

**Stage 4 Mitigation of Impacts  
P1 (AgGt-313)  
Clare Avenue Lands, Welland**

Part of Lot 236,  
Geographic Township of Thorold,  
Historical County of Welland,  
now Regional Municipality of Niagara, Ontario

**Submitted to:**

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Thorold, Ontario, L2V 4Y6

and

Ontario's Ministry of Citizenship and Multiculturalism

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CP Number: 2022-208

**ORIGINAL REPORT**

January 26, 2024

## Executive Summary

**Detritus Consulting Ltd. ('Detritus') was retained by Mountainview Homes ('the Proponent') to conduct a Stage 4 mitigation of impacts for archaeological site P1 (AgGt-313), located on part of Lot 236 in the Geographic Township of Thorold within the historical County of Welland, now Regional Municipality of Niagara, Ontario (Figure 1). This investigation was conducted in advance of a proposed subdivision development on the southern portion of a property located on Clare Avenue in Welland (Figure 5).**

The assessment **was triggered by the Provincial Policy Statement ('PPS') that is informed by the Planning Act** (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (Government of Ontario 1990b). **According to Section 2.6.2 of the PPS, "development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved."** To meet the conditions of this legislation, a Stage 4 investigation was conducted at P1 (AgGt-313) under archaeological consulting license P389 issued to Dr. Walter McCall by the Ministry of Citizenship and Multiculturalism ('MCM') **and adheres to the archaeological license report requirements under subsection 65 (1) of the Ontario Heritage Act** (Government of Ontario 1990b) and the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists* ('Standards and Guidelines'; Government of Ontario, 2011a).

P1 (AgGt-313) was identified during a Stage 1-2 assessment conducted by Detritus in July 2022 (Detritus 2023; P462-0152-2022). **The assessment area (identified as the 'Study Area') was a rectangular parcel measuring approximately 4.54 hectares ('ha'), occupying the agricultural field in the southern portion of the development property. The Study Area is bound to the west by the Steve Bauer Trail; to the east by a property comprising a woodlot designated an Environmental Conservation Area ('ECA'); to the north and south by residential properties on Quaker Road (647 to 673 Quaker Road) and Briarsdale Crescent (91 to 131 Briarsdale Crescent) respectively; and at the northeast corner by Nouvel Horizon Elementary School, located at 621 Quaker Road (Figure 3).**

The Study Area was part of a much larger parcel that was subject to a Stage 1 assessment, **conducted by Archaeological Services Inc. ('ASI') in 2018 (ASI 2018; P449-0207-2018). ASI's** Stage 1 investigation area measured 189ha and was generally bound by Steve Bauer Trail to the west; various commercial and industrial lots fronting Niagara Street to the east; residential developments, agricultural land, and woodlot to the north; and the campus of Niagara College to the south (Figure 3). Based on the results of **ASI's assessment, approximately 99% (187.4ha) of** the Stage 1 assessment area exhibited archaeological potential. This potential extended across the entire current Study Area. ASI recommended that any future development within the Study Area be preceded by a Stage 2 field assessment.

**Similar to ASI's Stage 1 assessment (ASI 2018), the Stage 1 background research conducted by** Detritus indicated that the Study Area exhibited moderate to high potential for the identification and recovery of archaeological resources. As such, a Stage 2 field assessment was recommended for all the agricultural land within the Study Area.

The agricultural land was accessible for ploughing and was assessed using a typical pedestrian survey at five-metre ('m') intervals. **This investigation resulted in the identification and** documentation of a single pre-contact Aboriginal site, P1 (AgGt-313), and three pre-contact Aboriginal findspots, Findspot 1, Findspot 2 (AgGt-323), and Findspot 3 (AgGt-324) (Tile 3 of the Supplementary Documentation).

The Stage 2 assessment of P1 (AgGt-313) resulted in the documentation of 14 pre-contact Aboriginal artifacts from 14 findspot locations scattered over an area roughly 14m by 7m in the southeastern quadrant of the agricultural field, approximately 16m from the eastern edge of the Study Area. All of the artifacts recovered from the site were manufactured from Onondaga chert and were identified as pieces of chipping detritus. Morphological analysis of the chert flakes suggests late-stage reduction occurred at the site for the production and maintenance of formal tools and projectile points. Based on the results of the Stage 2 investigation, P1 (AgGt-313) was

interpreted as a small activity area occupied during the pre-contact period and characterised by late-stage lithic reduction activities. Given the presence of at least ten non-diagnostic pre-contact Aboriginal artifacts in a 10m by 10m pedestrian survey area within an area on or west of the Niagara Escarpment, P1 (AgGt-313) met the criteria for a Stage 3 Site Specific Assessment, as per Section 2.2, Standard 1ai(3) of the *Standards and Guidelines* (Government of Ontario, 2011a) (Government of Ontario, 2011a) **and retained cultural heritage value or interest ('CHVI')**. P1 (AgGt-313) was recommended for a Stage 3 site specific assessment.

The Stage 3 assessment of P1 (AgGt-313) resulted in the recovery of 68 primarily Onondaga chert **flakes from the controlled surface collection ('CSP') and the hand excavation of 11 1m test units** across the extent of the Stage 2 site limits. Unit counts ranged from 0 to 19 with six of the units being sterile.

The morphological analysis of the flake assemblage suggests that late-stage lithic reduction occurred at the site for the production of blanks and bifaces. These results build upon those of the Stage 2 assessment, which identified nine secondary flakes, two thinning flakes, and three pieces of shatter. No diagnostic artifacts, formal tools, fire-cracked rock, or Aboriginal pottery were recovered during the Stage 3 assessment. A single stain was observed in Unit 205E, 495N. The possible feature was covered with geotextile fabric and the unit was backfilled with soil.

Based on the available evidence, P1 (AgGt-313) has been interpreted as a small activity area occupied briefly by Aboriginal people prior to the arrival of European settlers. Given the results of the Stage 3 assessment, wherein three test units yielded ten or more lithic artifacts, P1 (AgGt-313) fulfills the criteria for a Stage 4 archaeological investigation; therefore, a Stage 4 archaeological mitigation of impacts to P1 (AgGt-313) was recommended.

In consultation with the client, avoidance and protection at the site was not a viable option. As such, it was recommended that the Stage 4 mitigation at P1 (AgGt-313) consist of a hand excavated block of one-metre units of all positive one-metre square units identified during the Stage 3 assessment.

The Stage 4 mitigation consisted of hand excavation and was conducted between June 1 and July 19, 2023. The Stage 4 mitigation of P1 (AgGt-313) resulted in the hand excavation of 131 one-metre square units. This investigation resulted in two excavation blocks. The large, continuous excavation block to the southwest measured 16m north to south by 11 m east to west and a smaller block in the northwest measured 3m north to south by 3 m east to west. The two blocks were separated by a distance of 1m to each other (Figure 4).

Overall, the Stage 4 excavation produced 1653 pre-contact Aboriginal artifacts. The vast majority of artifacts were chipping detritus (98.91%; n=1635) followed by six biface fragments, six preforms, four cores, one projectile point, and one blank. The artifacts recovered from the site were manufactured from Onondaga (99.82%; n=1650) and Bois Blanc (0.18%; n=3) chert. According to the morphological analysis, the flake assemblage from P1 (AgGt-313) featured primarily fragments (51.35%; n=839), followed by tool thinning flakes (39.23%; n=641), as well as primary, secondary flakes, and shatter. This variety of flake types supplements the Stage 2 and 3 results and indicates that all stages of lithic reduction activities were undertaken at the site, including early-stage reduction from the creation of blanks and bifaces, and focused on late-stage reduction for the production and maintenance of formal tools and projectile points.

The Stage 4 mitigation of P1 (AgGt-313) is now complete. The CHVI of P1 (AgGt-313) has been fully documented and the information will be preserved for future study. P1 (AgGt-313) has no further CHVI, as per Section 7.11.4 Standard 1 of the *Standards and Guidelines* (Government of Ontario 2011).

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

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## 1.0 Project Context

### 1.1 Development Context

Detritus Consulting Ltd. ('Detritus') was retained by Mountainview Homes ('the Proponent') to conduct a Stage 4 mitigation of impacts for archaeological site P1 (AgGt-313), located on part of Lot 236 in the Geographic Township of Thorold within the historical County of Welland, now Regional Municipality of Niagara, Ontario (Figure 1). This investigation was conducted in advance of a proposed subdivision development on the southern portion of a property located on Clare Avenue in Welland (Figure 5).

The assessment was triggered by the Provincial Policy Statement ('PPS') that is informed by the *Planning Act* (Government of Ontario 1990a), which states that decisions affecting planning matters must be consistent with the policies outlined in the larger *Ontario Heritage Act* (Government of Ontario 1990b). According to Section 2.6.2 of the PPS, "development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved." To meet the conditions of this legislation, a Stage 4 investigation was conducted at P1 (AgGt-313) under archaeological consulting license P389 issued to Dr. Walter McCall by the Ministry of Citizenship and Multiculturalism ('MCM') and adheres to the archaeological license report requirements under subsection 65 (1) of the *Ontario Heritage Act* (Government of Ontario 1990b) and the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists* ('Standards and Guidelines'; Government of Ontario, 2011a).

The purpose of a Stage 4 mitigation of impacts by hand excavation is to document an archaeological site through its controlled removal in order to address archaeological concerns under land use planning and development processes. In compliance with the *Standards and Guidelines* (Government of Ontario, 2011a), the objectives of the Stage 4 investigation at P1 (AgGt-313) are:

- To document the archaeological context, cultural features and artifacts for all parts of the site;
- to document the removal of the archaeological site; and
- to preserve the information recovered about the archaeological site for future study.

The licensee received permission from the Proponent to enter the land and conduct all required archaeological fieldwork activities at P1 (AgGt-313), including the recovery of artifacts.

### 1.2 Historical Context

#### 1.2.1 Post-Contact Aboriginal Resources

Prior to the arrival of European settlers, much of the central and southern Ontario was occupied by Iroquoian speaking linguistic groups that had united to form confederacies, including the Huron-Wendat, the Neutral (or Attawandaran), and the Petun in Ontario, as well as the Five Nations Iroquois Confederacy in Upper New York State (Warrick, 2013; Birch, 2010). Of these groups, the Huron-Wendat established themselves to the east of the Niagara escarpment and the Neutral, to the west (Warrick, 2000).

Throughout the middle of the 17<sup>th</sup> century, the Iroquois Confederacy sought to expand upon their territory and to monopolize the fur trade between the European markets and the tribes of the western Great Lakes region. A series of bloody conflicts followed known as the Beaver Wars or the French and Iroquois Wars, contested between the Iroquois Confederacy and the Algonkian speaking communities of the Great Lakes region. Many communities were destroyed including the Huron, Neutral, Susquehannock and Shawnee leaving the Iroquois as the dominant group in the region. By 1653 after repeated attacks, the Niagara peninsula and most of Southern Ontario had been vacated (Heindereich, 1990).

At this same time, the Anishinaabeg Nation, an Algonkian-speaking community situated inland from the northern shore of Lake Huron, began to challenge the Haudenosaunee for dominance in the Lake Huron and Georgian Bay region in order to advance their own role in the fur trade (Gibson, 2006). The Algonkian-speaking groups that settled in the area bound by Lake Ontario, Lake Erie, and Lake Huron were referred to by the English as the Chippewas or Ojibwas. By 1680, the Ojibwa began expanding into the evacuated Huron-Wendat territory, and eventually into Southern Ontario. By 1701, the Haudenosaunee had been driven out of Ontario completely and were replaced by the Ojibwa (Gibson, 2006; Schmalz, 1991).

The late 17<sup>th</sup> and early 18<sup>th</sup> centuries also mark the arrival of an Ojibwa band known as the Mississaugas into Southern Ontario and, in particular, the watersheds of the lower Great Lakes. **‘The Mississaugas’ is the name that the Jesuits had used in 1840 for the Algonquin** community living near the Mississagi River on the northwestern shore of Lake Huron (Smith, 2022). The oral traditions of the Mississaugas, as recounted by Chief Robert Paudash and recorded in 1904, suggest that the Mississaugas defeated the Mohawk Nation, who retreated to their homeland south of Lake Ontario. Following this conflict, a peace treaty was negotiated between the two groups (Praxis Research Associates, n.d.).

From the beginning of the 18<sup>th</sup> century until the end of the Seven Years’ War in 1763, the Ojibwa nation, including the Mississaugas, experienced a golden age in trade holding no alliance with either the French or the British (Schmalz, 1991). At the end of the 17<sup>th</sup> century, the Mississaugas’ settled permanently in Southern Ontario (Praxis Research Associates, n.d.). Around this same time, in 1722, the Five Nation Iroquois Confederacy adopted the Tuscarora in New York becoming the Six Nations (Pendergast, 1995).

The Study Area first entered the Euro-Canadian historical record on December 7<sup>th</sup>, 1792 as part of **Treaty No. 3, which included land acquired in the ‘Between the Lakes Purchase’ dating to May 22, 1784**. According to the terms of the treaty, the Mississaugas ceded to the Crown approximately 3,000,000 acres of land between Lake Huron, Lake Erie, and Lake Ontario in return for trade goods valued at £1180.

The limits of the Treaty 3 lands are documented as comprising,

*Lincoln County excepting Niagara Township; Saltfleet, Binbrook, Barton, Glanford and Ancaster Townships, in Wentworth County; Brantford, Onondaga, Tusc[a]r[o]ra, Oakland and Burford Townships in Brant County; East and West Oxford, North and South Norwich, and Dereham Townships in Oxford County; North Dorchester Township in Middlesex County; South Dorchester, Malahide and Bayham Township in Elgin County; all Norfolk and Haldimand Counties; Pelham, Wainfleet, Thorold, Cumberland and Humberstone Townships in Welland County.*

Morris, 1943, pp. 17-8

One of the stated objectives of the Between the Lakes Purchase was **“to procure for that part of the Six Nation Indians coming into Canada a permanent abode”** (Morris, 1943, p. 17). Shortly after the transaction had been finalised in May of 1784, Sir Frederick Haldimand, the Governor of Québec, made preparations to grant a portion of land to those Six Nations who remained loyal to the Crown during the American War of Independence. More specifically, Haldimand arranged for the purchase of approximately 550,000 acres of land adjacent to the Treaty 3 limits from the Mississaugas. This tract of land, referred to as either the Haldimand Tract or the 1795 Crown Grant to the Six Nations, was provided for in the Haldimand Proclamation of October 25<sup>th</sup>, 1784 and was intended to extend a distance of six miles on each side of the Grand River from mouth to source (Weaver, 1978). By the end of 1784, representatives from each constituent nation of the Six Nations, as well as other allies, relocated to the Haldimand Tract with Joseph Brant (Weaver, 1978; Tanner, 1987).

Throughout southern Ontario, the size and nature of the pre-contact settlements and the subsequent spread and distribution of Aboriginal material culture began to shift with the establishment of European settlers. By 1834 it was accepted by the Crown that losses of portions of the Haldimand Tract to Euro-Canadian settlers were too numerous for all lands to be returned.



Lands in the Lower Grand River area were surrendered by the Six Nations to the British Government in 1832, at which point most Six Nations people moved into Tuscarora Township in Brant County and a narrow portion of Oneida Township (Page, 1879; Weaver, 1978; Tanner, 1987). Following the population decline and the surrender of most of their lands along the Credit River, the Mississaugas were given 6000 acres of land on the Six Nations Reserve, establishing the Mississaugas of New Credit First Nation, now the Mississaugas of the Credit First Nation (**MCFN**), in 1847 (Smith, 2022)

Despite the encroachment of European settlers on previously established Aboriginal territories, **“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, p. 114). As Ferris observes, despite the arrival of a competing culture, First Nations communities throughout Southern Ontario have left behind archaeologically significant resources that demonstrate continuity with their pre-contact predecessors, even if they have not been recorded extensively in historical Euro-Canadian documentation.

### 1.2.2 Euro-Canadian Resources

P1 (AgGt-313) is located in the geographic Township of Thorold and the historical County of Welland, now the Regional Municipality of Niagara, Ontario (Figure 1).

**In 1763, the Treaty of Paris brought an end to the Seven Years’ War, contested between the British, the French, and their respective allies.** Under the Royal Proclamation of 1763, the large stretch of land from Labrador in the east, moving southeast through the Saint Lawrence River Valley to the Great Lakes and on to the confluence of the Ohio and Mississippi Rivers became the British Province of Québec (Niagara Historical Society and Museum, 2008).

On July 24, 1788, Sir Guy Carleton, the Governor-General of British North America, divided the Province of Québec into the administrative districts of Hesse, Nassau, Mecklenburg, and Lunenburg (Archives of Ontario, 2012-2015). Further change came in December 1791 when the former Province of Québec was rearranged into Upper Canada and Lower Canada under the provisions of the Constitutional Act. Colonel John Graves Simcoe was appointed as Lieutenant-Governor of Upper Canada; he spearheaded several initiatives to populate the province including the establishment of shoreline communities with effective transportation links between them (Coyne, 1895).

In July 1792, Simcoe divided Upper Canada into 19 counties stretching from Essex in the west to Glengarry in the east. Each new county was named after a county in England or Scotland; the constituent townships were then given the names of the corresponding townships from each original British county (Powell & Coffman, 1956).

Later that year, the four districts originally established in 1788 were renamed the Western, Home, Midland, and Eastern Districts. As population levels in Upper Canada increased, smaller and more manageable administrative bodies were needed resulting in the establishment of many new counties and townships. As part of this realignment, the boundaries of the Home and Western Districts were shifted and the London and Niagara Districts were established. Under this new territorial arrangement, Thorold Township became part of the Niagara District, comprising Lincoln County, Haldimand County and other lands (Archives of Ontario, 2012-2015).

In 1845, after years of increasing settlement that began after the War of 1812, the southern portion of Lincoln County was severed to form Welland County (the two counties would be amalgamated once again in 1970 to form the Regional Municipality of Niagara). The county takes its name from the Welland River, which runs through the centre of the county and was itself named by Simcoe after a stream in Lincolnshire, England. This county was home to the Niagara Falls as well as many of the earliest settled townships in Upper Canada (Middleton & Landon, 1927).

Thorold Township is one **of these early townships. It was settled by Butler’s Rangers** and originally called Township Number 9 but was officially formed in 1788 to provide land for United



Empire Loyalist refugees and disbanded soldiers following the American Revolutionary War. It was named in honour of Sir John Thorold, Member of Parliament in the government of Upper Canada (Thompson, 1898). The early settlements of the Township of Thorold included Beaverdams, St. Johns, and Decew Falls. These fell into decline after the opening of the first Welland Canal when the canal towns of Thorold, Port Robinson, and Allanburg began to prosper (Jackson, 1997).

**Port Robinson's history is linked to that of the Welland Canal. When the First Welland Canal was opened in 1829, Port Robinson was the southern terminus. The small port was named for John Beverley Robinson, Chief Justice of Upper Canada. Much of the early rapid and growth of the village can be attributed to canal construction and specifically the work that went on to pass the canal through the 'Deep Cut', a 20m high hill between Port Robinson and Allanburg that had to be cut through for the canal to continue. Many of the labourers used for the project were based in Port Robinson while work continued from 1824-28 on this section of canal. Between 1843 and 1851 during construction of the Second Canal a company of Negro soldiers were encamped in Port Robinson to keep order among the frequently feuding canal workers. The soldiers' mess was located beside St. Paul's Anglican Church in Port Robinson** (Detritus, 2002). Port Robinson went into decline after Welland became the administrative centre for the County and particularly after 1880 when shipyards were closed (Archaeological and Historic Sites Board of Ontario, 2019).

Within Lincoln County, the *Illustrated Historical Atlas of the Counties of Lincoln and Welland* ('*Historical Atlas*'), **demonstrates the extent to which Thorold Township had been settled by 1876** (Page, 1876; Figure 2). Landowners are listed for every lot within the township, many of which had been subdivided multiple times into smaller parcels to accommodate an increasing population throughout the late 19th century. Structures and orchards are prevalent throughout the township, almost all of which front early roads and water

P1 (AgGt-313) occupies a part of Lot 236 in Thorold Township. According to the *Historical Atlas*, by 1876, the lot was divided equally north to south (Page, 1876). The western half of the lot, in which P1 (AgGt-313) lies, was owned by J.H.E. Page. The eastern half was owned by G.A. Both lots show a building and orchard fronting the road at the north end of the lot, which is now known as Quaker Road. The road at the south end of Lot 236 is also now a major road, Woodlawn Road, and the road at the west edge of the lot is now Clare Avenue. Lot 236 is near to the southwestern corner of Thorold Township, and the Welland River is shown running north to south to the east of the Study Area. At some distance the early communities of Port Robinson and Font Hill are visible to the east and north of the Study Area, and at a greater distance, beyond the Welland River, is the Welland Railroad.

Although significant and detailed landowner information is available on the current *Historical Atlas*, it should be recognized that historical county atlases were funded by subscriptions fees and were produced primarily to identify factories, offices, residences, and landholdings of subscribers. Landowners who did not subscribe were not always listed on the maps (Caston, 1997). Moreover, associated structures were not necessarily depicted or placed accurately (Gentilcore & Head, 1984).

### 1.2.4 Recent Reports

Three archaeological reports (Table 1) have been written for archaeological work pertaining to P1 (AgGt-313). The results of these investigations will be discussed in more detail in Section 1.3.4 below.

**Table 1: Archaeological Assessment Reports for P1 (AgGt-313)**

Year	Title	Author	PIF Numbers
2018	<i>Stage 1 Archaeological Assessment of the Northwest Welland Secondary Plan, Part of Lots 174, 175, 176, 226, 227, 228, 233, 234, 235 and 236, Geographic Township of Thorold, Welland County, City of Welland, Regional Municipality of Niagara.</i>	ASI	P449-0207-2018

Year	Title	Author	PIF Numbers
2023a	Stage 1-2 Archaeological Assessment Clare Avenue Lands, Welland Part of Lot 236, Geographic Township of Thorold, Historical County of Welland, now Regional Municipality of Niagara, Ontario	Detritus	P462-0152-2022
2023b	Stage 3 Archaeological Assessment Clare Avenue Lands, Welland Part of Lot 236, Geographic Township of Thorold, Historical County of Welland, now Regional Municipality of Niagara, Ontario	Detritus	P389-0622-2022

## 1.3 Archaeological Context

### 1.3.1 Property Description and Physical Setting

As was noted above, P1 (AgGt-313) was documented during a Stage 2 assessment of the Study Area, a rectangular parcel of land measuring approximately 4.54 hectares ('ha'), occupying the agricultural field in the southern portion of the development property on Clare Avenue (Figure 3). The Study Area is bound to the west by the Steve Bauer Trail; to the east by a property comprising a woodlot designated an Environmental Conservation Area ('ECA'); to the north and south by residential properties on Quaker Road (647 to 673 Quaker Road) and Briarsdale Crescent (91 to 131 Briarsdale Crescent) respectively; and at the northeast corner by Nouvel Horizon Elementary School, located at 621 Quaker Road (Figure 3). P1 (AgGt-313) was identified in the southeastern quadrant of the Study Area.

The majority of the region surrounding P1 (AgGt-313) has been subject to European-style agricultural practices for over 100 years, having been settled by Euro-Canadian farmers by the early 19<sup>th</sup> century. Much of the region continues to be used for agricultural purposes today.

P1 (AgGt-313) is situated within the Haldimand Clay Plain. According to Chapman and Putnam,

*...although it was all submerged in Lake Warren, the till is not all buried by stratified clay; it comes to the surface generally in low morainic ridges in the north. In fact, there is in that area a confused intermixture of stratified clay and till. The northern part has more relief than the southern part where the typically level lake plains occur.*

Chapman and Putnam 1984: 156

Haldimand clay is slowly permeable, imperfectly drained with medium to high water-holding capacities. Surface runoff is usually rapid, but water retention of the clayey soils can cause it to be droughty during dry periods (Kingston and Presant 1989). The soil is suitable for corn and soy beans in rotation with cereal grains as well as alfalfa and clover (Huffman and Dumanski 1986).

The Niagara region as a whole is located within the Deciduous Forest Region of Canada, and contains tree species which are typical of the more northern Great Lakes-St. Lawrence Biotic zone, such as beech, sugar maple, white elm, basswood, white oak and butternut (MacDonald & Cooper, 1997). During pre-contact and early contact times, the land in the vicinity of the Study Area comprised a mixture of hardwood trees such as sugar maple, beech, oak and cherry. This pattern of forest cover is characteristic of areas of clay soil within the Maple-Hemlock Section of the Great Lakes-St. Lawrence Forest Province-Cool Temperate Division (McAndrews & Manville, 1987). In the early 19<sup>th</sup> century, Euro-Canadian settlers began to clear the forests for agricultural purposes.

Three individual sources of potable water lie to the north, east, and west of the Study Area in the form of tributaries of the Welland Canal, each at approximately 828 metres ('m'), 675m, and 1085m from P1 (AgGt-313) respectively.

### 1.3.2 Pre-Contact Aboriginal Land Use

P1 (AgGt-313) is located within a portion of Southern Ontario that was occupied by people as far back as 11,000 years ago as the glaciers retreated. For the majority of this time, people were practicing hunter gatherer lifestyles with a gradual move towards more extensive farming

practices. Table 1 on the following page provides a general outline of the cultural chronology of Thorold Township (Ellis and Ferris 1990).

**Table 2: Cultural Chronology for the Thorold Township**

Time Period	Cultural Period	Comments
9500 – 7000 BC	Paleo Indian	first human occupation hunters of caribou and other extinct Pleistocene game nomadic, small band society
7500 - 1000 BC	Archaic	ceremonial burials increasing trade network Hunter gatherers
1000 - 400 BC	Early Woodland	large and small camps spring congregation/fall dispersal introduction of pottery
400 BC – AD 800	Middle Woodland	kinship based political system incipient horticulture long distance trade network
AD 800 - 1300	Early Iroquoian (Late Woodland)	limited agriculture developing hamlets and villages
AD 1300 - 1400	Middle Iroquoian (Late Woodland)	shift to agriculture complete increasing political complexity large palisaded villages
AD 1400 - 1650	Late Iroquoian	regional warfare and political/tribal alliances destruction of Huron and Neutral

### 1.3.3 Previous Identified Archaeological Work

In order to compile an inventory of known archaeological resources in the vicinity of the Study Area, Detritus consulted the ASDB. The ASDB, which is maintained by the MCM (Government of Ontario, n.d.), contains information concerning archaeological sites that have been registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks **based on latitude and longitude. A Borden Block is approximately 13 kilometres ('km') east to west and approximately 18.5km north to south.** Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The Study Area lies within block AgGt.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990c). 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. The MCM 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.

According to the ASDB, nine sites have been registered within 1km of P1 (AgGt-313). These include seven pre-contact Aboriginal sites dating to the Early Woodland and Archaic periods and two post-contact Euro-Canadian sites. For further information see Table 2, below.

**Table 3: Registered Archaeological Sites within 1km**

Borden Number	Site Name	Time Period	Affinity	Site Type	Current Development Review Status
AgGt-57		Pre-Contact	Aboriginal	findspot	
AgGt-45		Woodland, Early	Aboriginal	findspot	
AgGt-44	Milburn	Archaic, Late	Aboriginal	camp/campsite	
AgGt-36	Quaker Park	Archaic, Early	Aboriginal	camp/campsite	
AgGt-287		Archaic, Late	Aboriginal	hunting loss	No Further CHVI
AgGt-286		Archaic, Middle	Aboriginal	hunting loss	No Further CHVI

Borden Number	Site Name	Time Period	Affinity	Site Type	Current Development Review Status
AgGt-285		Pre-Contact	Aboriginal	findspot	No Further CHVI
AgGt-284		Post-Contact	Euro-Canadian	farmstead	Further CHVI
AgGt-269		Post-Contact	Euro-Canadian	residential	No Further CHVI

The Study Area in which P1 (AgGt-313) was documented was part of a much larger parcel that was **subject to a Stage 1 assessment, conducted by Archaeological Services Inc. (‘ASI’) in 2018 (ASI 2018; P449-0207-2018). ASI’s Stage 1 investigation area measured 189ha** and was generally bound by Steve Bauer Trail to the west; various commercial and industrial lots fronting Niagara Street to the east; residential developments, agricultural land, and woodlot to the north; and the campus of Niagara College to the south (Figure 3). **Based on the results of ASI’s assessment,** approximately 99% (187.4ha) of the Stage 1 assessment area exhibited archaeological potential. This potential extended across the entire current Study Area. ASI recommended that any future development within the Study Area be preceded by a Stage 2 field assessment.

**To the best of Detritus’ knowledge, no additional assessments have been conducted on adjacent properties, nor have sites been registered within 50m of the Study Area.**

### 1.3.4 Summary of Previous Investigations

As mentioned above, P1 (AgGt-313) and the Study Area are located within a large parcel that was subject to a Stage 1 investigation by ASI in 2018 (ASI 2018). ASI identified that approximately 99% of the Stage 1 assessment area exhibited archaeological potential.

In July 2022 Detritus conducted a Stage 1-2 assessment for a small area of the previous Stage 1 assessment area which resulted in the identification of P1 (AgGt-313) (Detritus 2023a; P462-0152-2022).

The Stage 1 background research indicated that the Study Area exhibited moderate to high potential for the identification and recovery of archaeological resources and a typical Stage 2 pedestrian survey was recommended.

The Stage 2 investigation resulted in the identification and documentation of a single pre-contact Aboriginal site, P1 (AgGt-313), and three pre-contact Aboriginal findspots, Findspot 1, Findspot 2 (AgGt-323), and Findspot 3 (AgGt-324) (Tile 3 of the Supplementary Documentation).

The Stage 2 assessment of P1 (AgGt-313) resulted in the documentation of 14 pre-contact Aboriginal artifacts from 14 findspot locations scattered an area roughly 14m by 7m in the southeastern quadrant of the agricultural field approximately 16m from the eastern edge of the Study Area. All of the artifacts recovered from the site were manufactured from Onondaga chert and were identified as pieces of chipping detritus. The morphological analysis of the chert flakes suggests late-stage reduction occurred at the site for the production and maintenance of formal tools and projectile points. Based on the results of the Stage 2 investigation, P1 (AgGt-313) was interpreted as a small activity area occupied during the pre-contact period and characterised by late-stage lithic reduction activities. Given the presence of at least ten non-diagnostic pre-contact Aboriginal artifacts in a 10m by 10m pedestrian survey area within an area on or west of the Niagara Escarpment, P1 (AgGt-313) met the criteria for a Stage 3 Site Specific Assessment, as per Section 2.2, Standard 1a(3) of the *Standards and Guidelines* (Government of Ontario, 2011a) and retained CHVI and was recommended for a Stage 3 site specific assessment.

The Stage 2 assessment of Findspot 1 resulted in the documentation of a single pre-contact Aboriginal artifact in the form of a fragmentary projectile point manufactured from Flint Ridge chert recovered during the pedestrian survey of the agricultural land in the southeastern quadrant of the Study Area, approximately 40m to the northwest of P1 (AgGt-313). The CHVI of Findspot 1 was judged to be sufficiently documented; therefore, no further archaeological assessment was recommended.

The Stage 2 assessment of Findspot 2 (AgGt-323) resulted in the documentation of four pre-contact Aboriginal artifacts manufactured from Onondaga chert, recovered during the pedestrian

survey of the agricultural land along the southwestern edge of the Study Area, from an area of roughly 7m by 4m approximately 162m northwest of P1 (AgGt-313). The artifacts are all chipping detritus including two secondary flakes, one tool thinning flake, and one piece of shatter. The CHVI of Findspot 2 (AgGt-323) was judged to be sufficiently documented; therefore, no further archaeological assessment was recommended.

The Stage 2 assessment of Findspot 3 (AgGt-324) resulted in the documentation of four pre-contact Aboriginal artifacts, including one blade fragment, manufactured from Onondaga chert, recovered during the pedestrian survey of the agricultural land along the southeastern edge of the Study Area from an area roughly 3.3m by 2.6m approximately 99m north of P1 (AgGt-313). The remaining artifacts are all chipping detritus consisting of one secondary flake and two tool thinning flakes. The CHVI of Findspot 3 (AgGt-324) was judged to be sufficiently documented; therefore, no further archaeological assessment was recommended.

The Stage 3 assessment of P1 (AgGt-313) resulted in the recovery of 68 primarily Onondaga chert flakes from the **controlled surface collection ('CSP') and the hand excavation of 11 1m test units** across the extent of the Stage 2 site limits. Unit counts ranged from 0 to 19 with six of the units being sterile. The morphological analysis of the flake assemblage suggests that late-stage lithic reduction occurred at the site for the production of blanks and bifaces. These results build upon those of the Stage 2 assessment, which identified nine secondary flakes, two thinning flakes, and three pieces of shatter. No diagnostic artifacts, formal tools, fire-cracked rock, or Aboriginal pottery were recovered during the Stage 3 assessment. A single stain was observed in Unit 205E, 495N. The possible feature was covered with geotextile fabric and the unit was backfilled with soil.

Based on the available evidence, P1 (AgGt-313) has been interpreted as a small activity area occupied briefly by Aboriginal people prior to the arrival of European settlers. Given the results of the Stage 3 assessment, wherein three test units yielded ten or more lithic artifacts, P1 (AgGt-313) fulfills the criteria for a Stage 4 archaeological investigation; therefore, a Stage 4 archaeological mitigation of impacts for P1 (AgGt-313) was recommended.

### 1.3.5 Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Detritus applied archaeological potential criteria commonly used by the MCM to determine areas of archaeological potential within the Study Area. According to Section 1.3.1 of the *Standards and Guidelines* (Government of Ontario, 2011a), these variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area.

Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, when considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site locations and types to varying degrees. As per Section 1.3.1 of the *Standards and Guidelines* (Government of Ontario, 2011a), water sources may be categorized in the following manner:

- Primary water sources, lakes, rivers, streams, creeks;
- secondary water sources, intermittent streams and creeks, springs, marshes and swamps;
- past water sources, glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- accessible or inaccessible shorelines, high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

As was noted above, three individual sources of potable water lie to the north, east, and west of the Study Area in the form of tributaries of the Welland Canal, each approximately 828m, 675m, and 1,085m from P1 (AgGt-313) respectively.

Soil texture is also an important determinant of past settlement, usually in combination with other factors such as topography. P1 (AgGt-313) is situated within the Haldimand Clay Plain physiographic region. As was discussed earlier, the soils within this region are suitable for pre-contact and post-contact Aboriginal agricultural. Considering also the length of occupation of Thorold Township prior to the arrival of European settlers, as evidenced by the seven sites yielding pre-contact Aboriginal material culture registered within 1km from the Study Area, the potential for pre-contact Aboriginal, post-contact Aboriginal material culture at P1 (AgGt-313) is deemed to be moderate to high.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990b) or property that local histories or informants have identified with possible historical events.

According to the background research presented above, the *Historical Atlas* (Page, 1876; Figure 2) map of Thorold Township has revealed that the Study Area is in close proximity to historic roads, the early communities of Port Robinson and Fonthill, the Welland River, and the Welland Railroad. Considering also the presence of two Euro-Canadian sites within 1km of the Study Area, the potential for post-contact Euro-Canadian archaeological resources at P1 (AgGt-313) is judged to be moderate to high.

Given that no disturbance areas were identified, Detritus determined that the entirety of the Study Area, including the agricultural field, demonstrated the potential for the recovery of pre-contact Aboriginal, post-contact Aboriginal, and Euro-Canadian archaeological resources, and were recommended for Stage 2 field assessment.

Finally, despite the factors mentioned above, extensive land disturbance can eradicate archaeological potential within a Study Area, as outlined in Section 1.3.2 of the *Standards and Guidelines* (Government of Ontario, 2011a). No areas of disturbance were identified anywhere in the Study Area during the previous Stage 2 assessment (Detritus 2023a); therefore, the pre-contact Aboriginal, post-contact Aboriginal, and Euro-Canadian archaeological potential of P1 (AgGt-313) is judged to be moderate to high.



## 2.0 Field Methods

The Stage 4 mitigation of P1 (AgGt-313) was conducted between September June 1 and July 19, 2023 under archaeological consulting license P389 issued to Dr. Walter McCall by the MCM. This investigation began with a review of all relevant reports of previous fieldwork on the property as per Section 3.2, Standard 1 of the *Standards and Guidelines* (Government of Ontario, 2011a).

Additionally, in accordance with Section 3.4, Standard 2 of the *Standards and Guidelines* (Government of Ontario 2011a) and Section 1.1, Standard 1 of the *Engaging Aboriginal Communities in Archaeology* draft technical bulletin (Government of Ontario 2011b), Aboriginal engagement was undertaken throughout the Stage 4 mitigation at P1 (AgGt-313). Additional information on the Aboriginal engagement practices conducted during the construction stage of the development is provided in the Supplementary Documentation to this report.

Upon arrival at the site, the original Stage 3 grid was no longer in place and all excavated units had been backfilled. Therefore, work began with establishing the Stage 4 excavation grid based on previously recorded Datums, Landmarks, and tape measurements as per Section 4.2.1, Standard 5 of the *Standards and Guidelines* (Government of Ontario, 2011). At no time were field or weather conditions detrimental to the recovery of archaeological material, as required by Section 4.2, Standard 3 of the *Standards and Guidelines* (Government of Ontario, 2011). Lighting and soil conditions were suitable, and visibility was excellent, as per Section 7.9.1, Standard 1a of the *Standards and Guidelines* (Government of Ontario, 2011a). Photos 1 to 14 illustrate field conditions during the Stage 4 mitigation as per Section 4.2, Standard 3 and Section 7.9.6, Standard 1a of the *Standards and Guidelines* (Government of Ontario, 2011a). Table 4 provides a summary of the weather and field conditions during the Stage 4 archaeological assessments.

**Table 4: Field and Weather Conditions**

Date	Activity	Weather	Field Conditions
June 1, 2023	Set in grid and unit excavation	sunny, 30° Celsius (°C)	soil dry and screens easily
June 2, 2023	unit excavation	partly cloudy, 30°C	soil dry and screens easily
June 5, 2023	unit excavation	cloudy, 24°C	soil dry and screens easily
June 6, 2023	unit excavation	partly cloudy, 24°C	soil dry and screens easily
June 7, 2023	unit excavation	hazy, partly cloudy, 28°C	soil dry and screens easily
June 8, 2023	unit excavation	hazy, cloudy, 18°C	soil dry and screens easily
June 19, 2023	unit excavation	sunny, 32°C	soil dry and screens easily
June 20, 2023	unit excavation	partly cloudy, 30°C	soil dry and screens easily
June 22, 2023	unit excavation	partly cloudy, 28°C	soil dry and screens easily
June 23, 2023	unit excavation	a few clouds, 30°C	soil dry and screens easily
July 10, 2023	unit excavation	sunny, 30°C	soil dry and screens easily
July 11, 2023	unit excavation	sunny, 25°C	soil dry and screens easily
July 12, 2023	unit excavation	sunny, 25°C	soil dry and screens easily
July 14, 2023	unit excavation	sunny, 25°C	soil dry and screens easily
July 17, 2023	unit excavation	sunny, 28°C	soil wet and screenable
July 19, 2023	unit excavation	sunny, 26°C	soil dry and screens easily

The Stage 4 mitigation of P1 (AgGt-313) resulted in the hand excavation of 131 one-metre units, conducted according to Sections 4.2.1 and 4.2.2 of the *Standards and Guidelines* (Government of Ontario, 2011). These units surrounded the three highest Stage 3 units at 200E 500N, 205E 495N, and 205E 505N, located in the central area of the site extent as per Section 4.2.2, Standard 3c of the *Standards and Guidelines* (Government of Ontario, 2011), and resulted in two excavation blocks. The large, continuous excavation block to the southwest measured 16m north to south by 11 m east to west and a smaller block in the northwest measured 3m north to south by 3 m east to west. The two blocks were separated by a distance of 1m to each other (Figure 4). Artifact yields among the Stage 4 units ranged from zero to 60. The extent of the excavation block was determined in accordance with Section 4.2.2, Standard 4 and Table 4.1 of the *Standards and Guidelines* (Government of Ontario, 2011).

All Stage 4 units were excavated by hand in systematic levels, as per Section 4.2.1, Standards 1 and 6 of the *Standards and Guidelines* (Government of Ontario, 2011). All of the 123 Stage 4 units



contained a single stratigraphic layer. The units were excavated into the first five centimetres (**'cm'**) of subsoil, as per **Section 4.2.2, Standard 6 of the *Standards and Guidelines*** (Government of Ontario, 2011). Overall, the Stage 4 units at P1 (AgGt-313) ranged in depth from 22cm to 86cm.

All soil was screened through six-millimetre hardware cloth to facilitate the recovery of small artifacts, as per Section 4.2.2, Standard 6 of the *Standards and Guidelines* (Government of Ontario, 2011). All artifacts recovered during the Stage 4 block excavation were recorded with reference to their one-metre grid unit number and retained for laboratory analysis and description, as per Section 4.2.1, Standards 8 of the *Standards and Guidelines* (Government of Ontario, 2011). The subsoil surface of each unit was shovel shined, trowelled and examined for any evidence of subsurface cultural features. During the Stage 3 assessment a single stain was observed in Unit 205E, 495N, and initially interpreted to likely be a root burn. All units surrounding Unit 205E, 495N were excavated and the subsoil surface was shovel shined to allow further investigation of the completely exposed stain, which resulted confirming it to be a root burn devoid of any cultural material.

No Aboriginal ceramics, or fire cracked rock were recovered during any stage of investigation, nor were any subsurface features observed.

### 3.0 Record of Finds

The Stage 4 mitigation of P1 (AgGt-313) was conducted employing the methods described in Section 2.0 above. Figure 4 provides the results of this investigation; Tile 4 of Supplementary Documentation provides the results in relation to the current development plan. Maps indicating the exact site location, and all UTM coordinates recorded during the assessment, are also included in the Supplementary Documentation to this report. An inventory of the documentary record generated by the fieldwork is provided in Table 4 below.

**Table 5: Inventory of Document Record**

Document Type	Current Location	Additional Comments
4 page of field notes	Detritus office	stored digitally in project file
1 map provided by the Proponent	Detritus office	stored digitally in project file
1 field map	Detritus office	stored digitally in project file
138 digital photographs	Detritus office	stored digitally in project file

All of the material culture collected during the Stage 4 mitigation of impacts of P1 (AgGt-313) is contained in one box and will be temporarily housed in a Detritus office until formal arrangements can be made for its transfer to His Majesty the King in right of the Province of Ontario or another suitable public institution acceptable to the MCM and the site's owners.

### 3.1 Cultural Material

The chert artifacts within the Stage 4 assemblages of P1 (AgGt-313) were manufactured from Bois Blanc and Onondaga cherts. Chert type identifications were accomplished visually using reference materials located in personal collections or online.

Haldimand chert, also known as Bois Blanc chert, is a medium quality raw material that outcrops along the Bois Blanc formation between Kohler and Hagersville, as well as in Cayuga, Ontario. Dating to the Early Silurian, it derives from chalk-bearing limestones which give the material its characteristically white to light grey or buff colour and relatively low lustre (Eley & von Bitter, 1989).

Onondaga chert is a dense non-porous rock that derives from the Middle Devonian age, with outcrops occurring along the north shore of Lake Erie between Long Point and the Niagara River. (Eley & von Bitter, 1989). Primary outcrops have also been reported along the banks of the Grand River (Ellis & Ferris, 1990). Onondaga chert typically occurs in nodules or irregular thin beds, and may appear light to dark grey, bluish grey, brown, or black. It can also be mottled with a dull to vitreous or waxy lustre. Onondaga chert is often found at archaeological sites in southern Ontario and is commonly recognised as a high-quality raw material that was frequently utilized by pre-contact Aboriginal people (Eley & von Bitter, 1989).

Furthermore, all pieces of chipping detritus were subject to morphological analysis following the classification scheme described by Lennox, Dodd and Murphy for the Wiacek Site (Lennox, Dodd, & Murphy, 1986) and expanded upon by Fisher for the Adder Orchard site (Fisher, 1997). The flake types that were identified during the analysis of the current Stage 4 assemblage include the entire chaîne opératoire.

Primary and secondary flakes, along with cortical removal flakes, are a product of percussion flaking undertaken during the initial reduction phases of raw material into blanks, bifaces and preforms. These early-stage reduction flakes tend to exhibit minimal dorsal flake scarring, and are often characterized by the presence of cortex, or the original unflaked chert exterior, on their dorsal surfaces and proximal ends. For cortical removal flakes, over half of the dorsal surface comprises cortex; for primary flakes, less than half. Secondary flakes, meanwhile, may not contain any cortex. Thinning flakes are produced during the latter stages of lithic reduction, when blanks, bifaces, and preforms are shaped into projectile points and formal tools. They are the result of pressure flaking, where the maker uses a softer material such as antler, wood or bone to apply direct pressure onto a specific part of the tool. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking. Thinning flakes also exhibit more flake scars on their

dorsal surface than do primary or secondary flakes. Fragmentary flakes are flakes that have some identifiable flake characteristics but cannot be classified with certainty into a specific category.

## 3.2 P1 (AgGt-313)

The Stage 4 investigation of P1 (AgGt-313) resulted in the documentation of 1653 pre-contact Aboriginal artifacts from 131 test units over an area of 19m by 11m. The vast majority of artifacts were chipping detritus (n=1,635) followed by six biface fragments, six preforms, four cores, one projectile point and one blank (Table 6). The artifacts recovered from the site were manufactured from Bois Blanc and Onondaga cherts. Figure 4 (and Tile 4 of the Supplementary Documentation) provide the results of the Stage 4 excavation.

**Table 6: Artifact Assemblage**

Artifacts	Frequency	%
chipping detritus	1635	98.91
biface	6	0.36
preform	6	0.36
core	4	0.24
projectile point	1	0.06
blank	1	0.06
Total	1653	100.00

### 3.2.1 Chipping Detritus

The results of the morphological analysis of the chipping detritus recovered from the Stage 4 mitigation of impacts for P1 (AgGt-313) are detailed Table 7 below.

**Table 7: Flake Analysis for Site P1 (AgGt-313)**

Chert Type	Primary		Secondary		Thinning		Fragment		Shatter		Total Analyzed	
	n	%	n	%	n	%	n	%	n	%	n	%
Onondaga	3	0.18	147	9.00	641	39.23	839	51.35	4	0.24	1634	100.00
Bois Blanc	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00

P1 (AgGt-313) featured primarily fragmentary flakes (n=839; 51.35%) followed by a large amounts of tool thinning fragments (n=641; 39.23%), as well as a small number of secondary flakes (n=147; 9.00%), primary flakes (n=839; 51.35%), and shatter (n=4; 0.24%). This variety of flakes supplements the Stage 2 and 3 results by including flakes from all stages of lithic reduction activities. While early-stage lithic reduction for the creation of blanks and bifaces was undertaken at site to a limited degree the results suggest that the focus was on late late-stage reduction for the production and maintenance of formal tools and projectile points.

### 3.2.2 Biface

In addition, six biface fragments, two in Bois Blanc chert and four in Onondaga chert, were documented during the Stage 4 excavation of P1 (AgGt-313), detailed in Table 8.

The term biface refers to any unfinished, discarded, or broken bifacially worked form that cannot be identified as a specific tool or projectile point. Therefore, bifaces could represent a variety of tools with different functions. The biface fragments recovered were incomplete tools of unknown intended use. Due to its long span of production, bifaces cannot be used to determine the cultural affiliation or time period of the occupation of a site.

**Table 8: Biface Metrics**

Cat#	Chert Type	Length (mm)	Width (mm)	Thickness (mm)	Comments
196	Bois Blanc	36.5	19.8	7.6	Likely a projectile point; fragmented;
197	Onondaga	53.1	38.2	10	
201	Bois Blanc	24.7	33.1	9.1	fragmented;
248	Onondaga	50.6	23.8	10.9	
256	Onondaga	21.8	17.8	6.9	fragmented;
289	Onondaga	63.1	30.5	15.7	

### 3.2.3 Projectile Point

One projectile point fragment made from Onondaga chert was documented during the Stage 4 excavation of P1 (AgGt-313), detailed in Table 9.

**Table 9: Projectile Point Metrics**

Cat#	Chert Type	Length (mm)	Width (mm)	Thickness (mm)	Neck (mm)	Base (mm)	Comments
247	Onondaga	39.2	23.9	7.7	13.8	15.6	Base is slightly fragmented, and point is fragmented off as well.; fragmented; point of unknown type

### 3.2.4 Preform

A total of six preforms, all made from Onondaga chert, were documented during the Stage 4 excavation of P1 (AgGt-313) and are detailed in Table 10.

Preforms are associated with early-stage lithic reduction as chert cores or flint nodules area converted into blanks or preforms. These artifacts are not temporally diagnostic, beyond the fact that they date to the pre-contact Aboriginal period.

**Table 10: Preform Metrics**

Cat#	Chert Type	Length (mm)	Width (mm)	Thickness (mm)	Comments
7	Onondaga	59.9	43.6	17.2	
52	Onondaga	70.9	47.9	25.6	
200	Onondaga	46.7	55.3	24.8	fragmented;
217	Onondaga	76.1	51.4	21.8	fragmented;
240	Onondaga	54.3	50.2	16.5	
265	Onondaga	73.3	40.1	30.1	

### 3.2.5 Core

Four Onondaga chert core fragment were recovered. Chert cores are not considered to be temporally diagnostic.

### 3.2.6 Artifact Catalogue

The complete catalogue from the Stage 4 mitigation of P1 (AgGt-313) is provided in Appendix 10.1. below.

### 3.3 Artifact Distribution and Settlement Pattern

The Stage 4 mitigation of P1 (AgGt-313) yielded 1653 pieces of pre-contact Aboriginal artifacts. from the hand excavation of 131 Stage 4 test units spanning an area of 19m by 11m. No Aboriginal pottery or fire cracked rock was encountered. A previously observed Stain in Unit 205E 495N was fully exposed and shovel shined. Following investigation, it was identified as a root burn devoid of any cultural material.

In contrast to the three highest yielding Stage 3 units and the Stage 2 surface finds the Stage 4 block shifted to the southwest and with the highest yielding Stage 4 Unit being 199E 496N containing 60 pieces of chipping detritus. The units surrounding Unit 199E 496N also yielded the highest artefact concentration within the excavation block and is therefore interpreted as the main activity area. This is reflected in the tool distribution with 78% of formal tools found within 5m distance to Unit 199E 496N and 78% of all chipping detritus recovered. The majority of units surrounding the three highest yielding Stage 3 units had artifact counts below ten pieces of chipping detritus. These areas are therefore interpreted as smaller activity areas within the site.

Given the distribution of artifacts, P1 (AgGt-313) has been identified as a small activity area centred on grid coordinate 199E 496N. Formal tools recovered from the site suggest that the activity focused on late-stage reduction to produce and maintain bifaces and projectile points. Since 50% of the recovered preforms and bifaces were fragmented, this suggests that the tools were either discarded due to material flaws or knapping accidents.

## 4.0 Analysis and Conclusions

Detritus was retained the Proponent to conduct a Stage 4 mitigation of impacts for archaeological site P1 (AgGt-313) in advance of a proposed subdivision development on the southern portion of a property located on Clare Avenue in Welland.

The Stage 4 mitigation consisted of hand excavation and was conducted between June 1 and July 19, 2023. The Stage 4 mitigation of P1 (AgGt-313) resulted in the hand excavation of 131 one-metre square units. This investigation resulted in two excavation blocks. The large, continuous excavation block to the southwest measured 16m north to south by 11 m east to west and a smaller block in the northwest measured 3m north to south by 3 m east to west. The two blocks were separated by a distance of 1m to each other (Figure 4).

Overall, the Stage 4 excavation produced 1653 pre-contact Aboriginal artifacts. The vast majority of artifacts were chipping detritus (98.91%; n=1635) followed by six biface fragments, six preforms, four cores, one projectile point, and one blank. The artifacts recovered from the site were manufactured from Onondaga (99.82%; n=1650) and Bois Blanc (0.18%; n=3) chert. According to the morphological analysis, the flake assemblage from P1 (AgGt-313) featured primarily fragments (51.35%; n=839), followed by tool thinning flakes (39.23%; n=641), as well as primary, secondary flakes, and shatter. This variety of flake types supplements the Stage 2 and 3 results and indicates that all stages of lithic reduction activities were undertaken at the site, including early-stage reduction from the creation of blanks and bifaces, and focused on late-stage reduction for the production and maintenance of formal tools and projectile points.

## 5.0 Recommendations

The Stage 4 mitigation of P1 (AgGt-313) is now complete. The CHVI of P1 (AgGt-313) has been fully documented and the information will be preserved for future study. P1 (AgGt-313) has no further CHVI, as per Section 7.11.4 Standard 1 of the *Standards and Guidelines* (Government of Ontario 2011).



## 6.0 Advice on Compliance with Legislation

This report is submitted to the Minister of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological 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 Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

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

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

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 license.

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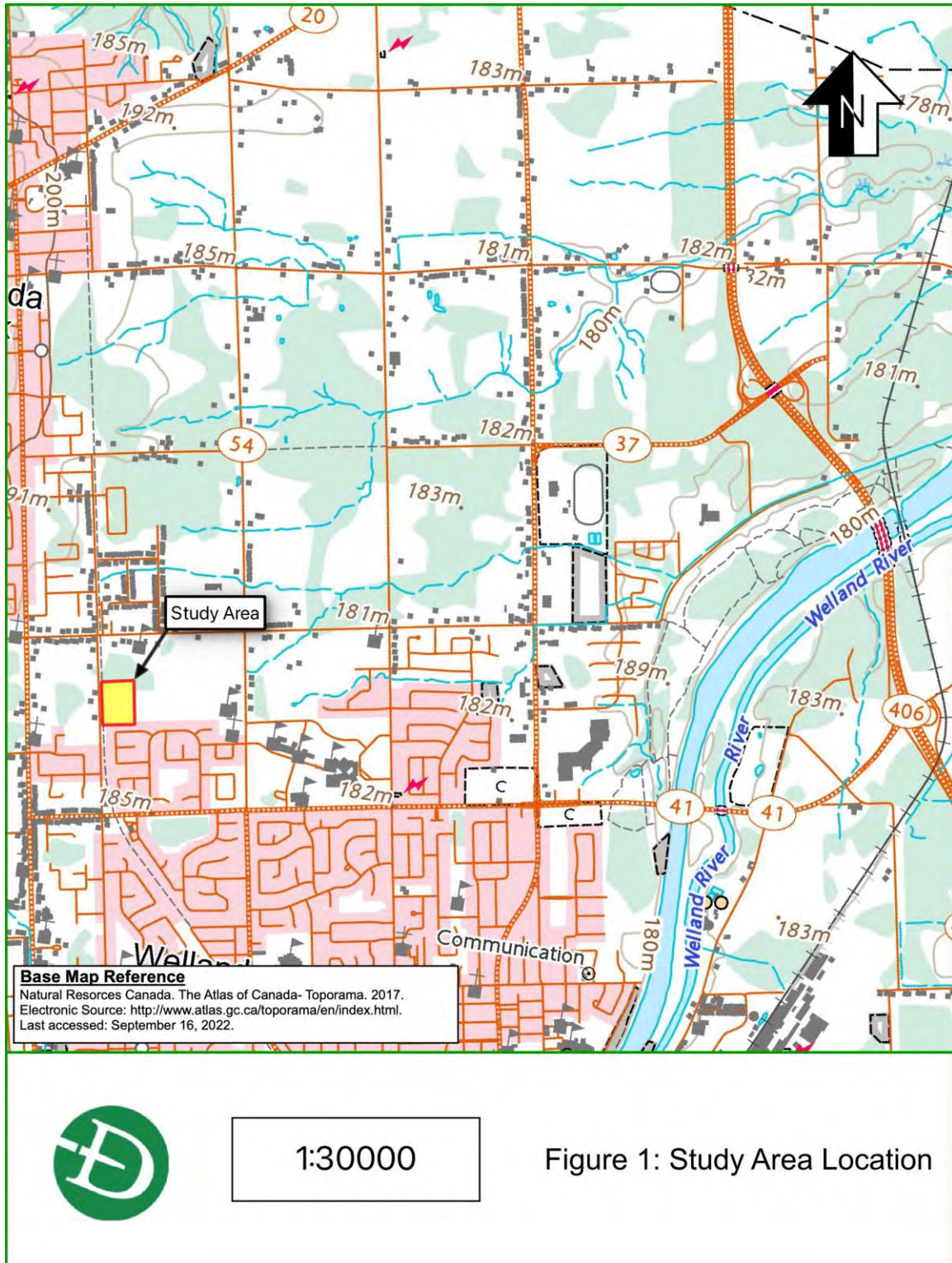
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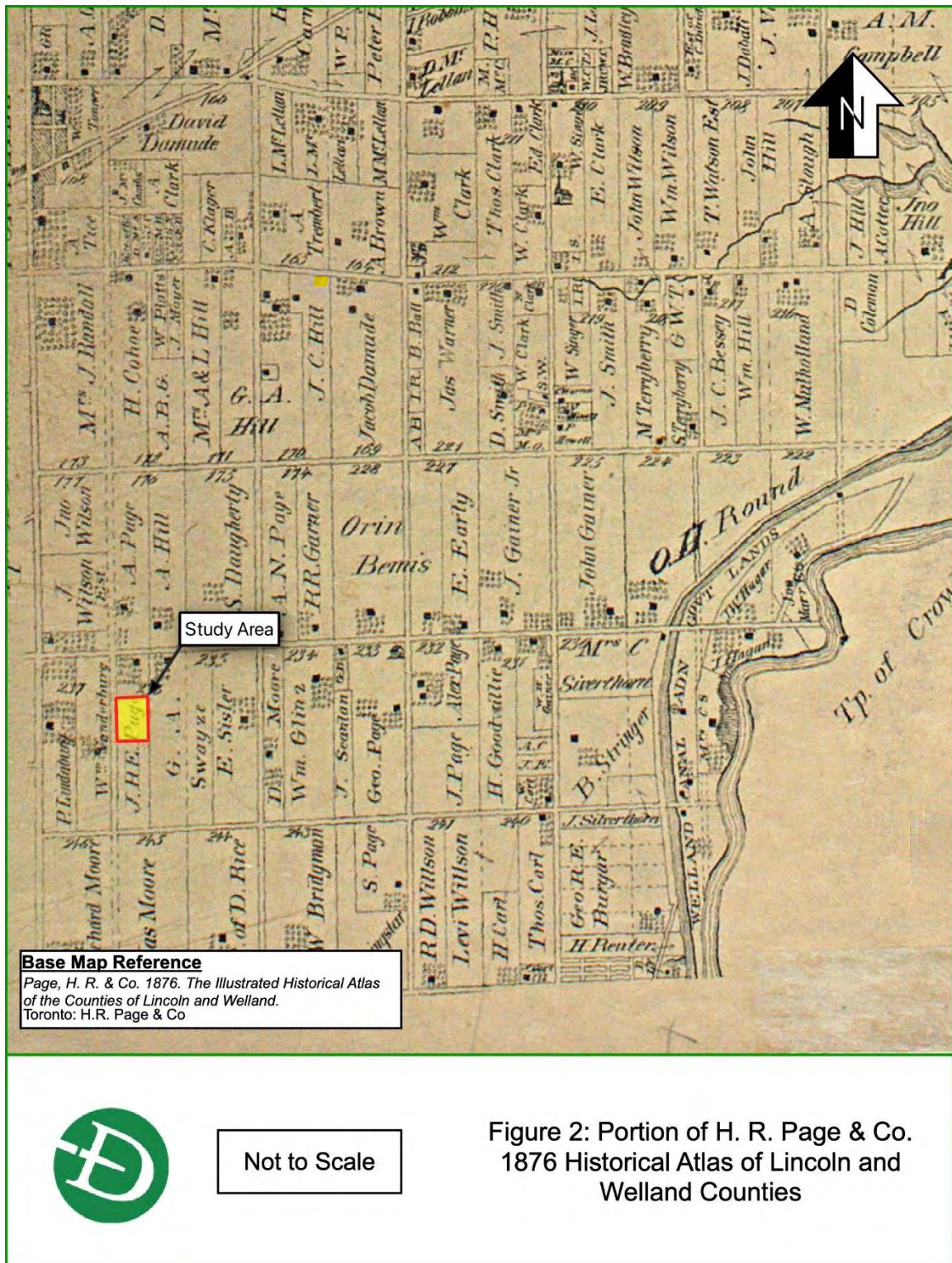
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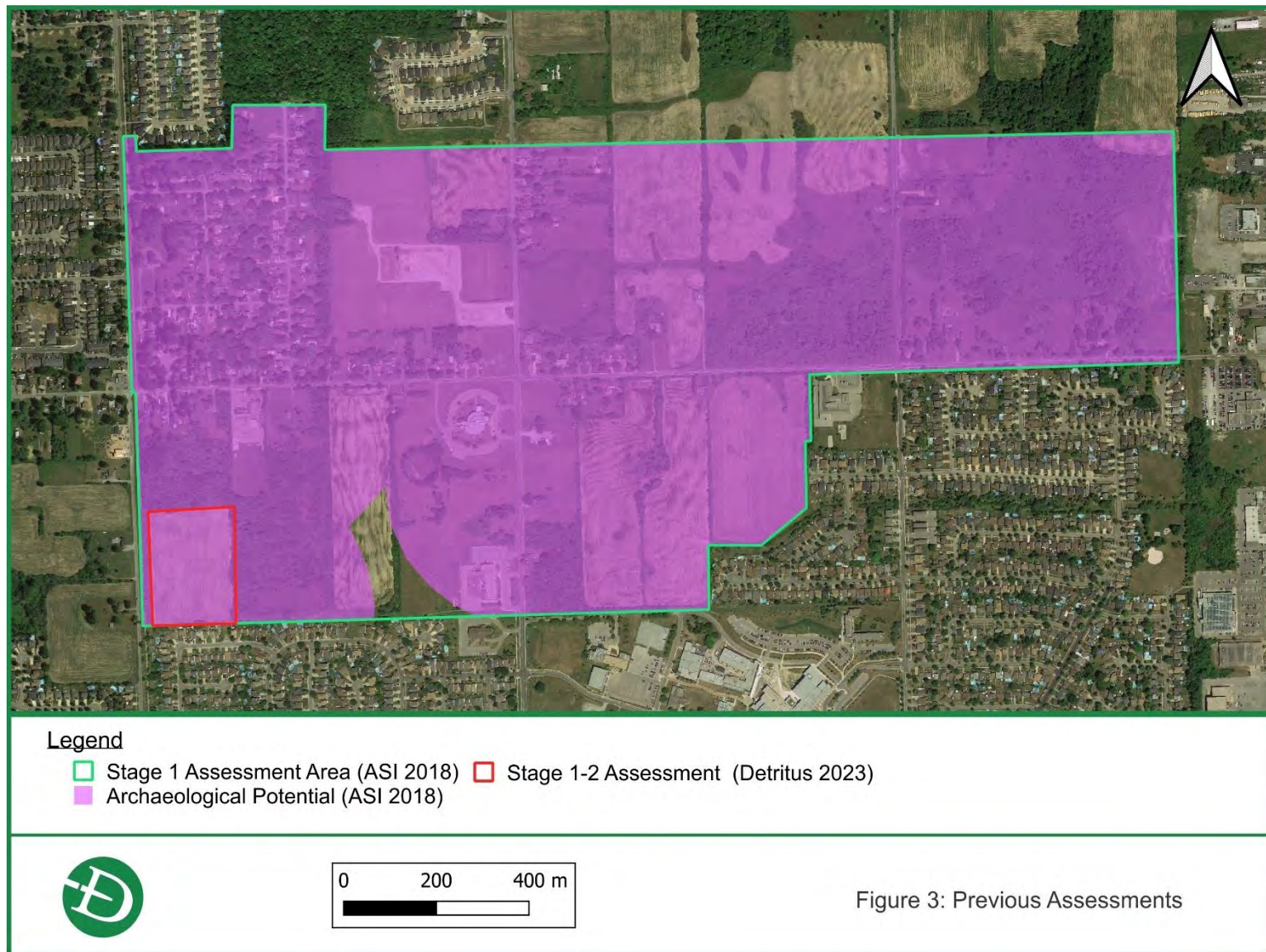
## 8.0 Maps













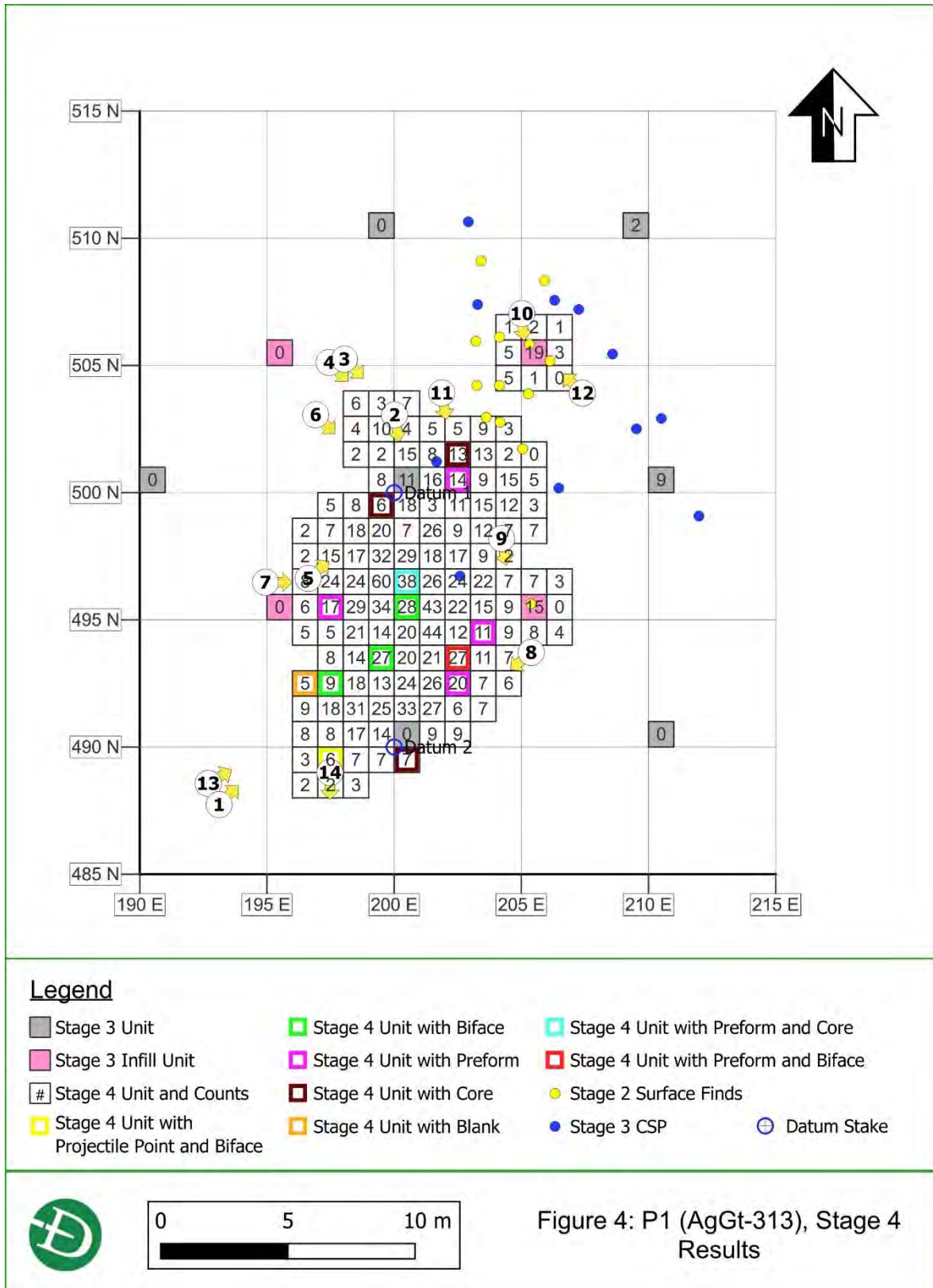
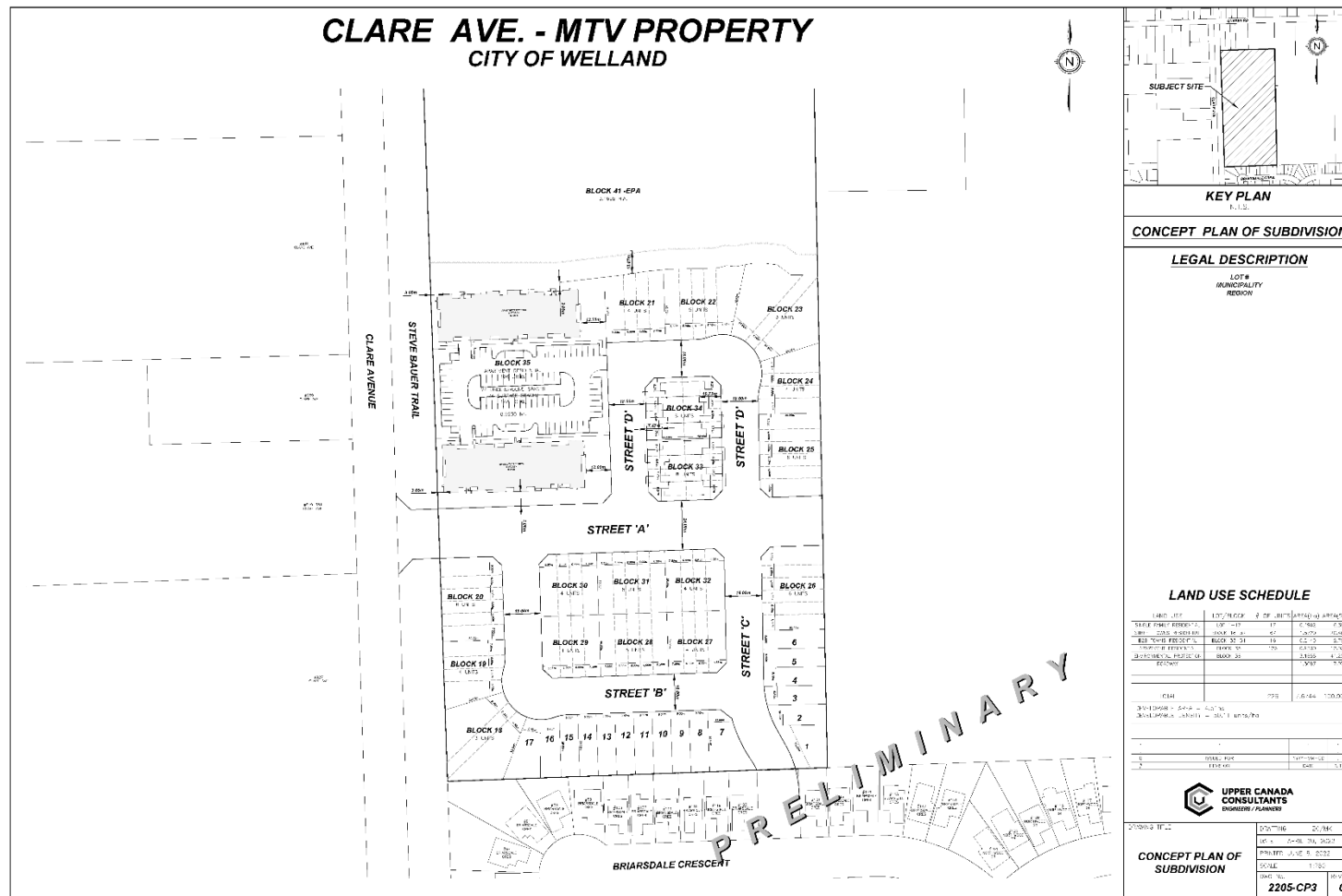


Figure 5: Development Map



## 9.0 Images

### 9.1 Field

**Photo 1: Setting in Stage 4 grid at P1 (AgGt-313), facing northeast**



**Photo 2: Stage 4 Unit Excavation at P1 (AgGt-313), facing south**



**Photo 3: Stage 4 Unit Excavation at P1 (AgGt-313), facing southeast**



**Photo 4: Stage 4 Unit Excavation at P1 (AgGt-313), facing southeast**



**Photo 5: Stage 4 Unit Excavation at P1 (AgGt-313), facing northeast**



**Photo 6: Stage 4 Unit Excavation at P1 (AgGt-313), facing southeast**





**Photo 7 Stage 4 Unit Excavation at P1 (AgGt-313), facing east**



**Photo 8: Stage 4 Unit Excavation at P1 (AgGt-313), facing southwest**



**Photo 9: Stage 4 Unit Excavation at P1 (AgGt-313), facing south**



**Photo 10: Stage 4 Unit Excavation at P1 (AgGt-313), facing south**



**Photo 11: Stage 4 Unit Excavation at P1 (AgGt-313), facing south**



**Photo 12: Stage 4 Unit Excavation at P1 (AgGt-313), facing northwest**





**Photo 13: Stage 4 Unit Excavation at P1 (AgGt-313), facing northeast**



**Photo 14: Southwall profile P1 (AgGt-313), facing south**



## 9.2 Artifacts

**Plate 1: Cat# 294 sample of Chipping Detritus (fragments) Recovered from P1 (AgGt-313)**



**Plate 2: Cat# 180 sample of Chipping Detritus (secondary) Recovered from P1 (AgGt-313)**



**Plate 3: Cat# 222 sample of Chipping Detritus (tool thinning) Recovered from P1 (AgGt-313)**



**Plate 4: Cat# 68 sample of Chipping Detritus (fragment wit potlids) Recovered from P1 (AgGt-313)**



**Plate 5: Cat# 196 Biface, Bois Blanc chert  
Recovered from P1 (AgGt-313)**



**Plate 6: Cat# 197 Biface Recovered from  
P1 (AgGt-313)**



**Plate 7: Cat# 240 Preform Recovered from P1  
(AgGt-313)**



**Plate 8: Cat# 244 Core Recovered from P1  
(AgGt-313)**



**Plate 9: Cat# 247 Projectile point, fragmented  
(non diagnostic) Recovered from P1 (AgGt-313)**



**Plate 10: Cat# 248 Biface Recovered from P1  
(AgGt-313)**



**Plate 11: Cat# 171 Blank Recovered from P1  
(AgGt-313)**





10.0 Appendix

10.1 P1 (AgGt-313) Artifact catalogue

Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
1	Test Unit Excavation	489	196	1	0.34	chipping detritus	1	tool thinning	Onondaga	
2	Test Unit Excavation	489	196	1	0.34	chipping detritus	2	fragment	Onondaga	
3	Test Unit Excavation	489	199	1	0.38	chipping detritus	3	tool thinning	Onondaga	
4	Test Unit Excavation	489	199	1	0.38	chipping detritus	4	fragment	Onondaga	
5	Test Unit Excavation	490	201	1	0.35	chipping detritus	3	tool thinning	Onondaga	
6	Test Unit Excavation	490	201	1	0.35	chipping detritus	6	fragment	Onondaga	
7	Test Unit Excavation	492	202	1	0.37	preform	1	tool	Onondaga	59.9mm; 43.6mm; 17.2mm
8	Test Unit Excavation	492	202	1	0.37	chipping detritus	1	secondary	Onondaga	
9	Test Unit Excavation	492	202	1	0.37	chipping detritus	9	tool thinning	Onondaga	
10	Test Unit Excavation	492	202	1	0.37	chipping detritus	9	fragment	Onondaga	
11	Test Unit Excavation	493	204	1	0.35	chipping detritus	2	tool thinning	Onondaga	
12	Test Unit Excavation	493	204	1	0.35	chipping detritus	5	fragment	Onondaga	
13	Test Unit Excavation	488	196	1	0.33	chipping detritus	2	fragment	Onondaga	
14	Test Unit Excavation	488	197	1	0.27	chipping detritus	2	fragment	Onondaga	
15	Test Unit Excavation	489	198	1	0.30	chipping detritus	1	secondary	Onondaga	
16	Test Unit Excavation	489	198	1	0.30	chipping detritus	3	tool thinning	Onondaga	
17	Test Unit Excavation	489	198	1	0.30	chipping detritus	3	fragment	Onondaga	
18	Test Unit Excavation	488	198	1	0.30	chipping detritus	3	tool thinning	Onondaga	
19	Test Unit Excavation	489	200	1	0.30	core	1	tool	Onondaga	
20	Test Unit Excavation	489	200	1	0.30	chipping detritus	1	secondary	Onondaga	
21	Test Unit Excavation	489	200	1	0.30	chipping detritus	5	fragment	Onondaga	
22	Test Unit Excavation	490	202	1	0.37	chipping detritus	2	secondary	Onondaga	
23	Test Unit Excavation	490	202	1	0.37	chipping detritus	3	tool thinning	Onondaga	
24	Test Unit Excavation	490	202	1	0.37	chipping detritus	4	fragment	Onondaga	
25	Test Unit Excavation	491	202	1	0.45	chipping detritus	6	fragment	Onondaga	
26	Test Unit Excavation	491	203	1	0.34	chipping detritus	2	secondary	Onondaga	
27	Test Unit Excavation	491	203	1	0.34	chipping detritus	2	tool thinning	Onondaga	
28	Test Unit Excavation	491	203	1	0.34	chipping detritus	3	fragment	Onondaga	
29	Test Unit Excavation	492	203	1	0.30	chipping detritus	1	secondary	Onondaga	
30	Test Unit Excavation	492	203	1	0.30	chipping detritus	1	tool thinning	Onondaga	
31	Test Unit Excavation	492	203	1	0.30	chipping detritus	5	fragment	Onondaga	
32	Test Unit Excavation	492	204	1	0.37	chipping detritus	1	tool thinning	Onondaga	
33	Test Unit Excavation	492	204	1	0.37	chipping detritus	5	fragment	Onondaga	
34	Test Unit Excavation	506	206	1	0.33	chipping detritus	1	tool thinning	Onondaga	
35	Test Unit Excavation	496	206	1	0.35	chipping detritus	1	tool thinning	Onondaga	
36	Test Unit Excavation	496	206	1	0.35	chipping detritus	2	fragment	Onondaga	
37	Test Unit Excavation	505	206	1	0.34	chipping detritus	3	fragment	Onondaga	
38	Test Unit Excavation	494	206	1	0.34	chipping detritus	1	secondary	Onondaga	
39	Test Unit Excavation	494	206	1	0.34	chipping detritus	1	tool thinning	Onondaga	
40	Test Unit Excavation	494	206	1	0.34	chipping detritus	2	fragment	Onondaga	
41	Test Unit Excavation	496	205	1	0.30	chipping detritus	3	tool thinning	Onondaga	
42	Test Unit Excavation	496	205	1	0.30	chipping detritus	4	fragment	Onondaga	
43	Test Unit Excavation	498	205	1	0.40	chipping detritus	2	tool thinning	Onondaga	
44	Test Unit Excavation	498	205	1	0.40	chipping detritus	5	fragment	Onondaga	

Stage 4 Mitigation of Impacts, P1 (AgGt-313), Clare Avenue Lands, Welland

Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
45	Test Unit Excavation	500	205	1	0.27	chipping detritus	2	tool thinning	Onondaga	
46	Test Unit Excavation	500	205	1	0.27	chipping detritus	3	fragment	Onondaga	
47	Test Unit Excavation	504	205	1	0.34	chipping detritus	1	tool thinning	Onondaga	
48	Test Unit Excavation	506	205	1	0.31	chipping detritus	2	tool thinning	Onondaga	
49	Test Unit Excavation	493	203	1	0.36	chipping detritus	1	secondary	Onondaga	
50	Test Unit Excavation	493	203	1	0.36	chipping detritus	3	tool thinning	Onondaga	
51	Test Unit Excavation	493	203	1	0.36	chipping detritus	7	fragment	Onondaga	
52	Test Unit Excavation	494	203	1	0.32	preform	1	tool	Onondaga	70.9mm; 47.9mm; 25.6mm
53	Test Unit Excavation	494	203	1	0.32	chipping detritus	5	tool thinning	Onondaga	
54	Test Unit Excavation	494	203	1	0.32	chipping detritus	5	fragment	Onondaga	
55	Test Unit Excavation	495	203	1	0.44	chipping detritus	2	secondary	Onondaga	
56	Test Unit Excavation	495	203	1	0.44	chipping detritus	4	tool thinning	Onondaga	
57	Test Unit Excavation	495	203	1	0.44	chipping detritus	9	fragment	Onondaga	
58	Test Unit Excavation	496	203	1	0.34	chipping detritus	11	fragment	Onondaga	
59	Test Unit Excavation	496	203	1	0.34	chipping detritus	11	fragment	Onondaga	
60	Test Unit Excavation	497	203	1	0.32	chipping detritus	5	tool thinning	Onondaga	
61	Test Unit Excavation	497	203	1	0.32	chipping detritus	4	fragment	Onondaga	
62	Test Unit Excavation	498	203	1	0.28	chipping detritus	5	tool thinning	Onondaga	
63	Test Unit Excavation	498	203	1	0.28	chipping detritus	7	fragment	Onondaga	
64	Test Unit Excavation	499	203	1	0.29	chipping detritus	9	tool thinning	Onondaga	
65	Test Unit Excavation	499	203	1	0.29	chipping detritus	6	fragment	Onondaga	
66	Test Unit Excavation	500	203	1	0.29	chipping detritus	3	tool thinning	Onondaga	
67	Test Unit Excavation	500	203	1	0.29	chipping detritus	5	fragment	Onondaga	
68	Test Unit Excavation	500	203	1	0.29	chipping detritus	1	fragment	Onondaga	Potlids
69	Test Unit Excavation	501	203	1	0.24	chipping detritus	5	tool thinning	Onondaga	
70	Test Unit Excavation	501	203	1	0.24	chipping detritus	4	fragment	Onondaga	
71	Test Unit Excavation	501	203	1	0.24	chipping detritus	4	shatter	Onondaga	
72	Test Unit Excavation	502	203	1	0.30	chipping detritus	3	tool thinning	Onondaga	
73	Test Unit Excavation	502	203	1	0.30	chipping detritus	6	fragment	Onondaga	
74	Test Unit Excavation	491	201	1	0.31	chipping detritus	3	secondary	Onondaga	
75	Test Unit Excavation	491	201	1	0.31	chipping detritus	10	tool thinning	Onondaga	
76	Test Unit Excavation	491	201	1	0.31	chipping detritus	14	fragment	Onondaga	
77	Test Unit Excavation	492	201	1	0.28	chipping detritus	13	tool thinning	Onondaga	
78	Test Unit Excavation	492	201	1	0.28	chipping detritus	13	fragment	Onondaga	
79	Test Unit Excavation	493	201	1	0.33	chipping detritus	2	secondary	Onondaga	
80	Test Unit Excavation	493	201	1	0.33	chipping detritus	10	tool thinning	Onondaga	
81	Test Unit Excavation	493	201	1	0.33	chipping detritus	9	fragment	Onondaga	
82	Test Unit Excavation	494	201	1	0.35	chipping detritus	7	secondary	Onondaga	
83	Test Unit Excavation	494	201	1	0.35	chipping detritus	21	tool thinning	Onondaga	
84	Test Unit Excavation	494	201	1	0.35	chipping detritus	16	fragment	Onondaga	
85	Test Unit Excavation	495	201	1	0.32	chipping detritus	8	secondary	Onondaga	
86	Test Unit Excavation	495	201	1	0.32	chipping detritus	15	tool thinning	Onondaga	
87	Test Unit Excavation	495	201	1	0.32	chipping detritus	20	fragment	Onondaga	
88	Test Unit Excavation	496	201	1	0.32	chipping detritus	4	secondary	Onondaga	
89	Test Unit Excavation	496	201	1	0.32	chipping detritus	14	tool thinning	Onondaga	
90	Test Unit Excavation	496	201	1	0.32	chipping detritus	8	fragment	Onondaga	
91	Test Unit Excavation	497	201	1	0.29	chipping detritus	13	tool thinning	Onondaga	
92	Test Unit Excavation	497	201	1	0.29	chipping detritus	5	fragment	Onondaga	

Stage 4 Mitigation of Impacts, P1 (AgGt-313), Clare Avenue Lands, Welland

Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
93	Test Unit Excavation	498	201	1	0.30	chipping detritus	2	secondary	Onondaga	
94	Test Unit Excavation	498	201	1	0.30	chipping detritus	16	tool thinning	Onondaga	
95	Test Unit Excavation	498	201	1	0.30	chipping detritus	8	fragment	Onondaga	
96	Test Unit Excavation	499	201	1	0.30	chipping detritus	1	secondary	Onondaga	
97	Test Unit Excavation	499	201	1	0.30	chipping detritus	1	tool thinning	Onondaga	
98	Test Unit Excavation	499	201	1	0.30	chipping detritus	1	fragment	Onondaga	
99	Test Unit Excavation	500	201	1	0.28	chipping detritus	5	tool thinning	Onondaga	
100	Test Unit Excavation	500	201	1	0.28	chipping detritus	11	fragment	Onondaga	
101	Test Unit Excavation	501	201	1	0.29	chipping detritus	3	tool thinning	Onondaga	
102	Test Unit Excavation	501	201	1	0.29	chipping detritus	5	fragment	Onondaga	
103	Test Unit Excavation	502	201	1	0.28	chipping detritus	2	secondary	Onondaga	
104	Test Unit Excavation	502	201	1	0.28	chipping detritus	2	tool thinning	Onondaga	
105	Test Unit Excavation	502	201	1	0.28	chipping detritus	1	fragment	Onondaga	
106	Test Unit Excavation	494	205	1	0.29	chipping detritus	2	secondary	Onondaga	
107	Test Unit Excavation	494	205	1	0.29	chipping detritus	3	tool thinning	Onondaga	
108	Test Unit Excavation	494	205	1	0.29	chipping detritus	3	fragment	Onondaga	
109	Test Unit Excavation	499	205	1	0.41	chipping detritus	1	primary	Onondaga	
110	Test Unit Excavation	499	205	1	0.41	chipping detritus	2	tool thinning	Onondaga	
111	Test Unit Excavation	494	204	1	0.32	chipping detritus	1	secondary	Onondaga	
112	Test Unit Excavation	494	204	1	0.32	chipping detritus	4	tool thinning	Onondaga	
113	Test Unit Excavation	494	204	1	0.32	chipping detritus	4	fragment	Onondaga	
114	Test Unit Excavation	495	204	1	0.30	chipping detritus	9	tool thinning	Onondaga	
115	Test Unit Excavation	496	204	1	0.30	chipping detritus	1	secondary	Onondaga	
116	Test Unit Excavation	496	204	1	0.30	chipping detritus	5	tool thinning	Onondaga	
117	Test Unit Excavation	496	204	1	0.30	chipping detritus	1	fragment	Onondaga	
118	Test Unit Excavation	497	204	1	0.33	chipping detritus	1	tool thinning	Onondaga	
119	Test Unit Excavation	497	204	1	0.33	chipping detritus	1	fragment	Onondaga	
120	Test Unit Excavation	498	204	1	0.32	chipping detritus	2	tool thinning	Onondaga	
121	Test Unit Excavation	498	204	1	0.32	chipping detritus	5	fragment	Onondaga	
122	Test Unit Excavation	499	204	1	0.39	chipping detritus	4	tool thinning	Onondaga	
123	Test Unit Excavation	499	204	1	0.39	chipping detritus	8	fragment	Onondaga	
124	Test Unit Excavation	500	204	1	0.29	chipping detritus	6	tool thinning	Onondaga	
125	Test Unit Excavation	500	204	1	0.29	chipping detritus	9	fragment	Onondaga	
126	Test Unit Excavation	501	204	1	0.28	chipping detritus	2	fragment	Onondaga	
127	Test Unit Excavation	502	204	1	0.26	chipping detritus	1	tool thinning	Onondaga	
128	Test Unit Excavation	502	204	1	0.26	chipping detritus	2	fragment	Onondaga	
129	Test Unit Excavation	504	204	1	0.30	chipping detritus	5	fragment	Onondaga	
130	Test Unit Excavation	505	204	1	0.30	chipping detritus	1	secondary	Onondaga	
131	Test Unit Excavation	505	204	1	0.30	chipping detritus	1	tool thinning	Onondaga	
132	Test Unit Excavation	505	204	1	0.30	chipping detritus	3	fragment	Onondaga	
133	Test Unit Excavation	506	204	1	0.28	chipping detritus	1	fragment	Onondaga	
134	Test Unit Excavation	490	198	1	0.32	chipping detritus	11	tool thinning	Onondaga	
135	Test Unit Excavation	490	198	1	0.32	chipping detritus	6	fragment	Onondaga	
136	Test Unit Excavation	491	198	1	0.28	chipping detritus	3	secondary	Onondaga	
137	Test Unit Excavation	491	198	1	0.28	chipping detritus	14	tool thinning	Onondaga	
138	Test Unit Excavation	491	198	1	0.28	chipping detritus	14	fragment	Onondaga	
139	Test Unit Excavation	492	198	1	0.25	chipping detritus	2	secondary	Onondaga	
140	Test Unit Excavation	492	198	1	0.25	chipping detritus	6	tool thinning	Onondaga	

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Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
141	Test Unit Excavation	492	198	1	0.25	chipping detritus	10	fragment	Onondaga	
142	Test Unit Excavation	493	198	1	0.24	chipping detritus	1	secondary	Onondaga	
143	Test Unit Excavation	493	198	1	0.24	chipping detritus	8	tool thinning	Onondaga	
144	Test Unit Excavation	493	198	1	0.24	chipping detritus	5	fragment	Onondaga	
145	Test Unit Excavation	494	198	1	0.23	chipping detritus	5	secondary	Onondaga	
146	Test Unit Excavation	494	198	1	0.23	chipping detritus	11	tool thinning	Onondaga	
147	Test Unit Excavation	494	198	1	0.23	chipping detritus	5	fragment	Onondaga	
148	Test Unit Excavation	495	198	1	0.26	chipping detritus	5	secondary	Onondaga	
149	Test Unit Excavation	495	198	1	0.26	chipping detritus	11	tool thinning	Onondaga	
150	Test Unit Excavation	495	198	1	0.26	chipping detritus	13	fragment	Onondaga	
151	Test Unit Excavation	496	198	1	0.24	chipping detritus	2	secondary	Onondaga	
152	Test Unit Excavation	496	198	1	0.24	chipping detritus	12	tool thinning	Onondaga	
153	Test Unit Excavation	496	198	1	0.24	chipping detritus	10	fragment	Onondaga	
154	Test Unit Excavation	497	198	1	0.26	chipping detritus	4	secondary	Onondaga	
155	Test Unit Excavation	497	198	1	0.26	chipping detritus	6	tool thinning	Onondaga	
156	Test Unit Excavation	497	198	1	0.26	chipping detritus	7	fragment	Onondaga	
157	Test Unit Excavation	498	198	1	0.30	chipping detritus	9	tool thinning	Onondaga	
158	Test Unit Excavation	498	198	1	0.30	chipping detritus	9	fragment	Onondaga	
159	Test Unit Excavation	499	198	1	0.26	chipping detritus	3	secondary	Onondaga	
160	Test Unit Excavation	499	198	1	0.26	chipping detritus	1	tool thinning	Onondaga	
161	Test Unit Excavation	499	198	1	0.26	chipping detritus	4	fragment	Onondaga	
162	Test Unit Excavation	501	198	1	0.25	chipping detritus	2	fragment	Onondaga	
163	Test Unit Excavation	502	198	1	0.26	chipping detritus	4	tool thinning	Onondaga	
164	Test Unit Excavation	503	198	1	0.30	chipping detritus	2	tool thinning	Onondaga	
165	Test Unit Excavation	503	198	1	0.30	chipping detritus	4	fragment	Onondaga	
166	Test Unit Excavation	490	196	1	0.30	chipping detritus	1	tool thinning	Bois Blanc	
167	Test Unit Excavation	490	196	1	0.30	chipping detritus	5	tool thinning	Onondaga	
168	Test Unit Excavation	490	196	1	0.30	chipping detritus	2	fragment	Onondaga	
169	Test Unit Excavation	491	196	1	0.30	chipping detritus	6	tool thinning	Onondaga	
170	Test Unit Excavation	491	196	1	0.30	chipping detritus	3	fragment	Onondaga	
171	Test Unit Excavation	492	196	1	0.30	blank	1	tool	Onondaga	fragmented; 35.7mm; 21.7mm; 6.9mm
172	Test Unit Excavation	492	196	1	0.30	chipping detritus	1	tool thinning	Onondaga	
173	Test Unit Excavation	492	196	1	0.30	chipping detritus	3	fragment	Onondaga	
174	Test Unit Excavation	494	196	1	0.31	chipping detritus	1	secondary	Onondaga	
175	Test Unit Excavation	494	196	1	0.31	chipping detritus	3	tool thinning	Onondaga	
176	Test Unit Excavation	494	196	1	0.31	chipping detritus	1	fragment	Onondaga	
177	Test Unit Excavation	495	196	1	0.32	chipping detritus	2	tool thinning	Onondaga	
178	Test Unit Excavation	495	196	1	0.32	chipping detritus	4	fragment	Onondaga	
179	Test Unit Excavation	496	196	1	0.20	chipping detritus	1	primary	Onondaga	
180	Test Unit Excavation	496	196	1	0.20	chipping detritus	2	secondary	Onondaga	
181	Test Unit Excavation	496	196	1	0.20	chipping detritus	2	tool thinning	Onondaga	
182	Test Unit Excavation	496	196	1	0.20	chipping detritus	3	fragment	Onondaga	
183	Test Unit Excavation	497	196	1	0.25	chipping detritus	1	secondary	Onondaga	
184	Test Unit Excavation	497	196	1	0.25	chipping detritus	1	fragment	Onondaga	
185	Test Unit Excavation	498	196	1	0.27	chipping detritus	2	tool thinning	Onondaga	
186	Test Unit Excavation	491	200	1	0.29	chipping detritus	4	secondary	Onondaga	
187	Test Unit Excavation	491	200	1	0.29	chipping detritus	12	tool thinning	Onondaga	
188	Test Unit Excavation	491	200	1	0.29	chipping detritus	17	fragment	Onondaga	

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Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
189	Test Unit Excavation	492	200	1	0.25	chipping detritus	8	tool thinning	Onondaga	
190	Test Unit Excavation	492	200	1	0.25	chipping detritus	16	fragment	Onondaga	
191	Test Unit Excavation	493	200	1	0.26	chipping detritus	1	secondary	Onondaga	
192	Test Unit Excavation	493	200	1	0.26	chipping detritus	10	tool thinning	Onondaga	
193	Test Unit Excavation	493	200	1	0.26	chipping detritus	9	fragment	Onondaga	
194	Test Unit Excavation	494	200	1	0.28	chipping detritus	7	tool thinning	Onondaga	
195	Test Unit Excavation	494	200	1	0.28	chipping detritus	13	fragment	Onondaga	
196	Test Unit Excavation	495	200	1	0.29	biface	1	tool	Bois Blanc	Likely a projectile point; fragmented; 36.5mm; 19.8mm; 7.6mm
197	Test Unit Excavation	495	200	1	0.29	biface	1	tool	Onondaga	53.1mm; 38.2mm; 10mm
198	Test Unit Excavation	495	200	1	0.29	chipping detritus	13	tool thinning	Onondaga	
199	Test Unit Excavation	495	200	1	0.29	chipping detritus	13	fragment	Onondaga	
200	Test Unit Excavation	496	200	1	0.27	preform	1	tool	Onondaga	fragmented; 46.7mm; 55.3mm; 24.8mm
201	Test Unit Excavation	496	200	1	0.27	biface	1	tool	Bois Blanc	fragmented; 24.7mm; 33.1mm; 9.1mm
202	Test Unit Excavation	496	200	1	0.27	chipping detritus	2	secondary	Onondaga	
203	Test Unit Excavation	496	200	1	0.27	chipping detritus	12	tool thinning	Onondaga	
204	Test Unit Excavation	496	200	1	0.27	chipping detritus	22	fragment	Onondaga	
205	Test Unit Excavation	497	200	1	0.29	chipping detritus	10	tool thinning	Onondaga	
206	Test Unit Excavation	497	200	1	0.29	chipping detritus	19	fragment	Onondaga	
207	Test Unit Excavation	498	200	1	0.29	chipping detritus	3	tool thinning	Onondaga	
208	Test Unit Excavation	498	200	1	0.29	chipping detritus	4	fragment	Onondaga	
209	Test Unit Excavation	499	200	1	0.29	chipping detritus	6	tool thinning	Onondaga	
210	Test Unit Excavation	499	200	1	0.29	chipping detritus	12	fragment	Onondaga	
211	Test Unit Excavation	501	200	1	0.27	chipping detritus	6	tool thinning	Onondaga	
212	Test Unit Excavation	501	200	1	0.27	chipping detritus	9	fragment	Onondaga	
213	Test Unit Excavation	502	200	1	0.30	chipping detritus	1	tool thinning	Onondaga	
214	Test Unit Excavation	502	200	1	0.30	chipping detritus	3	fragment	Onondaga	
215	Test Unit Excavation	503	200	1	0.31	chipping detritus	3	tool thinning	Onondaga	
216	Test Unit Excavation	503	200	1	0.31	chipping detritus	4	fragment	Onondaga	
217	Test Unit Excavation	493	202	1	0.35	preform	1	tool	Onondaga	fragmented; 76.1mm; 51.4mm; 21.8mm
218	Test Unit Excavation	493	202	1	0.35	core	1	tool	Onondaga	fragmented
219	Test Unit Excavation	493	202	1	0.35	chipping detritus	12	tool thinning	Onondaga	
220	Test Unit Excavation	493	202	1	0.35	chipping detritus	13	fragment	Onondaga	
221	Test Unit Excavation	494	202	1	0.30	chipping detritus	1	secondary	Onondaga	
222	Test Unit Excavation	494	202	1	0.30	chipping detritus	4	tool thinning	Onondaga	
223	Test Unit Excavation	494	202	1	0.30	chipping detritus	7	fragment	Onondaga	
224	Test Unit Excavation	495	202	1	0.31	chipping detritus	5	secondary	Onondaga	
225	Test Unit Excavation	495	202	1	0.31	chipping detritus	6	tool thinning	Onondaga	
226	Test Unit Excavation	495	202	1	0.31	chipping detritus	11	fragment	Onondaga	
227	Test Unit Excavation	496	202	1	0.34	chipping detritus	2	secondary	Onondaga	
228	Test Unit Excavation	496	202	1	0.34	chipping detritus	10	tool thinning	Onondaga	
229	Test Unit Excavation	496	202	1	0.34	chipping detritus	12	fragment	Onondaga	
230	Test Unit Excavation	497	202	1	0.28	chipping detritus	1	secondary	Onondaga	
231	Test Unit Excavation	497	202	1	0.28	chipping detritus	8	tool thinning	Onondaga	
232	Test Unit Excavation	497	202	1	0.28	chipping detritus	8	fragment	Onondaga	
233	Test Unit Excavation	498	202	1	0.33	chipping detritus	4	tool thinning	Onondaga	
234	Test Unit Excavation	498	202	1	0.33	chipping detritus	5	fragment	Onondaga	
235	Test Unit Excavation	499	202	1	0.32	chipping detritus	1	secondary	Onondaga	
236	Test Unit Excavation	499	202	1	0.32	chipping detritus	4	tool thinning	Onondaga	



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Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
237	Test Unit Excavation	499	202	1	0.32	chipping detritus	6	fragment	Onondaga	
238	Test Unit Excavation	500	202	1	0.28	chipping detritus	7	tool thinning	Onondaga	
239	Test Unit Excavation	500	202	1	0.28	chipping detritus	7	fragment	Onondaga	
240	Test Unit Excavation	501	202	1	0.30	preform	1	tool	Onondaga	54.3mm; 50.2mm; 16.5mm
241	Test Unit Excavation	501	202	1	0.30	chipping detritus	1	secondary	Onondaga	
242	Test Unit Excavation	501	202	1	0.30	chipping detritus	3	tool thinning	Onondaga	
243	Test Unit Excavation	501	202	1	0.30	chipping detritus	8	fragment	Onondaga	
244	Test Unit Excavation	502	202	1	0.30	core	1	tool	Onondaga	With cortex
245	Test Unit Excavation	502	202	1	0.30	chipping detritus	3	tool thinning	Onondaga	
246	Test Unit Excavation	502	202	1	0.30	chipping detritus	1	fragment	Onondaga	
247	Test Unit Excavation	489	197	1	0.33	projectile point	1	tool	Onondaga	Base is slightly fragmented, and point is fragmented off as well; fragmented; 39.2mm; 23.9mm; 7.7mm; 13.8mm; 15.6mm
248	Test Unit Excavation	489	197	1	0.33	biface	1	tool	Onondaga	50.6mm; 23.8mm; 10.9mm
249	Test Unit Excavation	489	197	1	0.33	chipping detritus	2	secondary	Onondaga	
250	Test Unit Excavation	489	197	1	0.33	chipping detritus	2	fragment	Onondaga	
251	Test Unit Excavation	490	197	1	0.27	chipping detritus	5	tool thinning	Onondaga	
252	Test Unit Excavation	490	197	1	0.27	chipping detritus	3	fragment	Onondaga	
253	Test Unit Excavation	491	197	1	0.30	chipping detritus	2	secondary	Onondaga	
254	Test Unit Excavation	491	197	1	0.30	chipping detritus	8	tool thinning	Onondaga	
255	Test Unit Excavation	491	197	1	0.30	chipping detritus	8	fragment	Onondaga	
256	Test Unit Excavation	492	197	1	0.26	biface	1	tool	Onondaga	fragmented; 21.8mm; 17.8mm; 6.9mm
257	Test Unit Excavation	492	197	1	0.26	chipping detritus	2	secondary	Onondaga	
258	Test Unit Excavation	492	197	1	0.26	chipping detritus	5	tool thinning	Onondaga	
259	Test Unit Excavation	492	197	1	0.26	chipping detritus	1	fragment	Onondaga	
260	Test Unit Excavation	493	197	1	0.27	chipping detritus	1	secondary	Onondaga	
261	Test Unit Excavation	493	197	1	0.27	chipping detritus	4	tool thinning	Onondaga	
262	Test Unit Excavation	493	197	1	0.27	chipping detritus	3	fragment	Onondaga	
263	Test Unit Excavation	494	197	1	0.27	chipping detritus	2	secondary	Onondaga	
264	Test Unit Excavation	494	197	1	0.27	chipping detritus	3	tool thinning	Onondaga	
265	Test Unit Excavation	495	197	1	0.29	preform	1	tool	Onondaga	73.3mm; 40.1mm; 30.1mm
266	Test Unit Excavation	495	197	1	0.29	chipping detritus	3	secondary	Onondaga	
267	Test Unit Excavation	495	197	1	0.29	chipping detritus	8	tool thinning	Onondaga	
268	Test Unit Excavation	495	197	1	0.29	chipping detritus	5	fragment	Onondaga	
269	Test Unit Excavation	496	197	1	0.35	chipping detritus	8	secondary	Onondaga	
270	Test Unit Excavation	496	197	1	0.35	chipping detritus	3	tool thinning	Onondaga	
271	Test Unit Excavation	496	197	1	0.35	chipping detritus	13	fragment	Onondaga	
272	Test Unit Excavation	497	197	1	0.25	chipping detritus	3	secondary	Onondaga	
273	Test Unit Excavation	497	197	1	0.25	chipping detritus	6	tool thinning	Onondaga	
274	Test Unit Excavation	497	197	1	0.25	chipping detritus	6	fragment	Onondaga	
275	Test Unit Excavation	498	197	1	0.20	chipping detritus	4	tool thinning	Onondaga	
276	Test Unit Excavation	498	197	1	0.20	chipping detritus	3	fragment	Onondaga	
277	Test Unit Excavation	499	197	1	0.25	chipping detritus	2	tool thinning	Onondaga	
278	Test Unit Excavation	499	197	1	0.25	chipping detritus	3	fragment	Onondaga	
279	Test Unit Excavation	490	199	1	0.32	chipping detritus	5	secondary	Onondaga	
280	Test Unit Excavation	490	199	1	0.32	chipping detritus	3	tool thinning	Onondaga	
281	Test Unit Excavation	490	199	1	0.32	chipping detritus	6	fragment	Onondaga	
282	Test Unit Excavation	491	199	1	0.21	chipping detritus	3	secondary	Onondaga	
283	Test Unit Excavation	491	199	1	0.21	chipping detritus	6	tool thinning	Onondaga	

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Cat#	Context	Unit Northing	Unit Easting	Layer	Depth (m)	Artifact	Frequency	Morphology	Chert Type	Comments
284	Test Unit Excavation	491	199	1	0.21	chipping detritus	16	fragment	Onondaga	
285	Test Unit Excavation	492	199	1	0.29	chipping detritus	1	primary	Onondaga	
286	Test Unit Excavation	492	199	1	0.29	chipping detritus	4	secondary	Onondaga	
287	Test Unit Excavation	492	199	1	0.29	chipping detritus	2	tool thinning	Onondaga	
288	Test Unit Excavation	492	199	1	0.29	chipping detritus	6	fragment	Onondaga	
289	Test Unit Excavation	493	199	1	0.26	biface	1	tool	Onondaga	63.1mm; 30.5mm; 15.7mm
290	Test Unit Excavation	493	199	1	0.26	chipping detritus	4	secondary	Onondaga	
291	Test Unit Excavation	493	199	1	0.26	chipping detritus	9	tool thinning	Onondaga	
292	Test Unit Excavation	493	199	1	0.26	chipping detritus	13	fragment	Onondaga	
293	Test Unit Excavation	494	199	1	0.23	chipping detritus	5	tool thinning	Onondaga	
294	Test Unit Excavation	494	199	1	0.23	chipping detritus	9	fragment	Onondaga	
295	Test Unit Excavation	496	199	1	0.24	chipping detritus	8	secondary	Onondaga	
296	Test Unit Excavation	496	199	1	0.24	chipping detritus	16	tool thinning	Onondaga	
297	Test Unit Excavation	496	199	1	0.24	chipping detritus	36	fragment	Onondaga	
298	Test Unit Excavation	495	199	1	0.30	chipping detritus	10	tool thinning	Onondaga	
299	Test Unit Excavation	495	199	1	0.30	chipping detritus	24	fragment	Onondaga	
300	Test Unit Excavation	497	199	1	0.26	chipping detritus	2	secondary	Onondaga	
301	Test Unit Excavation	497	199	1	0.26	chipping detritus	15	tool thinning	Onondaga	
302	Test Unit Excavation	497	199	1	0.26	chipping detritus	15	fragment	Onondaga	
303	Test Unit Excavation	498	199	1	0.29	chipping detritus	2	secondary	Onondaga	
304	Test Unit Excavation	498	199	1	0.29	chipping detritus	3	tool thinning	Onondaga	
305	Test Unit Excavation	498	199	1	0.29	chipping detritus	15	fragment	Onondaga	
306	Test Unit Excavation	499	199	1	0.28	chipping detritus	1	secondary	Onondaga	
307	Test Unit Excavation	499	199	1	0.28	chipping detritus	2	tool thinning	Onondaga	
308	Test Unit Excavation	499	199	1	0.28	chipping detritus	3	fragment	Onondaga	
309	Test Unit Excavation	500	199	1	0.26	core	1	tool	Onondaga	
310	Test Unit Excavation	500	199	1	0.26	chipping detritus	3	tool thinning	Onondaga	
311	Test Unit Excavation	500	199	1	0.26	chipping detritus	4	fragment	Onondaga	
312	Test Unit Excavation	501	199	1	0.28	chipping detritus	1	tool thinning	Onondaga	
313	Test Unit Excavation	501	199	1	0.28	chipping detritus	1	fragment	Onondaga	
314	Test Unit Excavation	502	199	1	0.30	chipping detritus	2	secondary	Onondaga	
315	Test Unit Excavation	502	199	1	0.30	chipping detritus	3	tool thinning	Onondaga	
316	Test Unit Excavation	502	199	1	0.30	chipping detritus	5	fragment	Onondaga	
317	Test Unit Excavation	503	199	1	0.30	chipping detritus	3	fragment	Onondaga	