-926) prior to hand excavation.



2) All Stage 3 test units at Location 4 (White Oak 1; AfHh-926) should be excavated into the first 5 cm of subsoil, or until a cultural feature is uncovered. Any features identified should be recorded through photographs and plan drawings and then be covered with geotextile fabric prior to backfilling. All soil excavated from the test units should be screened through 6 mm hardware cloth to facilitate the recovery of artifacts that may be present. All recovered artifacts should be recorded, bagged, and catalogued according to their provenience.

3) Indigenous communities should be engaged when assessing the cultural heritage value or interest of Location 4 (White Oak 1; AfHh-926) and when formulating a Stage 4 strategy to mitigate impacts, if required.

4) Location A (AfHh-929), Location 1 (AfHh-928), and Locations 2, 3, 5, and 6 have been sufficiently assessed and documented, and no further archaeological assessment is required for these locations. The Ontario Ministry of Tourism, Culture and Sport is asked to review the results and recommendations presented herein, accept this report into the Provincial Register of archaeological reports and issue a standard letter of compliance with the Ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licencing.

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

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

Sincerely,

Andrea Williams  
Archaeology Review Officer

cc. Archaeology Licensing Officer  
Andre Joseph, City of London  
Michael Losee, City of London

<sup>1</sup>In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.



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