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# A STAGE 1&2 ARCHAEOLOGICAL ASSESSMENT OF A PROPOSED QUARRY ON THE W½ OF LOTS 12, 13 & 14 CONCESSION 11 ORILLIA NORTH TWP. (GEO), SIMCOE COUNTY

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# A STAGE 1&2 ARCHAEOLOGICAL ASSESSMENT OF A PROPOSED QUARRY ON THE W½ OF LOTS 12, 13, & 14 CONCESSION 11 ORILLIA NORTH TWP. (GEO), SIMCOE COUNTY

In May 2007 Severn Aggregates Ltd. engaged Kinickinick Heritage Consultants to prepare a Stage 1&2 archaeological assessment of 300 acres, or 121 ha, near Cumberland Beach, in Orillia North Township (geo.), Simcoe County, where Severn Aggregates propose to develop a limestone quarry. A Stage 1 assessment is a background review of archaeological sites in the study area vicinity and a review of the surficial geology, post-glacial landscape evolution, historical land use, and present condition of the property. A Stage 2 archaeological assessment is a field test to determine the presence or absence of archaeological material, cultural features, or human remains in the study area.

The study area is located 12 km north of Orillia about 3 km west of Lake Couchiching. A public forest is adjacent the property on the north and on the southeast it borders an environmentally sensitive wetland. There are operating quarries on each side of the proposed quarry.

The property can be divided into four physiographic zones: 1) shallow lacustrine deposits over limestone plains, from 225 to 231 m a.s.l.; 2) exposed limestone plains above 233 m a.s.l.; 3) organic terrain, between 231 and 233 m a.s.l; and 4) an environmentally sensitive and protected wetland, below 225 m a.sl. The tablelands have extensive areas of exposed bedrock and patches of stunted shrubs. The area of lacustrine deposits was cleared farmland in the 19th century and it now is second growth deciduous trees with patches of pasture, overgrown with juniper, hawthorn and red cedar.

The upper limestone tablelands would have emerged from Lake Algonquin as a wave-washed bedrock island, in the Late Palaeo-Indian period. The sand plains in southeast corner of the proposed Severn Quarry would have been the shoreline in the Early Archaic cultural period. In later cultural periods, the proposed quarry would have been at a removed elevation from major shorelines.

Area 1 is well-drained terrain between elevations 225 m to 231 m a.s.l. and has high archaeological potential for early Holocene hunter-gatherer sites, because it was then part of a littoral zone. Area 1 has potential for historical archaeological deposits associated with the late 19th century farmsteads. Area 2 has low archaeological potential because it has little or no soil. Areas 3 and 4 are areas of organic terrain with low pre-contact archaeological potential and may be omitted from the Stage 2 field assessment because of are poor drainage.

The Stage 2 assessment resulted in the identification of seven archaeological sites that have been registered as BeGu-23 to 29. Four sites are pre-contact sites characterized by stone artifacts. Three sites are historical, although BeGu-26 and BeGu-28 also have pre-contact components. The pre-contact sites are campsites or workshops, or resource gathering stations. The artifact collections consists of stone tools-of-expediency made from locally available raw material. The historical sites and site components are 19th century homesteads. The pre-contact sites are affiliated with a hunter-gatherer culture of undetermined age, possibly from early postglacial times, since they are on relic shorelines. The historical homestead sites are representative of late 19th century European settlement. Artifacts from all sites have a low density and frequency. No pre-contact features were observed. The deposits have been affected in recent times by cultivation and forest clearance. No bones or other organic material were observed in the pre-contact components. Human remains were not observed.

The consultant recommends that Stage 3 archaeological assessments should be carried out at BeGu-23, 24, 25, 26, and 28. A licensed archaeological consultant should carry out these site-specific test excavations in accordance with OMCL technical guidelines.

# A STAGE 1&2 ARCHAEOLOGICAL ASSESSMENT OF A PROPOSED QUARRY ON THE W½ OF LOTS 12, 13, & 14 CONCESSION 11 ORILLIA NORTH TWP. (GEO), SIMCOE COUNTY

## Introduction

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A Stage 1 assessment is a background review of archaeological sites in the study area vicinity and a review of the surficial geology, post-glacial landscape evolution, historical land use, and present condition of the property. A Stage 2 archaeological assessment is a field test to determine the presence or absence of archaeological material, cultural features, or human remains in the study area. This assessment follows Ontario Ministry of Culture technical guidelines (OMCL 1993).

## *STAGE 1*

### 1.0 Description of the Property and Land Use History

The study area is located about 12 km north of Orillia about 3 km west of the north end of Lake Couchiching (Figure 1) and about 3 km southeast of the first rapids on the Severn River (Figure 3). A public forest is adjacent the property on the north and on the southeast it borders an environmentally sensitive wetland of the Grass Lake drainage. There are operating quarries immediately to the west and east of the proposed Severn Quarry.

Figure 2 is a work map provided by Severn Aggregates for the purposes of the Stage 2 field test. According to the work map, each half-lot is approximately 650 x 650 m; however the Ontario base map (Figure 4) indicates that the boundary of the three half-lots extends further east and not as far north as Figure 2 illustrates. When the study area dimensions that are shown in Figure 2 are plotted on NTS 31 D/11 and 31 D/14 the property includes part of a recreational trail in the northeast corner (Figure 3 and 10).

The property has about 28 m relief, from 215 m a.s.l. in the southeast corner, to 243 m a.s.l. on the exposed limestone bedrock in the northwest corner. For the purposes of this study, the property can be divided into four physiographic zones (Figure 8): 1) shallow lacustrine deposits over limestone plains, from 225 to 231 m a.s.l.; 2) exposed limestone plains above 233 m a.s.l.; 3) organic terrain, between 231 and 233 m a.s.l; and 4) an environmentally sensitive and protected littoral of the Grass Lake wetland, below 225 m a.sl. The tablelands are located in the northwest and southwest and have extensive areas of exposed bedrock and patches of stunted shrubs (Figure 9). The organic terrain supports swampy patches of water-tolerant trees as well as fens and marshy areas. The organic terrain may have been cleared and drained land in the 19th century. The area of lacustrine deposits, from 225 to 233 m a.s.l., was cleared farmland (cultivated fields, pasture, and ranch-land) in the 19th century but it was not utilized for agriculture in the late 20th century and now supports second growth deciduous forest with a few patches of pasture, overgrown with juniper, hawthorn and red cedar.

An unopened road allowance separates the property from the quarry on the west, although it has been improved to make an entrance in the southwest corner of lot 12. An unimproved access road runs obliquely through lot 12, parallel to the environmentally protected zone, and then north to the northeast corner, where it joins a recreational trail from Sparrow Lake Road to the public forest. Through lots 13 and 14 the access road runs along the fence that separates the study area from the Beamish Quarry. *The Historical Atlas of Simcoe County* (Belden 1881) does not show any buildings in the study area (Figure 5).

The W½ of lot 12, the southern third of the study area, was divided into two parts early in the 1870s and the title of each changed hands frequently into the 20th century. According to the abstract pages in the Land Registry office, lot 12 concession 11 was patented to Thomas Harris, of Thorah, in 1856, who took out a mortgage on it from the “Canada Permanent B&S Society”, for consideration of £350. In 1867 Peter Phillips, of Markham, assumed tenure of the lot (200 acres) “under power of sale in Harris mortgage”, for $370. In 1870, Phillips bargained and sold the west 60 acres of the south half of lot 12 to James Mahoney, of Vaughn, for $240. In 1877 Phillips sold the north half (100 acres) to Abail Marshall of N.Orillia for $500 and another 40 acres to William Bridgeman, of North Orillia, for $200. In 1882 Bridgeman sold “That part of lot at SE corner=40 acres” to Andrew Tait of Orillia, for $150. In 1882 Mahoney sold his 60 acres in the southeast corner to Abel Marshall, for $600. In 1904 Tait sold his part to Joseph James of N. Orillia, for $525. In 1919 James sold the N½ of his part to William Matts, of N. Orillia.

According to the abstract pages at the Land Registry office, lot 13 concession 11 (200 acres) was patented in 1872 to Daniel Dick, who bargained and sold it to Henry B. Beecher and James R. Silliman, both of Allegeny New York, trading under the name of Beecher and Silliman. In 1874 Beecher sold his share to Silliman for $1. In 1885, the lot passed into the trusteeship of Robert H. Bethune and James Austin, who bargained and sold all 200 acres to Andrew Tait, for $546 in the same year. In 1897, Tait bargained and sold the W½ of lot 13 (100 acres) to Charles W.A. Brailey, of N.Orillia, for $255.43. In 1937, tenure of the parcel passed to Charles H.G. Brailey. In 1950 Brailley’s widow, Sara Brailey, conveyed tenure of the W½ to Leslie Hawkins of Orillia, for $2,000.

According to the abstract pages in the Land Registry office, lot 14 concession 11 (200 acres) was patented to William Roi and Andrew Borland in 1821. In 1841 the lot was divided into parts A and B. Part A consisted of 70 acres in southwest corner of lot 14 Part B consists of 100 acres of the E ½ of the lot and 30 acres in the north part of the W½. A Sherriffs deed in 1841 gave tenure of part A to John Ridout, of Toronto, for £3. In 1854 Ridout quit claim and tenure passed to Howard Spanner Short and Eliza McNulty, both of Toronto. In 1855 Eliza McNulty (Spinster) quit claim, for a consideration of £8, and Thomas Spanner Short assumed tenure of part A.

Figure 6 is an aerial photograph of the property taken about 1930. At that time there were clearings in each half-lot. The southeast corner of lot 12 appears to be divided into three separate fields, which appear to have been recently cultivated. A building, which probably corresponds to BeGu-28, is visible about 150 m from the south boundary of the lot on the edge of the lacustrine deposits, near the bedrock escarpment. William Matts may have been occupied the house at that time. The tableland above the house shows bedrock exposure similar to existing conditions. There is a small clearing in the northeast corner of lot 12, south of the creek and mostly within the environmentally protected zone (zone 4). Lot 13 was mostly treed in the 1930s although there appear to be several overgrown clearings. Two clearings near the center of the lot are more overgrown and may have been cleared by Tait who bought the land associated with BeGu-28 in 1882. The small clearing in the southeast corner of lot 13 is more open and there appears to be a small building (BeGu-29) at the corner. At the time the photograph was taken, Charles W.A. Brailey may have been occupied BeGu-29, but the homestead and the other clearings in lot 13 may have been the work of Andrew Tait. In the 1930s, lot 14 was mostly cleared land east of the organic terrain. Two buildings (BeGu-26) are visible beside the organic terrain. The field does not appear cultivated and may have been only used for pasture, although former field divisions are evident in some areas, by the alignment of shrubs. The organic terrain is thick growth of shrubs. The tableland on the west side of the organic terrain is exposed and eroded as it is today.

## 2.0 Previous Archaeological Research and Known Sites in the Vicinity

Charles Borden (1952) designed a site registration system that is used throughout Canada. A "Borden Block" is ten degrees latitude long and ten degrees longitude wide. It uses a co-ordinate system of upper and lower case letters. Canadian archaeologists refer to "Borden Blocks" and "Borden Numbers" and "Bordenize" sites when they register them. Sites within a Borden Block are numbered sequentially. The proposed Severn Aggregates quarry is in the BeGu Borden Block on the boundary of NTS maps 31 D/11 and 31 D/14 (Figure 10). Two sites are registered in the BeGu block within a 5 km radius of the study area. BeGu-6 is located in concession 9 about 1.5 km to the west of the study area and BeGu-17 is located 4-5 km southwest near Ardtrea.

## 3.0 Post-Glacial Landscape Evolution and Surficial Geology

After deglaciation, beginning over 12,000 years ago, a large great lake called *Lake Algonquin*, which persisted until about 10,100 BP occupied the Lake Huron/Georgian Bay Basin. Because of inconsistent isostatic rebound in the great lakes region, Lake Algonquin had several different outlets, and its relic strandlines are now found at different elevations in various places around the basin (Deane 1950; Lewis and Anderson 1989). From the *Kirkfield Algonquin* stage about 12,500 B.P. to the *Main Algonquin* stage 11,500 B.P., (during the Palaeo-Indian period) the water plane rose steadily and the great lake drained through the Kirkfield outlet, near Fenelon Falls, and down the Trent

River into the Lake Ontario Basin. Lake Algonquin remained high until about 10,100 BP when the North Bay gap opened and *Marquette-Ottawa* Low Stand water poured into the Champlain Sea in the Ottawa Valley (Karrow 2004). High water levels during the Early Mattawa Flood, Mattawa Flood, and Mattawa Base Flow phases returned during the Early Archaic period (Lewis and Anderson 1989). Archaeological site visibility in Ontario is affected for this period because, although the relic shorelines of the northern half of the Huron/Georgian Basin are uplifted continually, those in the southern half are submerged below the modern waterline.

In terms of terrain evolution at the proposed Severn Quarry, the upper limestone tablelands, above 233 m a.s.l., would have emerged from Lake Algonquin as a wave-washed bedrock island, in the Late Palaeo-Indian period. During the *Marquette-Ottawa* Low Stand, after 10,100 BP in the Early Archaic cultural period, the sand plains in southeast corner of the proposed Severn Quarry, below 225 m a.s.l., would have been the shoreline of an ancestral version of the Severn River. However, during the subsequent Early Mattawa Flood (9600 BP), Early Mattawa Base Flow (9,500 BP), and Mattawa Base Flow (8500 BP) periods—still in the Early Archaic cultural period—former shorelines, or littoral environmental zones, of the ancient great lakes must have migrated across the proposed Severn Quarry terrain, from the 233 m contour line to the 225 m contour line. As the land rebounded isostatically, through the Middle Archaic cultural period, the proposed Severn Quarry would have been at a removed elevation from the ancestral Severn River shore, which is now marked by the Grass Lake and St. George Lake. During this time the study area would have bordered a minor water body, which is now organic terrain but would have been a shallow pond, marsh, fen, and swamp from then until the historical period.

Figure 7 illustrates the physiography of the study area vicinity, according to Chapman (1975). The study area is primarily classified as limestone plains, although the environmentally sensitive southeastern corner is categorized as sand plains. Relic beaches and escarpments are indicated about 6 to 8 km southwest of the property, just west of Ardtrea, at elevations from 285 to 245 m a.s.l. By extrapolation, the lower relic shoreline must cross the northwest part of the proposed Severn quarry. This indicates that glacial Lake Algonquin washed the thin till from the upper limestone tableland, above 232 m a.s.l., onto the lower terrace where it has been reworked by wave action. This till would have included fine-grained silt, sand, pebbles and cobbles, which derived ultimately from the Canadian Shield, which begins north of the Severn River.

Schnurrenberger and Bryan (1985) have discussed geological forces that may produce natural fractures that might be mistaken for cultural artifacts. Natural fractures are factors of the energy available (high or low) at a specific location and manner of force application. These include: 1) high energy, static loading (such as thick overlying beds and glacial transport); 2) high energy, dynamic loading (such as mudflows); 3) low energy, static loading (such as cryoturbation and solifluction; 4) low energy, dynamic loading (such as a fluvial environment). The only condition that might apply to the proposed Severn Quarry, in early postglacial period, would be number 4, low-energy fluvial environment. In such an environment the limestone plain became scoured and fissured and the surface of the bedrock would be altered by wave action and freeze-thaw into flags and flag fragments. Igneous or metamorphic rock however is more resistant to such fractures, so any natural occurring pebbles and cobbles of quartz, quartzite, gneiss, or granite, would become water-rolled and rounded. Although natural causes might crack a small fraction of such stones, they would break along cleavage plains and, since the fresh edges so produced would also be subjected to wave action, the edges would become rounded and polished.

4.0 Archaeological Potential

Figure 8 illustrates the archaeological potential of the physiographic zones of the proposed Severn Quarry and the areas that were tested by Stage 2 assessment.

Area 1 is well-drained terrain between elevations 225 m to 231 m a.s.l. Area 1 has high archaeological potential for early Holocene hunter-gatherer sites, because it was part of a littoral zone during the Early Mattawa Flood (9600 BP) to the Mattawa Base Flow (8500 BP) stages of the Great Lakes. The pre-contact archaeological potential of Area 1 would have diminished over time, as the study area became further removed from major littoral zones. The terrain that borders the study area wetlands would have been moderately attractive to later Archaic and Woodland period hunter-gatherers, because the littoral zone was then associated with a minor water body. Area 1 has potential for historical archaeological deposits associated with the late 19$^{th}$ century farmsteads. The recommended Stage 2 field assessment method for Area 1 is test pit survey at 5 m intervals.

Area 2 consists of exposed bedrock limestone tablelands above 233 m a.s.l. Area 2 has low archaeological potential because, although habitable since the *Marquette-Ottawa* low stand stage of the Great Lakes (10,100 BP), it has little or no soil and would have been unattractive for habitation. The recommended Stage 2 field assessment method for Area 2 is visual inspection and judgmental test pit survey where soil may be found.

Areas 3 and 4 are areas of organic terrain with low pre-contact archaeological potential. These areas may be omitted from the Stage 2 field assessment because of are poor drainage.

*STAGE 2*

5.0 Objective of Stage 2 Field Assessment

A Stage 2 archaeological assessment is a field test to determine the presence or absence of archaeological material, or cultural features, or human remains, in the study area. When cultural material is present, a Stage 2 assessment maps the location and distribution of the cultural material, and catalogues the artifact collection.

6.0 Method and Procedure

Permission to enter the property to carry out the Stage 2 assessment was obtained from Mr. Doug Reid of Severn Aggregates Ltd. Ian Badgley, a licensed archaeological consultant (P101), directed the fieldwork from May 29 to June 5 2007. Field and laboratory assistants included: Charmaine Gallagher, Ron Bernard, John Ratcliffe, France Brind'Amour, Collin Potter-Bonar, Monica Maika, Carrie Herzog. Ian Badgley sorted and catalogued the collections and prepared the site plans. Ken Swayze wrote the observations, description, results, and recommendations below. The terminology used to describe the stone tools is taken from Mr. Badgley's catalogue.

The method of field assessment was a combination of visual inspection and test pit survey. In area 1 (Figure 8) the test pit interval was 5 m, in Area 2, the test pits were placed judgmentally, where soil permitted. Test pits were about 30 x 30 cm and were excavated by shovel and masonry trowel to parent material or bedrock, usually less than 30 cm below the surface. The back dirt was passed through a 6 mm mesh and the screen and the soil profile were examined for artifacts and cultural features. When positive test pits were discovered, subsequent test pits were excavated at 2.5 m from it. Test pits were back filled after inspection. Positive test pits were flagged and the artifacts recovered were labeled with test pit provenience. The locations of test pits were plotted on plans.

The weather was normal for the duration of the survey. Poison Ivy infections affected several members of the crew. The artifact collections are in storage at the consultant's facility at the *Diefenbuker Museum* in Carp.

## 7.0 Observation and Description

Three hundred and sixty-nine (N=369) artifacts were collected during the course of the Stage 2 survey. Three hundred and fifty-five (n=355) came from 53 positive test pits, while 14 were found on the surface. The positive test pits and various cultural features are distributed in seven concentrations that have been registered in the Ministry of Culture archaeological site database as BeGu-23, 24, 25, 26, 27, 28, and 29 (Figure 10). Stone tools, made by pre-contact aboriginal people, defined four of these sites, while a combination of historical artifacts, cultural features, and pre-contact stone artifacts identified another two. A third historical site, BeGu-29, was identified on the basis of a visible cultural feature—a collapsed building—but the periphery of this feature was not physically testable due to a dense growth of Poison Ivy.

BeGu-23 is located in the northeast corner of the property, in lot 14, at about 235 m a.s.l. (Figure10). The site is defined by 10 positive test pits and is bounded on the north by an ATV trail, on the east by the property access road, and on the southwest by a low terrace edge (Figure 11).

Seventeen (n=17) lithic (stone) artifacts were collected, seven of which are debitage (flakes or shatter) while ten are classed as tools, including: four scrapers (or unifacially retouched flakes), 2 perforator-scrapers, three retouched, or notched, flakes, and a split pebble (see the catalogue below and Figure 21). The predominant raw materials are pebbles and cobbles of granite, gneiss, and quartz, which the mechanics obtained locally

from bedrock exposures and glacial drift. One specimen (BeGu-23:4), a bi-pointed bi-facetted scraper, is composed of large grains of quartz and feldspar, in about equal amounts, and might be called pegmatite granite, although it is called "quartz" in the catalogue (Figure 21). The specimen resembles the "beaked" artifacts reported from early postglacial contexts by Bunker (1992) and Ellis and Deller (1988). The interested reader may wish to read the Discussion section below to learn more about the use of these informal and expedient tools made of non-chert materials in the Pre-contact Period.
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BeGu-24 is also located in the northeast corner of the property, in lot 14, about 20 to 45 m west of the access road (Figure 10). The site is at elevation 233 m a.s.l. and was defined by 11 positive test pits. Nine test pits are at the edge of a second growth forest and two are in a clearing beside a large juniper bush (Figure 11). Fifteen lithic artifacts were collected, including a plane-scraper and worked, or notched, fragments and pebbles (see catalogue and Figure 22). The predominant raw material is quartz and over half of the collection is debitage (flakes and shatter). Although these non-chert specimens were not meant to formed into projectile points by direct percussion, they do show evidence of percussion in form of step flake scars, cone scars, and compression breaks (see Discussion below and Figure 26).

BeGu-25 is located in the northeast corner of the property, in the overgrown clearing in lot 14, about 110 to 130 m west of BeGu-24, at about 232 m a.s.l. elevation (Figures 10 and 16). Ten positive test pits defined the site: six of them are clustered together and three are outliers (Figure 11). The majority of artifact collection consists of quartz debitage (shatter and flakes); however, two flakes of chert are present and a graver made of gneiss. The retouched flake called a "graver" (in Figure 24, plate 3) was formed by two flake scars, side by side struck, from alternate faces to isolate the graver.

BeGu-26 is located in the middle of lot 14 on the east shore of the organic terrain, at about 231 m a.s.l. (Figure10). The site has two cultural components. The historical component was identified by a shallow foundation depression that is visible in a grassy clearing about 50 m from the marsh (Figure 17). The deposit may be associated with the tenure of John Ridout, after 1841, or the Short/McNulty tenure, after 1854. Two whetstones and some glass sherds were found on the surface nearby (see catalogues and Figure 23). Five test pits in proximity to the house foundation produced bone fragments and sherds of crockery, as well as sherds of glass bottles and jars. Sherds from two plates made of refined white earthenware were recovered: one plate is flow blue ware that was manufactured before 1850. One positive test pit was excavated inside the house foundation and produced window pane glass, carpet tacks, nails, brick fragments, and two small spiral marine shells that are presumed to be ornamental because each has a tiny drilled hole.

Eight positive test pits beside the organic terrain define the Pre-contact Period component. They produced 17 lithic stone artifacts, predominantly of quartz, although some gneiss, chert, and schist specimens were collected. One artifact has steep-angled unifacial retouch flake scars, like the "scrapers" reported by Bunker (1992), the remainder are debitage (shatter and flakes). Those readers interested in learning more about these informal tools and tools of expediency are encouraged to read the Discussion section below and refer to the peer-reviewed references.

BeGu-27 is located on the north side of Grass Lake Creek, in lot 13, close to the buffer that bounds the environmentally sensitive southeast corner of the property (Figures 10 and 18). Two positive test pits, five metres apart, at about 226 m a.s.l define the site. One test pit produced a perforator, made from a split quartz pebble, the other a bi-facetted scraper, or core (see catalogues and Figure 24). Although an additional four test pits were excavated at 2.5 m intervals around each positive test pit, no further artifacts were discovered.

BeGu-28 is located in the southwest corner of the property, in lot 12, at an elevation of about 230 m a.s.l. (Figures 10 and 19). The site has, primarily, historical 19th century cultural affiliation, although one pre-contact artifact was found in test pit 6, which is situated in the rock knob terrain. The historical component was identified by a deep foundation depression that is visible in a second growth sapling woodlot about 40 m from the unopened road allowance (Figure 13). The house foundation is situated on a terrace about 15 m from a bedrock escarpment, at the foot of the limestone plain, and about 25 south of a spring fed creek that flows into a recently dug-out well in the sediment at the foot of the terrace. Two positive test pits were excavated inside the foundation and produced 18 sherds of flow blue refined white earthenware, as well as glass bottle sherds, melted glass, round nails, a longitudinal half of an iron pipe, brick fragments. Two positive test pits on the outside periphery of the foundation produced more refined white earthenware fragments, a round nail, and light bulb glass sherds. One positive test pit, containing a green glass sherd, occurred 17 m south of the foundation. The flow blue ceramic sherds may indicate a pre-1850 deposition date, but most artifacts recovered are consistent with a late 19th century occupation by the Mahoney, Marshall, or James families. The light bulb fragments suggest it was occupied until the middle of the 20th century. Five artifacts were collected from a midden that is located on the escarpment ledge 65 m north of the house foundation and 30 m east of the property boundary

BeGu-29 is located in an overgrown clearing near the access road, in lot 13 about 80 m from the eastern boundary (Figure 10). The site consists of a collapsed building, with a tin roof, which is surrounded, for up to 15 m on each side, by a thicket of Poison Ivy shrubs (Figure 20). Orange plastic garbage bags and an old mattress are visible under the collapsed roof, which suggests that the building was a temporary shelter within the last 20 years. The site was not tested because of the health risk posed by Poison Ivy infection. No artifacts of other cultural features were observed and no positive test pits occurred in the immediate vicinity.

## 8.0 <u>Results</u>

The Stage 2 assessment resulted in the identification of seven archaeological sites that have been registered as BeGu-23 to 29. Four sites (BeGu-23, 24, 25, and 27) have pre-contact components characterized by stone artifacts. Three sites are historical, although BeGu-26 and BeGu-28 also have pre-contact components

- *Site Type & Function* – The pre-contact sites are diffuse lithic scatters. The artifact collections consists of stone tools-of-expediency made from locally available raw material. The historical sites and site components are 19$^{th}$ century homesteads.
- *Cultural Affiliation & Age* – The pre-contact sites are affiliated with a hunter-gatherer culture of undetermined age, possibly from early postglacial times, given that they are associated with relic shorelines of that period.
- *Rarity & Representation* – Hunter-gatherer sites of undetermined age (flake scatters) are commonly reported in the archaeological site database. The sites function cannot be determined from small sample of mundane artifacts; however, they *may* result from seasonal resource harvesting and processing by hunter-gatherer people, who made occasional visits to the property intermittently over several centuries during the early postglacial period. The historical homestead sites are representative of late 19$^{th}$ century European settlement.
- *Artifact & Feature Density* – Artifacts from all sites (pre-contact, historic, and multi-component) have a low density and frequency. No pre-contact features were observed.
- *Integrity & Preservation* – The deposits have been affected in recent times by cultivation and forest clearance. No bones or other organic material were observed in the pre-contact components.
- *Human Remains* – Human remains were not observed.
- *Community Interest* – Hunter-gatherer settlement-subsistence studies are of interest to the scientific and educational community and to First Nations.
- *Site/Resource Sensitivity* – Archaeological sites are sensitive to activities that disturb or impact the soil surface.

## 9.0 Recommendations

The consultant recommends that Stage 3 archaeological assessments should be carried out at BeGu-23, 24, 25, 26, and 28. A licensed archaeological consultant should carry out these site-specific test excavations in accordance with the technical guidelines of the Ontario Ministry of Culture (1993). The excavation procedure should include the establishment of a 1m$^2$ grid and datum at each site and the excavation of at least one metre-square unit at each positive test pit.

## 10.0 Discussion

Readers of this report may not be familiar with the use of granite, gneiss, and quartz for stone tools in Ontario in the Pre-contact Period and may wonder if such raw materials are suitable for tools, given that chert, and other microcrystalline stones, are more commonly reported. Also, readers are probably unfamiliar with bipolar and anvil percussion as a lithic reduction techniques. These methods can be used to make stone tools instead of, or in conjunction with, direct percussion and pressure flaking, which are the techniques used in bifacial reduction to shape a formal tool. Formal tools, particularly when found in a statigraphic depositional context, have been instrumental in establishing the framework of prehistory in Ontario because they are chronologically diagnostic. However, life in the Stone Age was profane and, generally speaking, man/land relationships did not significantly change from the Oldawan to the Neolithic. In fact, all cultures that relied on lithic technology to survive, performed most mundane tasks by means of the simplest tools made from cores and flakes. Even though debitage and waste products from stone reduction dominate the lithic assemblages of most Pre-contact archaeological sites, the emphasis in the published literature (especially in the early postglacial period) has mostly been focused on formal tools and exotic material. A few observant archaeologists have remarked upon the bias but the problem was and is rarely addressed.

> “The most common tool encountered, as in all stone tool-using cultures, is the stone flake that upon being detached from a core is razor sharp and capable of performing a wide range of cutting, scraping, slotting, and puncturing functions with no or little further modification” (Wright 1995:30).

The discussion below describes and compares different methods of percussion (direct, bipolar, and anvil); discusses the suitability of igneous and metamorphic rock for stone tool use; archaeological invisibility and bias in the archaeological record; and the theory of Archaic and Mesolithic stone tool adaptations. The discussion also includes annotated references from peer-reviewed literature that describe anvil and bipolar percussion and the use of non-chert stone to make tools of expediency. The references discussed first are from international contexts (Chile and Sweden), followed by examples from Western Canada, Northeastern United States, and lastly, from Ontario. Figures 26 and 27 presents diagrams from the literature that explain methods of percussion and some of the types of flakes that result.

### 10.1 A Comparison of Percussion Methods

With direct, freehand, percussion and bifacial reduction, the mechanic follows a sequence of flake detachments and attempts to predict how each flake will detach in order to shape the biface into a preconceived form. The ability to shape a biface into a formal projectile point type requires practice and skill and is easier to accomplish when the raw material is a tractable stone like chert. Bipolar percussion, on the other hand, requires no skill or practice and works well with any raw material. While it is impossible with bipolar percussion for the mechanic to predict how the flakes will be detached, the technique is certain to produce a multitude of useful edges and points that can be used to work organic substances with minimal modification—or none at all. While in bipolar percussion the force is delivered straight down into the centre of the core, anvil percussion allows a degree of flake prediction because the blow is directed at an angle to the core towards the outside of the core (see Figure 26c).

The bipolar technique is simple: place a core—a quartz or quartzite pebble, or cobble, or tabular piece of quartz or chert—on a large hard stone (called an anvil) and strike it straight down at the anvil with a hard hammerstone. Typically the core will exhibit crushed poles and, if battered repeatedly, may become bi-pointed. Bipolar percussion results in a variety of flakes but, typically, negative and positive bulbs of percussion are not readily apparent. After a pebble core is shattered on an anvil, the mechanic selects pieces with appropriate edges to use as tools-of-expediency for the task at hand. These are not curated but are disposed of when the task is complete.

Regardless of the type of the type of percussion used, the Cone Principal of physics governs the process of stone breakage—whether the material has good conchoidal properties or poor (see Figure 26b). The hallmarks of a flake detached by direct percussion include: prepared, or distinct, platforms, a pronounced bulb of percussion (some times with an eraillure flake scar), and ripple marks and flakes detached in the course of bifacial reduction will include primary and secondary flakes, as well as characteristic types such as “thinning” and “bifacial retouch” flakes. Bipolar and anvil percussion, on the other hand (while capable of producing a flake with “classic” hallmarks) produces a wide variety of flakes, fragments, chunks, and blocks. While anvil percussion includes some degree of “flake prediction” in the detachment of primary and secondary flakes, the result of bipolar percussion, in particular, cannot be predicted. Nevertheless, the mechanic can expect certain useful forms to recur, namely: “citrus wedge” shapes, “triangular flakes”, and “multiple flakes” (see Figure 27b). Citrus-wedge shapes (see Figure 27c) especially result from bipolar percussion of cobbles and pebbles and can be used unmodified as backed knives, or minimally modified for other tasks. Triangular flakes are long and thin with parallel sides and a triangular cross section (see Callahan 1987)). Multiple flakes are long wide thin flakes, with no apparent dorsal face, produced as multiples. Multiple flakes are sometimes the largest, thinnest, flake possible from small cores and they make excellent biface performs (see Boksenbaum 1980). Hallmarks of bipolar percussion cores include: multi-facetted surfaces, with one or more crushed, battered, and pointed poles. Anvil percussion cores may have prepared platforms and many small circular cone scars (sometimes with concentric rings, sometimes overlapping) are common (in addition to the cone scar that initiated the flake detachment) while a battered and pointed, pole may develop at the opposite end. The cores may be used to detach one or two flakes, or many flakes may be detached from multiple faces. Anvil cores will sometimes show negative bulbs of percussion and anvil-struck flakes may have pronounced or diffused bulbs of percussion, depending upon the raw material. Since the source of raw materials such as granite and gneiss are often boulders, rocks, ledges and cliffs, primary and secondary flakes are often very large, they are usually broken up into smaller pieces by means of “compression breaks”—a hallmark of bipolar percussion—induced by bipolar percussion, to make useful shapes and edges.

Crabtree (1972; 1973) and Cotterell and Kamminga (1987) describe how flakes can be shaped by compression breaks (induced by bipolar percussion) that produce flake fragments with edges with a straight, right-angled, edge profile, if there is direct contact between the hammerstone and the anvil. If the anvil has a depressed surface the break profiles will be concave/convex (see Figure 27a). Compression breaks are a common way to split pebbles and cobbles and reduce the size of large flakes and spalls struck from cobbles and boulders. They also serve to make the “back” of an edge used as a knife.

10.2 Suitability of Igneous and Metamorphic Rock For Stone Tools

Granite and gneiss are of similar chemistry, since both are predominantly made up of grains of quartz and feldspar, with other minerals, such as biotite, in smaller proportion. Chert, quartz, and felspar are all forms of silica and are similarly hard, all at least 6 in Moh's scale of hardness. The biotite grains often found in granite and gneiss are soft in comparison but, overall, a freshly detached flake of granite or gneiss can be very sharp indeed—sufficient, in any case, for short-term expedient uses, such as to: cut, scrape, saw, or perforate organic materials like fish, flesh, skin, bone, ivory, bark, or wood. However, once percussion has taken a flake of granite or gneiss from the lithosphere into the biosphere, the material begins to degrade from the effects of sunlight, chemical weathering, and frost. While a chert flake struck from a biface, for instance, may develop a surface patina; a flake of granite or gneiss will be affected by surface particle attrition caused by the erosion of the softer mineral grains (such as biotite) so that, over time, the flake edges and ridges between flake scars are increasingly rounded and indistinct. Collins (1997:385) notes that, over time, chemical weathering alters the "freshness" or appearance of stone facets, resulting in changes in colouration, surface pitting, and the gradual rounding of working edges and flake scar arrises. This process occurs widely and contributes to the archaeological (in)visibility problem discussed below.

In terms of suitability for bifacial reduction and to shape projectile points, microcrystalline materials like chert are ideal—if a large enough flake can be struck to make the preform—but quartzite and other cryptocrystalline rock can suffice. Even rather coarse-grained igneous and metamorphic rock can be worked into bifaces and points—by skilled and determined mechanics. For the most part however, these materials lend themselves to bipolar and anvil percussion and the manufacture of expedient or informal tools. For such purposes, the "schistocity" and natural cleavage of such materials can be used to advantage in the reduction process. (This too contributes the invisibility of non-chert material.)

10.3 <u>Archaeological Visibility and Invisibility</u>

Stone tool assemblages made from igneous and metamorphic rock by means of bipolar and anvil percussion have low "archaeological visibility" because archaeologists are, in general, are most familiar with the bifacial reduction of raw materials like chert by means of direct percussion and pressure flaking while unfamiliar with bipolar and anvil percussion. This has skewed artifact collections in favour of chert artifacts with aspects of direct percussion or bifacial reduction; while the other artifacts are ignored or overlooked and become archaeologically invisible. In this way, a site can be "invisible", because all or most of the artifacts are of igneous or metamorphic material worked by bipolar or anvil percussion. These kinds of sites only become visible when diggers have learned not to discriminate against non-chert materials and to look for hallmarks other than those more common to direct percussion. Even then, samples of non-chert stone should be routinely collected during test pit survey and examined in the laboratory after they have been washed.

By way of example, consider the a joke that has been common in archaeological social circles for decades: where a neophyte digger shows a stone to a field director and asks "Is this anything?" only to be told it is a "dog-stone", while it is thrown at an imaginary scavenger.

Other factors that have contributed to the archaeological invisibility of minimally modified tools (especially those made from igneous and metamorphic rock by bipolar and anvil percussion) has more to do with surficial geology and demographics. One of the reasons it is difficult to locate early postglacial sites in Eastern North America is that the sea coast and lower river valleys in the early postglacial were submerged over the millennia by rising sea levels. The situation was similar in peninsular Ontario through the Early and Middle Archaic periods, because the water level of the Great Lake basins were well below today's level for millennia. Given that proximity-to-water is the principal assumption of archaeological site prediction models, the highest areas of archaeological potential for Early and Middle Archaic sites in peninsular Ontario is now underwater and unavailable to normal methods of archaeological discovery. Obviously, this situation has biased the archaeological record of this period towards "inland" sites.

The great rift valley of the Nipissing-Mattawa-Ottawa-St Lawrence drainage, however, stand in contrast to peninsular Ontario, for this ancient channel contained huge volumes of water for thousands of years. Because the floor of the rift valley experienced rapid and extreme isostatic rebound, a sequence of relic shorelines formed as the water level gradually receded. These relic shorelines ring the valley walls from Quebec City to the north shore of Lake Nipissing.

The demography of Ontario has contributed to the invisibility problem because most archaeological research, past and present, has mainly taken place in peninsular Ontario, where most of the population lives and where igneous and metamorphic materials are relatively scarce and micro-crystalline materials, like chert, are readily available. Eastern and northern Ontario on the other hand, where chert is rare and granite or gneiss are common, has received very little attention.

10.4 <u>Theory of Lithic Technology in the Archaic</u>

Brian Hayden and William Andrefsky Jr., are two well-known lithic experts who have developed theories of lithic use that are appropriate in the current context.

In a paper published in *Current Anthropology* Brian Hayden (1981) discussed technological adaptation among hunter-gatherers during the transition from Palaeo-Indian to Archaic, in the New World, and from the Palaeolithic to the Mesolithic in the Old World. The Palaeo cultures are characterized by nonpermanent habitation, high mobility over a large land base, and the exploitation of large to medium-sized game animals in areas of high carrying capacity, which led to a wide geographic distribution of technological and stylistic stone artifacts. Archaic and Mesolithic cultures, on the other hand, are "…characterized by two major trends: general diversification of resources exploited in areas of poor-to-moderate resource richness and a tendency toward specialization in habitually exploited resources in resource-rich areas." Diversification resulted in the exploitation of smaller animals and gave new economical importance to plant foods and fishing. The use of a few simple tools became a hallmark of the Mesolithic/Archaic adaptation. Groundstone tools (such as edge-ground wood-cutting tools like axes, adzes, gouges, ground-slate knives) and the use of copper first occur with any regularity in the archaeological record of this period. In particular, Hayden points out the use of local raw materials, often poor in quality, as opposed to very high-grade exotics. This change in technological adaptation in the Archaic was often called a "degeneration" when compared with the projectile points characteristic of the Clovis-Folsom-Dalton tradition. According to Hayden, the technological adaptations of the postglacial period were a result of environmental stress brought on by climatic change and landscape evolution.

Hayden notes that current anthropological theory holds that highly mobile hunter-gatherer cultures—like Palaeo-Indians—tend to make use of very high quality material, often obtained through trade, to make formally shaped tools, like projectile points or endscrapers; while more sedentary groups—such as Archaic cultures—often relied on informal and expedient tools made from poorer quality, locally available raw materials.

William Andrefsky Jr. has developed and tested a theory of lithic organization (*American Antiquity* 1994 v.5 (1):21-34), based on the relative abundance and quality of lithic resources of any given region. He examined three large, widely separated, study areas in western USA, which contract archaeologists had systematically assessed. Each area had very different characteristics in terms of lithic abundance and quality and both mobile hunter-gatherers and sedentary agricultural cultures had occupied each area.

In the first area, where high (chert) and low quality (sandstone, quartzite, limestone, basalt) raw materials were available but not abundant, the expected association between tool design and mobility did not hold, since both formal and informal tools were made by both sedentary and mobile hunter-gatherer cultures. Moreover, even though very high quality material was available through trade from nearby sources, local lithic materials were used to make over 90% of all tools. The second area did not contain any good quality materials and only a few poor materials (quartzite and schist) were available. The stone artifacts recovered were largely made from high quality materials (chert, obsidian, and quartz crystal) obtained through trade from sources a considerable distance away. This material was used predominantly to make formal tools (projectile points, unifaces, scrapers, perforators, gravers) rather than informal ones. The poor quality coarse-grained material accounted for only 13% of the artifacts—all of them informal. In area third case, relatively poor quality lithic material was available throughout the area and formal tools were made from a variety of high quality lithics obtained through trade; while poor quality local material was used for informal ones. Andrefsky concluded that lithic raw material availability is a significant factor in the organization of lithic technology. His observations are summarized in a four-cell contingency table with lithic abundance (high or low) on one axis and lithic quality (high or low) on the other (see Figure 26a). According to Andrefsky's model, archaeological lithic assemblages like the one from Severn Quarry would characterize situations where lithic quality was either: low with low abundance, or low with high abundance. The Severn Quarry technology falls into the latter category.

10.5 Annotated References from Peer-Reviewed Literature

Below are annotated references from peer-reviewed archaeological literature that address in more detail the questions raised by raw material, suitability, and tool category and provide interested readers with additional references to refer to for study purposes.

Although there are no pertinent peer-reviewed publications that refer specifically to Simcoe County archaeological discoveries, there are many examples from international settings and from other regions of North America, including western Canada, Northeastern North America, and Ontario.

10.5.1 International References

*Chile*

At the world-renowned Monte Verde site in Chile a peat bog has preserved example of a Pleistocene culture with excellent cultural deposition. The deposit included traditionally recognized kinds of stone artifacts and others that are less clearly modified or used and do not constitute artifact classes or types in the usual sense. The assemblage includes a few curated tools of formal design and a large number of expedient tools. In the 1980s, the excavator, Tom Dillehay, realized that the assemblage of stone tools from Monte Verde were invisible to many North American archaeologists and needed to be assessed in an objective manner to learn how they were made and their suitability for stone tools.

Michael Collins (1997) addressed this invisibility problem through a descriptive and morphological analysis of formal and informal stone artifacts in volume 2 of “Monte Verde a Late Pleistocene Settlement in Chile” a case study of the *Smithsonian Series in Archaeological Enquiry* that addresses important research problems and demonstrates useful methodological approaches to analysis. To this end, Collins (and Tom Dillehay) carried out use-wear analysis and experiments using replicas of the expedient tools. Their general conclusion was that “expedient use of minimally modified stones was an important aspect of the lithic technology at Monte Verde and that many specimens lacking macromorphological evidence for cultural modification or use were, in fact, probably part of the tool kit.”

In total, 752 stones were analysed with an almost entirely inductive approach due to a lack of a paradigm. In particular he found the Palaeo-Indian model for interpreting chipped stone artifacts applied to less than 5% of the sample. A fundamental aspect of the study was to distinguish human from natural processes that affect stone and so he compared the 752 specimens—found in excellent depositional context on the floor of well-preserved dwellings—to a representative sample of stones from gravel beds in the surrounding environment. The null hypothesis of his comparison was that the stones recovered from archaeological contexts were a result of natural processes. The form of the cultural example proved to be significantly different from the natural one. Experimental replication indicated that the cultural sample had functional utility and microscopic analysis indicated, through visible use wear and the presence of organic residues, that artifacts in the archaeological sample were used as tools.

Collins, who has a background in Palaeo-Indian lithic analysis, initially saw nothing unquestionably cultural about the stones and, with the exception of one or two specimens, he suspected that most would not prove to be demonstrably cultural. However, after 12 years of study to develop the criteria that could discriminate cultural breakage from natural fracture, he learned "…to view the Monte Verde stones as part of a sophisticated prehistoric culture that efficiently tapped the local geologic environment…and he had "no longer any doubt that the assemblages…are cultural and represent effective sophisticated use of available lithic resources. These assemblages simply look clumsy and ineffective."

The most common raw materials at Monte Verde were igneous rocks like basalt, tonalite, andesite, tuffs, gabbro, and diorite, and metamorphic rocks, such as quartzite, and gneiss. Quartz is another raw material that was selected for use. Some examples of informal or expedient tool categories broadly similar to those at Severn Quarry are: notches; choppers; cores; flakes; edge-battered stones; single-faceted split stones with macroscopic evidence for use; single faceted stones without macroscopic evidence of use; multifaceted stone with macroscopic evidence of use; multifaceted stones without macroscopic evidence of use; single-facetted battered stones; faceted stones with one right angle; and hammerstones.

_Sweden_
Errett Callahan (1987), a Palaeo-Indian lithic specialist from the USA, published the results of an intensive study of the lithic technology called "An Evaluation of the Lithic Technology in Middle Sweden during the Mesolithic and Neolithic", which was funded by the Swedish Council for Research in the Humanities and Social Studies and published in *Aun 8* by Societas Archaeologica Upsaliensis. The stone tool technology he described, replicated, and tested in such detail is similar to the assemblages found at the Severn Quarry.

According to Callahan, the problem addressed is "both unique and universal" since, on one hand, "it is totally different from the well-known technology of southern Sweden and Denmark" yet "it is relevant to many cultures throughout the world where coarse materials such as quartz and quartzite predominate and where tool typology is vague". He notes, too, that part of the problem (which contributes to its archaeological invisibility) is this lithic technology (although recognized by earlier generations of archaeologists) "…has been either ignored or given superficial treatment in the literature until now."

Bipolar percussion is used to make pebble and cobble tools. It is an elegant method of deriving useful lithic edges from ubiquitous raw materials that are too small to permit bifacial reduction of long flakes or blades struck from cores. Hunter-gatherers globally have used variations of this lithic reduction strategy from the time of our earliest ancestors to the ethno-historic present. It is a deceptively simple technique but part of an essential strategy of the early Holocene pioneers of those parts of Ontario characterized by the Canadian Shield or the rocky till that flanks it.

> "This model allowed virtual freedom of movement across the landscape, with any size and kind of lithic material being suitable for use. The evolution of a system dependent upon rather small flakes of predominantly local material and an informal, fluid, tool typology may have been a master stroke of wisdom…" (Callahan 1987:61)

According to Callahan, many researchers have not recognized "…that bipolar reduction is a process, not just a fracture type…there is no such thing as a true bipolar fracture…wherein cracks are simultaneously produced at both poles of the core…it makes no difference whether one or two cracks are produced. What is important is that the process involves a core being struck straight downward from above, perpendicular to both the core top and the anvil" (ibid:13). Calahan's diagrams of direct, bipolar, and anvil percussion are replicated in Figure 26c.

The assemblages studied in 1984 came from four sites in Middle Sweden, two excavated in the late 1930s, 1977 and 1981 with a total of 63 "drawers" of stone artifacts made from quartz, quartzite, halleflinta, and porphyry. (Callahan notes that the informal and expedient artifacts were largely "invisible" to the excavators, who were unfamiliar with these kinds of artifacts, and so a good deal of non-artifacts and fire-cracked-rocks were included in the assemblage.)

The classification system devised by Callahan includes: cores (freehand platform, anvil platform, and bipolar); chopper-like cores (freehand and anvil); unmodified/unretouched flakes (freehand/anvil, bipolar, triangular splinter); modified/retouched flakes (scraper-like, denticulate-like, spokeshave-like, borer-like, bifacial-like, transverse point, oblique point, retouched flake); core scrapers; microblades; thick pieces/blocks; hammerstones; anvil stones; stone axes; abrading stones.

Callahan carried out over a hundred structured experiments using replicas of the cores and flakes made from same raw lithic materials available locally. The result was an invaluable lithic reference collection stored at Upsala University. In one test, Callahan butchered sheep using flint, quartz, and porphyry separately. He found the quartz be the superior material for this task but, to his surprise the porphyry flake proved to be more than adequate and even coarse quartzite was "suitable enough for certain common tasks".

10.5.2 <u>Western Canada</u>

The expedient use of pebbles and cobbles as tools by pre-contact cultures is a lithic technology that was first recognized in Canada by Carl Borden (1960) at the Milliken site in the Fraser Valley, British Columbia (published in *Contributions to Anthropology 1957*, National Museum of Canada, Bulletin 162:101-118, Ottawa). His later research (Borden 1975) demonstrated that cobble tools in various forms were a common adaptation of hunter-gatherers in a littoral, riverine, or marine environment. Some prominent researchers see the common, systematic, use of pebble and cobble tools as a technological hallmark of early cultures in the Northwest Coast (Carlson 1979; Fladmark

1990). Others have observed that in more recent contexts (such as shell midden deposits in the Lower Mainland of the Fraser Valley) pebble tools continued to be used for special purposes (Grabert 1979).

### 10.5.3 Northeastern North America

Robinson (1992: 95-97) defined a Gulf of Maine Archaic Tradition as a technological pattern (not a substitute for a whole cultural tradition) spanning the Early and Middle Archaic periods in northern New England, between approximately 9,500 and 6,000 BP. Like the Severn Quarry assemblages, it is characterized by "a flaked stone industry dominated by core, uniface and flake technology;" together with low frequencies of bifaces and a paucity or absence of projectile points, and ground stone tools. Ground stone artifacts are represented at frequencies of between 0 and 11% of the lithic tool assemblages at several early Archaic sites (Robinson 1992:102).

Victoria Bunker (2002: 25) states in *The Indian Heritage of New Hampshire and Northern New England*: "A nonbifacial toolkit has recently been recognized throughout northern New England during the Early Archaic period. Quartz is the primary stone tool material in this tool kit, which consists of a variety of steep and beaked unifacial edge tools, cores and flakes." Dincauze (1993:12) reports Early Archaic assemblages from central and northern New England sites that consist almost entirely of quartz uniface tools. Bourque (2001: 41) notes that the Early Archaic occupants of Maine flaked occasional tools from chert and rhyolite, but that "They also made many scrapers and minimally modified unifacial tools from quartz. In fact, an abundance of quartz flaking debris is one of the hallmarks of Early Archaic sites."

Quartz is a primary raw material for flaked stone tools in the Gulf of Maine Archaic tradition technological pattern, although a variety of igneous and metamorphic rocks are commonly used when quartz is not present, as is the case at Severn Quarry. Robinson (1992:96) characterizes these artifacts as "steep-edged quartz unifaces, irregular cores, flake tools, blocky fragments and flakes." Sanger (2005: 19) describes the Early Archaic from Maine as characterized by a variety of crude tools made from quartz and metamorphic rock, with forms that are "more functional than elegant." Robinson (1992:97) notes that thick-bitted uniface "scraper" intergrades continuously with cores.

David Sanger published an article in 1996 in the *Canadian Journal of Archaeology* (v.20:7-28) in which he noted that prior to 1980 interpretation of the archaeological record in New England from the early and mid-Holoceneperiod "depended almost entirely on extension of culture types defined outside the region"; however, since then, considerable new data about the Early and Middle Archaic in Maine has appeared that demonstrated the inadequacy of the imported models.

At the Gilman Falls site on the Stillwater River in Maine Sanger excavated a Middle Archaic quarry and workshop site, where poor quality, metamorphic rock (phyllite and granofels) had been reduced by bipolar/anvil percussion and used to fashion both formal and informal/expedient tools. Some of the phyllite choppers he illustrates resemble artifacts from the Severn Quarry. In reference to such tools, he notes:

> "Tempting though it may be to dump all of these unprepossessing tools into the catch-all category "expediency tools", closer examination reveals variability, some of which may be significant…Despite the tendancy to over-differentiate, a substantial number of pieces is relegated to "flaked phyllite", defined as artifacts that exhibit minimal shaping. If found in later contexts, many specimens in this class might well be discarded as non-artifactual." (Sanger 1996:14; emphasis has been added to highlight archaeological visibility).

The stone artifact categories at Gilman Falls include: groundstone rods, rod preforms gouges, and celts; choppers; phyllite "slate" points; battered nodules. Choppers are "large heavy, crudely-worked pieces affecting a steep edge angle, often unifacial, sometimes bifacial". "Battered nodules" is a term Sanger applies to "flaked felsite cobbles" with battered ridges between flake scars. Sanger speculates that the rods may have been used to sharpen the gouges. Sanger notes that "Gilman Falls joins with other central Maine sites in the apparent paucity, or even absence, of a chipped projectile point tradition during part of the Middle Archaic" and he suggests that the projectile points may have been made from organic substances

Sanger notes that the material (quartz-muscovite granofels and/or phyllite) is difficult to flake bifacially, "however, this rock can be shaped by unifacially flaking along one edge. The blank is then turned over and reduced unifacially along the second long edge, a technique which produces a beveled cross section." (ibid:19).

The retouched and notched tools in the Severn Quarry assemblages resemble the steep-bitted "scrapers" and "edge tools" reported from the lower levels of the Eddy site in Manchester NH, dated to approximately 8000–7500 BP (Bunker 1992:141). The range of artifacts in the Severn sample is similar to those of the quartz and rhyolite assemblages from the Early Archaic levels of the Brigham and Sharrow sites in the Maine interior, dated to between about 9500 and 7500 BP (Petersen and Putnam 1992: 32, 34).

10.5. 4 Ontario

In 1939, Kenneth Kidd (Curator of Ontario Archaeology at the ROM, later a professor at Trent University) and Norman Emerson (a professor at the U. of T.) carried out one of the first professional excavations on a pre-contact site in northern Ontario at Rock Lake in Algonquin Park. In 1948, Kidd published an account of this excavation in the *Southwestern Journal of Anthropology* (Vol.4:98-106). "Two superimposed cultures of simple content" were revealed in an excavation of 375 square feet, which contained about 1,000 bone fragments, 392 Late Woodland potsherds, and 253 stone artifacts (excluding fire-cracked rock), including 64 pieces of exotic chert. The exotic chert was used to make formally shaped scrapers, while "The slate culture, from the lower portions…" may have been older, possibly from the Archaic period. Most of the artifacts, however, were of granite, quartz, and slate and included numerous granite pebbles and other stones. Kidd notes that: “By far the greater number of these showed no evidence of human workmanship” (ibid:101). One of the formal artifacts recovered was a crude edge-ground axe made from “finely consolidated granite” (like felsite). Kidd classified a large proportion of the stone artifacts as “problematical tools” that he defined as: “…extremely crudely made, so crudely that their purpose can only be guessed at. There are four pieces which may conceivably have been used as scrapers…” (ibid:102). One of the artifacts Kidd illustrates in the report (ibid:Fig 1c) is an irregularly-shaped, step-flaked, slate piece that he calls a scraper—it is similar to an artifact from Severn Quarry that was also called a “scraper”. Such artifacts might more accurately be termed simply “retouched flakes”. Kidd was a prescient archaeologist who understood that some artifacts were “archaeologically invisible” (he did not use that term however), so obviously many stone artifacts in his collection—like those from Monte Verde or Middle Sweden—were collected because of their depositional context and association with demonstrable artifacts: “Many of the other twenty slate pieces have edges which could have rendered them useful as scrapers, show no conclusive evidence of having been so employed.” (ibid:103).

In “Some Distinctive Palaeo-Indian Tool Types from the Lower Great Lakes” Chris Ellis and Brian Deller (1988 *Midcontinental Journal of Archaeology* Vol. 13(2):111-158) describe seven chert artifact types from Palaeo-Indian sites in Ontario. Although focused on that period, the discussion is relevant to the early postglacial period and Archaic cultures as well. The function of the stone artifact types described in the article is defined by form, not by use wear. The seven types are: large alternately beveled bifaces; “backed” bifaces; proximal end and side scrapers; asymmetrical end scrapers; narrow end scrapers; hafted perforators; backed and snapped unifaces.

With 25 years hind sight, the consultant considers that the site sample employed would fall with cell 1 of the quality/abundance contingency table presented by Andrefsky (1994—see above), where the sites are in a region with abundant high quality raw material and so both formal and informal artifacts are made from high grade material obtained locally or from nearby sources (see Figure 26a). In fact some of the techniques described here with high-grade material are the only effective methods of working poor quality material, which is ubiquitous in northern and eastern Ontario. These techniques are: “alternate edge beveling” and “backed and snapped” artifacts.

The alternate edge beveling technique was described, replicated, and tested by Callahan (1987—see above), who notes that it is the best way to shape poor quality coarse-grained material. Backed flakes, whether they are retouched or not, were commonly used tools in the Stone Age. The “back” is a wide, blunt, side of the flake opposed to a sharp, acute, edge, so the mechanic can apply force without injury to the hand. The back can be natural or cortex edge (as in case of “citrus-wedge” shaped cobble fragments), or an edge made blunt by steep retouch; or by a compression break—called “snapped” by Ellis and Deller (1988). (The consultant follows the terminology used by Crabtree 1972, 1973 and Cotterel and Kaminga 1987.) Ellis and Deller (1988:119-120) describe backed and snapped tools as: “ very distinctive..rectangular in plan…and roughly wedge-shaped in transverse section”. One of the working edges of such pieces is the thin lateral edge opposite the thick back has a unifacially sharpened edge and an acute angle of 40-75 degrees. “Another distinctive aspect of these tools is the presence of a bend or snap break at one or both ends of the tool…[and]…the retouch is superimposed over the snaps.” This technique works well with poor quality material. Compression-broken edges with steep shallow unifacial retouch are found on Gulf of Maine Archaic tradition sites in New England (Bunker 1992).

In “An Early Palaeoindian Cache of Informal Tools at the Udora Site, Ontario” (*Research in Economic Anthropology: a Research Annual*, Supplement 5, pp 45-93) Peter Storck and John Tomenchuk (1990) describe a sample of informal and expedient tools from a Palaeo-Indian site associated with the relic shoreline of Glacial Lake Algonquin. The material was found in several discreet cultural features and although no unquestionably diagnostic Palaeo-Indian artifacts were found in the features there were several “backed and snapped” artifacts found. The material is high quality Fossil Hill and Onandaga chert that would have been readily available through trade or by journey to the source. Storck and Tomenchuk classified the 78 informal tools according to Ellis and Deller’s (1988) terminology. Use wear analysis indicated that the edges of 34 tools had been used for longitudinal cutting, while others were used for orthogonal cutting and direct penetration. The used tools exhibited bright polished surfaces. Storck and Tomenchuk (1990:77) speculate that some of the tools may have been used to split spruce roots. Replication and tool use experiments carried out by the authors suggested that “…the work performed with the tools in the Udora feature represent a substantial investment of time and effort”.

In “Iroquoian Archaeology: It’s the Pits” (Essays in St. Lawrence Iroquoian Archaeology, *Occasional Papers in Northeastern Archaeology* No.8 pp 1-7) Jim and Dawn Wright summarize the results of screening 27 tons of feature material salvaged from the St. Lawrence Iroquois Maynard/McKeown site. They report:

> “A utilized flake industry, hithertofore unrecognized in St Lawrence Iroquois culture, was represented by 97 chert, quartzite, and quartz speciments from 65 samples for an average of 1.5 per feature. These flakes, which include small split pebbles, were used and then discarded. Presumably, the abundant and elaborate bone tools and ornaments of St. Lawrence Iroquoian culture were fashioned with these simple expedient tools.” (Wright and Wright 1993:4).

In “The Heritage Hills Site and Early Postglacial Occupation of the Ottawa Valley” (*Archaeology of Eastern North America* 2011 Vol. 39:131-152) Ken Swayze and Robert McGhee report an early postglacial period site in Ottawa on relic shorelines dated to 11,000 and 9,000 radiocarbon years ago. The assemblage of lithic tool is based on locally quarried vein quartz, and other poor quality coarse materials, primarily using a bipolar/anvil percussion technique. An experimental study of use wear on quartz tools was undertaken as the basis for recognizing used artifacts in the collection These unifacial tools, with crushing and use polish on steep edges and points, resemble those characteristic of Gulf of Maine Archaic Tradition assemblages in New England and the St. Lawrence Valley.

The Heritage Hills site and other recently discovered sites suggest the existence of a previously unrecognized Early Archaic occupation of the Ottawa Valley and eastern Ontario. Over a period of 15 years from, 1991 to 2006, the consultant carried out 111 archaeological assessments in the Ottawa Valley that covered 1,493 ha (3,689 acres) of land slated for development. Given that many modern shorelines are already developed or protected from environmental disturbance, it is not surprising that these CRM study areas tended to occur on lands that are now high above, and at some distance from, modern shorelines.

The systematic survey of these study areas involved a sample of over 250,000 test pits, of which only about 1% produced stone artifacts and resulted in the identification of archaeological sites at 44 of the 111 locations tested. These positive test pits and find spots are clearly associated with relic shorelines and early postglacial landforms. On average about 100 stone artifacts were collected at each location. Initial surveys at these locations—excluding Heritage Hills, which produced a disproportionately high number of artifacts—yielded 4,666 stone artifacts. Further excavation at 22 of the 44 site locations produced an additional 10,163 artifacts.

The lithic technology practiced on the relic shorelines of the Ottawa Valley is characterized by the expedient use of whatever common stone material was available. Given that the region is located in the Metasedimentary Belt of the Canadian Shield there is a wide variety of raw materials available at any given location. Chert and other cryptocrystalline materials are scarce and present only in the form of small pebbles or thin lenses. Materials selected for use were, in order of apparent preference: chert; quartz (preferably clear "hyaline" quartz); quartzite; felsitic granite and gneiss; schist, and even sandstone. Techniques of reduction include the bipolar/anvil percussioin as well as flakes struck directly from cores or blocks extracted from veins and bedrock exposures. Core tools and cobble tools are present but most tools are made from minimally retouched flakes and spalls. In rare cases the retouched edges suggest a function, such as a chopper; scraper; perforator; or engraver, diagnoses which are widely accepted when applied to similarly shaped cryptocrystalline specimens (Swayze and McGhee 2011:148).

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## 12.0 Statement of Qualifications

Education and Experience – Mr. Swayze holds Ontario archaeological consulting licence P039 (Professional category Stages 1 to 4, Province-wide). He has a B.A. (1983) in Archaeology and a M.A. (1987) in Geography, both from Simon Fraser University, Burnaby B.C. His archaeological experience—relevant to this report—includes: the lithic technology of hunter-gatherers; pre-ceramic settlement patterns in the Ottawa Valley; and historical archaeology in the Ottawa Valley. His relevant geographical specialties include: early Holocene post-glacial landscape evolution, surficial geology, and soil (environmental) development in the Ottawa Valley; aerial photograph interpretation; and historical geography.

Previous Assignments –

- 1995- present – as an Archaeological Consultant he has completed over 200 compliance archaeological assessments in eastern and central Ontario and recorded, sampled, conserved or salvaged numerous archaeological sites. Other projects during this period have included: field courses and assessments in Nunavut for the Inuit Heritage Trust; preparation of an archaeological protocol for the Algonquins of Pikwàkanagàn; directing a Public Archaeology Programme for Bonnechere Provincial Park.
- 1991-1994 – as Project Archaeologist for the Northern Oil and Gas Action Plan (NOGAP) administered by Canadian Museum of Civilization he conducted field work and research in the Mackenzie River Delta region.
- 1988-1990 – as Project Archaeologist, Canadian Parks Service, Western Region (Calgary), Archaeology Unit he undertook prehistoric and historic archaeological research in Banff, Jasper, Elk Island, and Pacific Rim National Parks.
- 1977-1990 – as Archaeological Field Assistant, Canadian Museum of Civilization, he provided field assistance for 14 seasons of archaeological survey and excavation in the central and western Canadian arctic.
- 1972-1977 - Eastern Regional Archaeologist, Ontario Ministry of Culture and Recreation (now OMCL): Archaeological inventories and master plans of various provincial parks and counties in eastern Ontario.

References

- Dr. Jean-Luc Pilon, Curator of Ontario Archaeology, Canadian Museum of Civilization (819) 776-8192. jean-luc.pilon@civilization.ca Project: Stages 1&2 and 4 assessment and excavation of BiFs-1 Muldoon a Lamoka Archaic site on the South Nation River Assignment Period: June 2003 to March 2004.
- Lynn Peplinski, Heritage Manager, Inuit Heritage Trust Inc. Box 2080 Iqaluit NU X0A 0H0 Tel. (867) 979-0731 Fax. (867) 979-6700 lpeplinski@ihti.ca Projects: Field course Kugluktuk, 2002 and Tree River Estuary, 2003 Assignment Periods: August 2002 and August 2003.

1993 Jim Fraser, Park Superintendent, Ontario Parks, Ministry of Natural Resources 31 Riverside Drive, Pembroke, Ontario K8A 8R6 Tel.: (613) 757-2103 Fax.: (613) 757-0039 Project: Bonnechere Park Public Archaeology Programme, 2003 Assignment Period: June-October 2003.

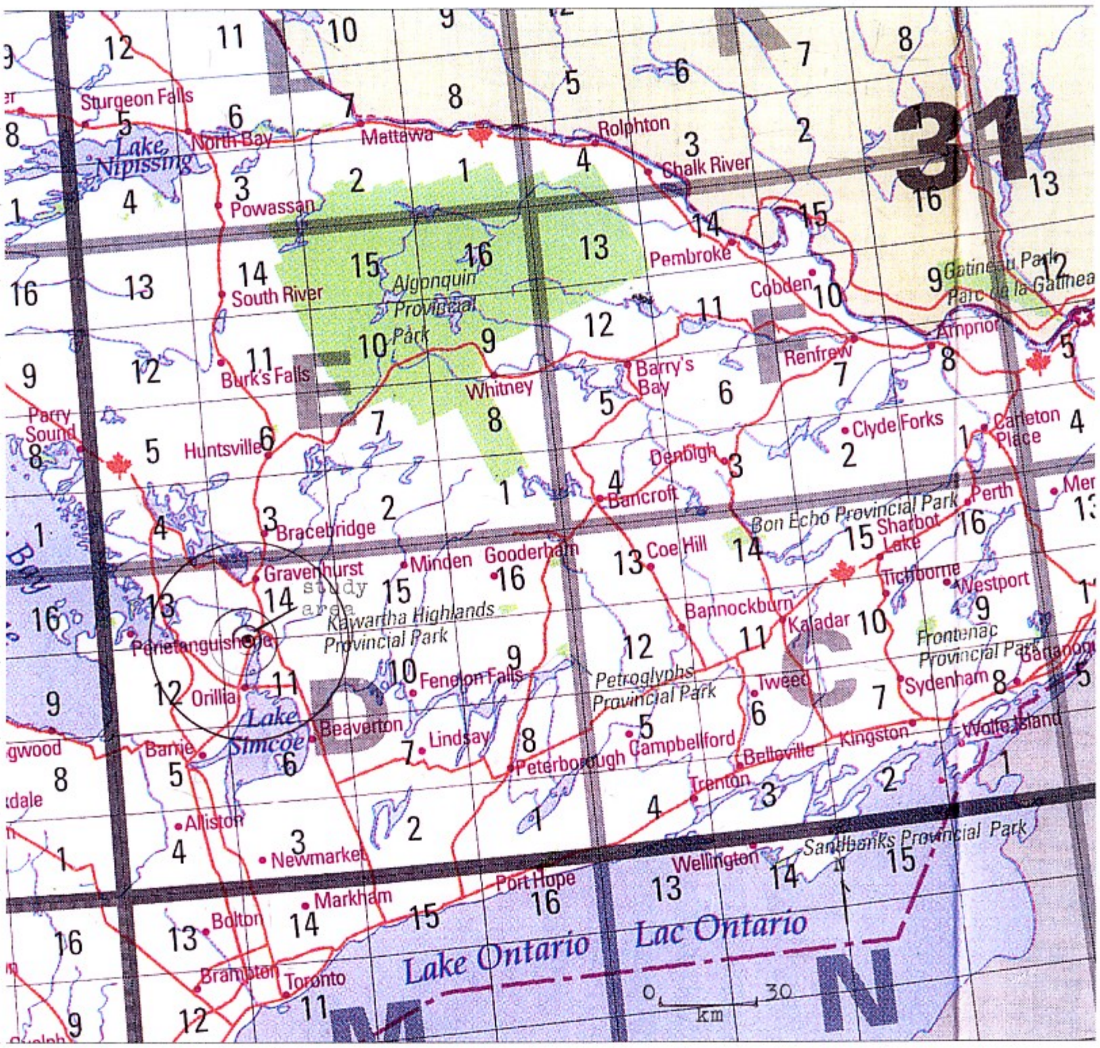


Figure 1: Regional location of the study area

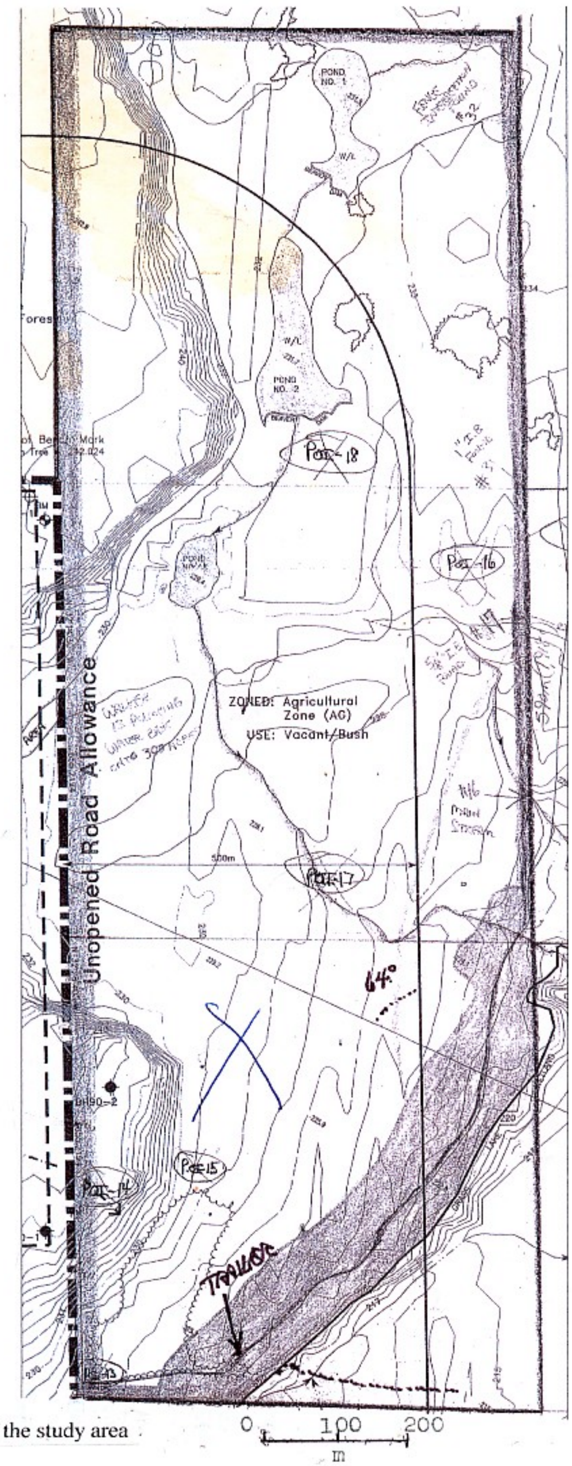


Figure 2: plan of the study area

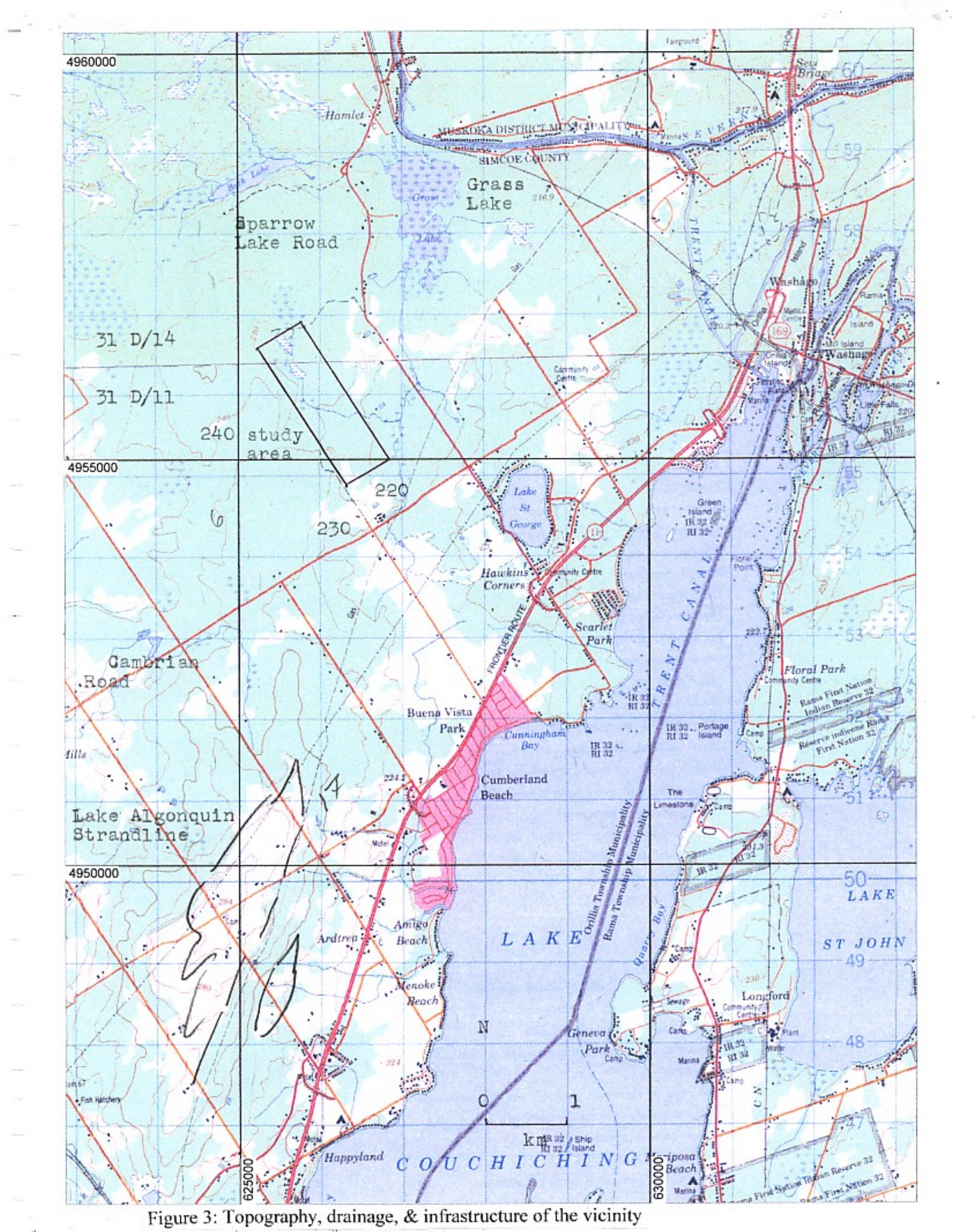

Figure 3: Topography, drainage, & infrastructure of the vicinity

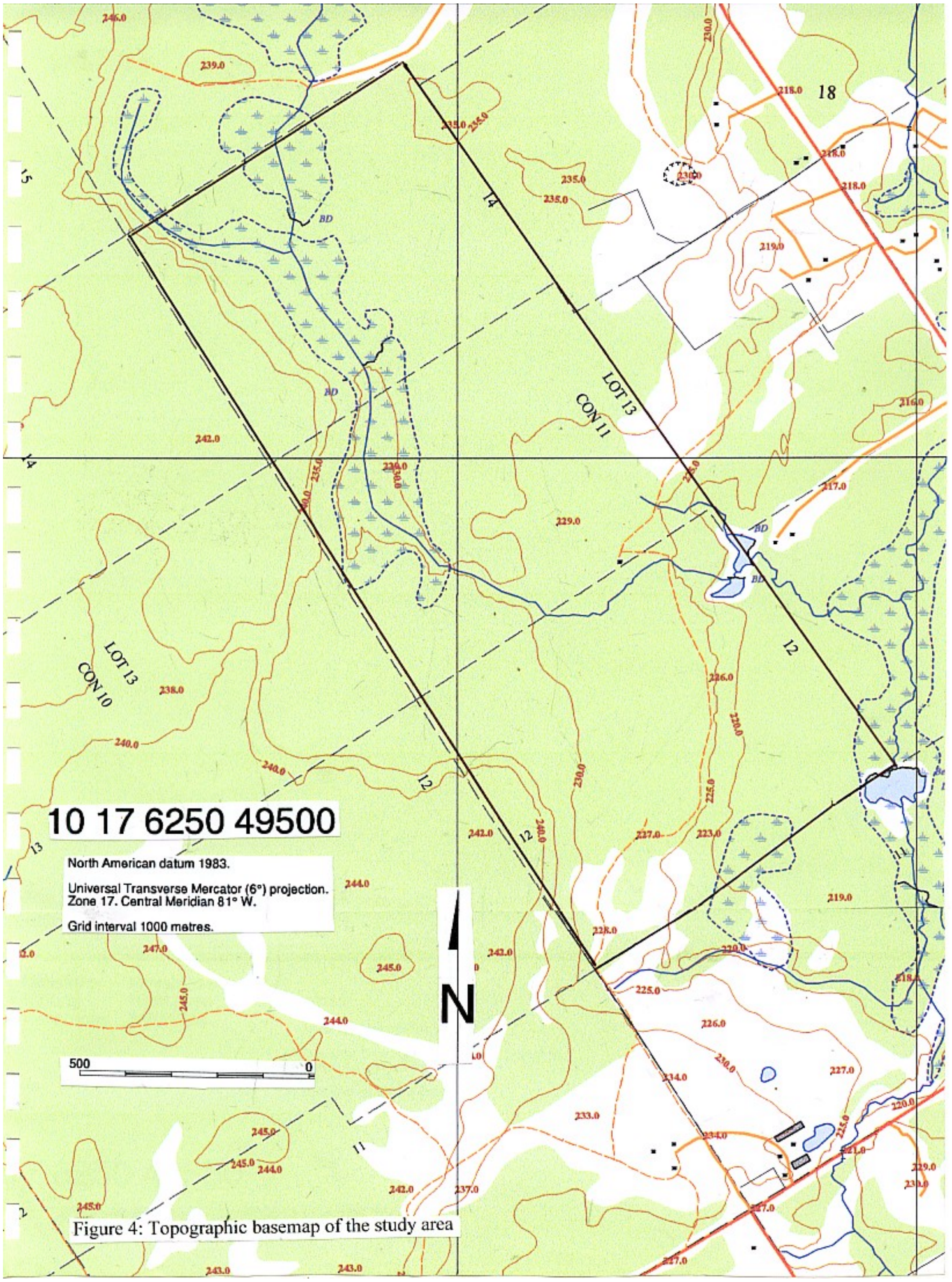


Figure 4: Topographic basemap of the study area

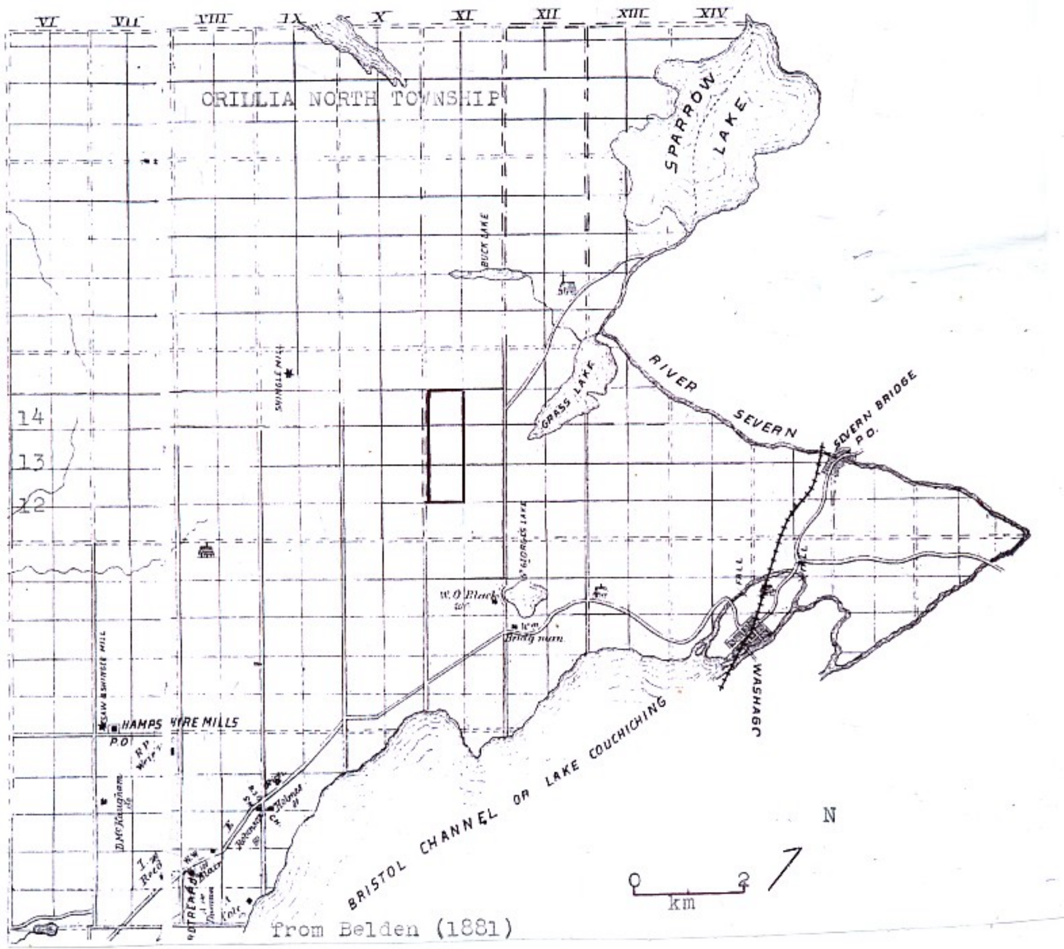


Figure 5: Historical atlas of Simcoe County 1881

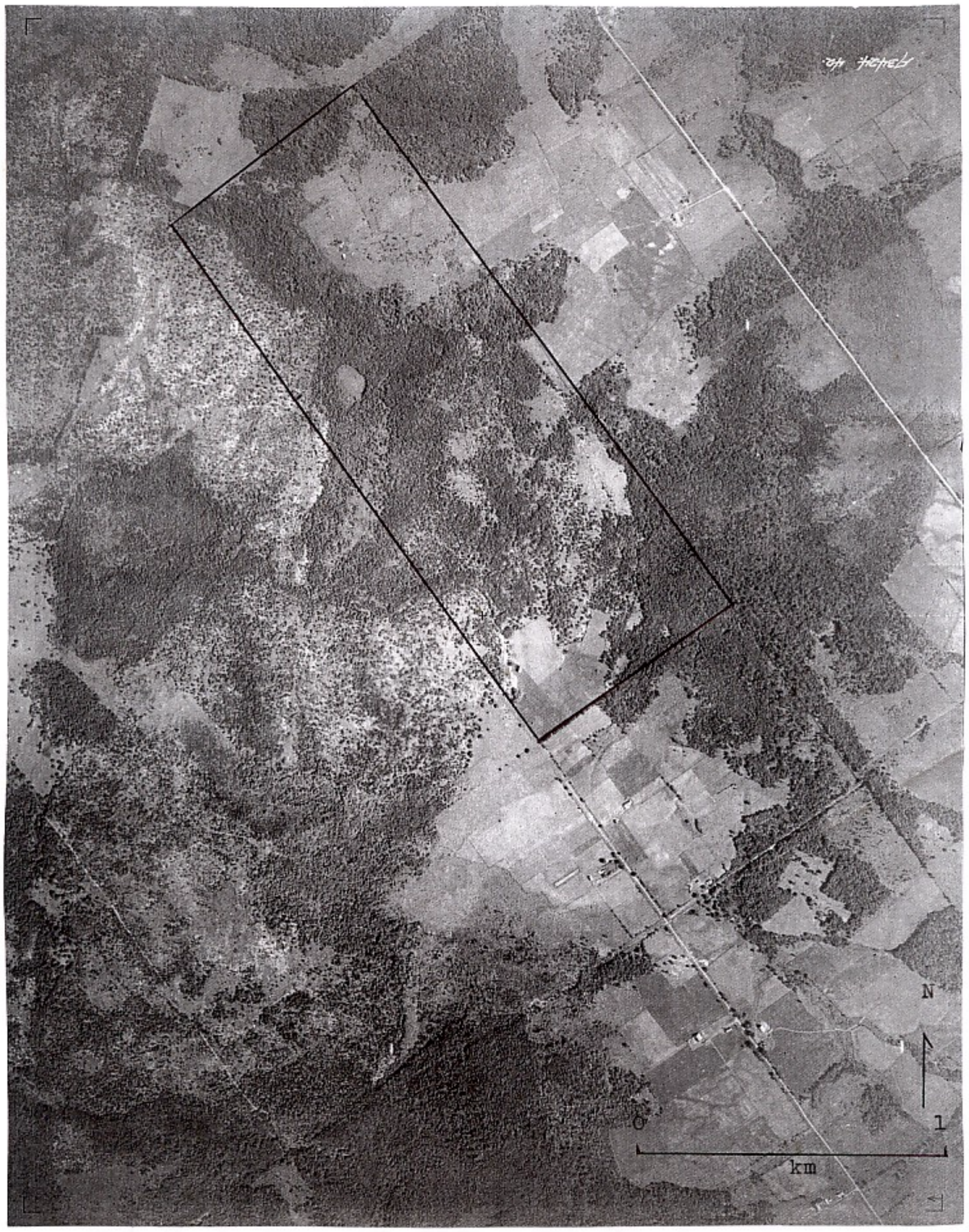


Figure 6: Historical aerial photograph A3424-42

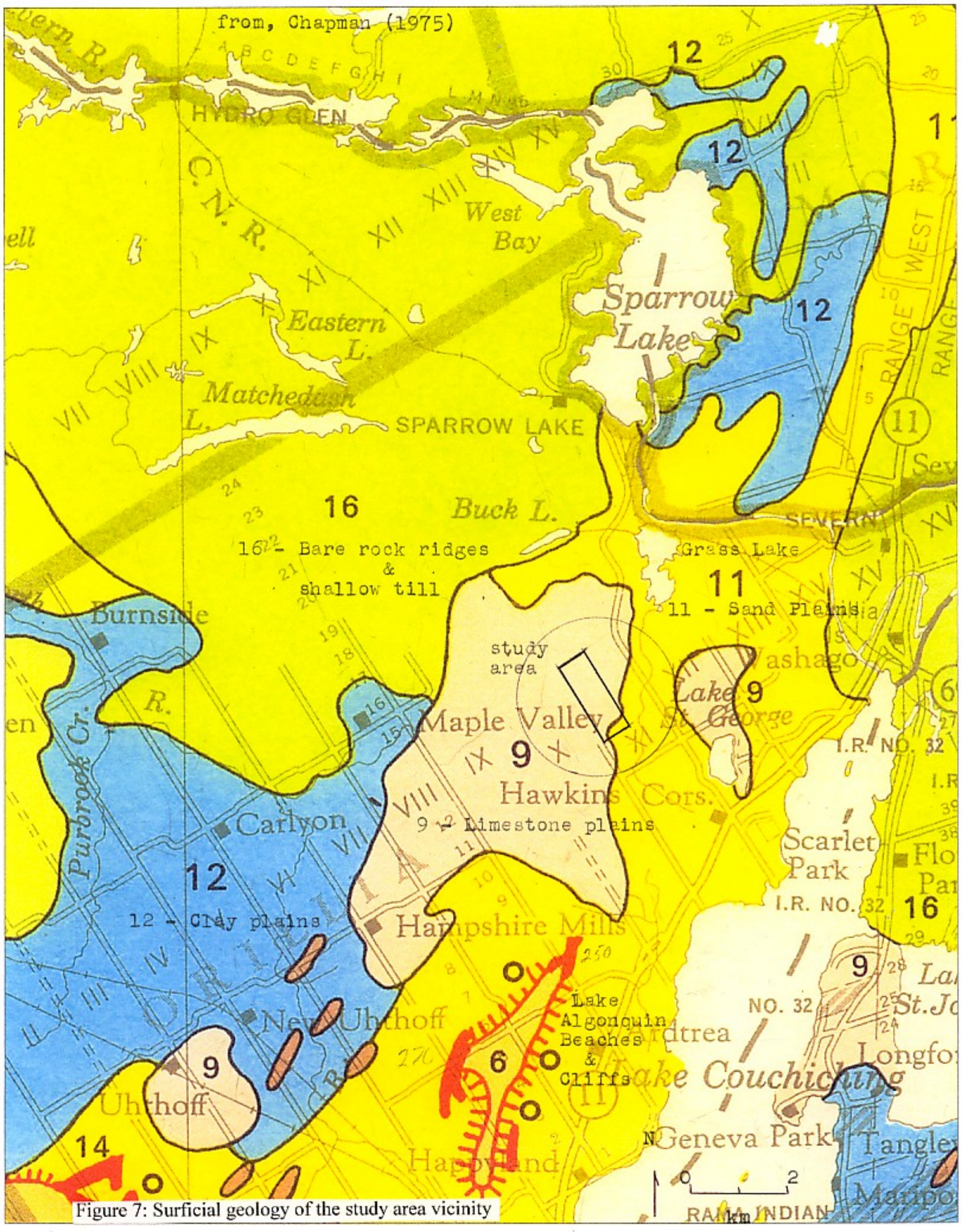

Figure 7: Surficial geology of the study area vicinity

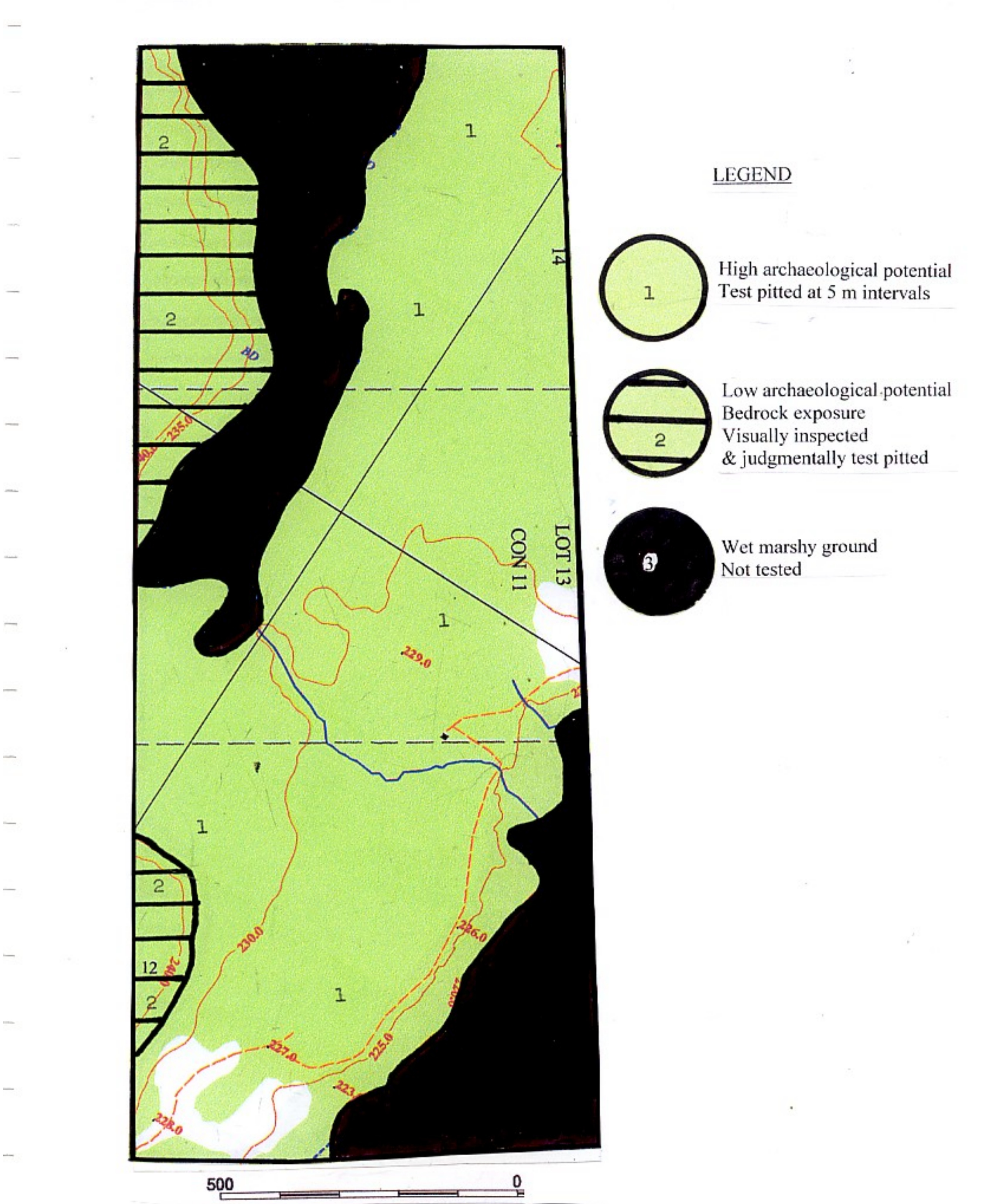


Figure 8: Archaeological potential of the study area

Figure 9A: Limestone bedrock exposure at the southern plateau, looking W

Figure 9B: Limestone bedrock exposure at the northern plateau, looking N

Figure 9: Visually inspected & judgementally tested areas

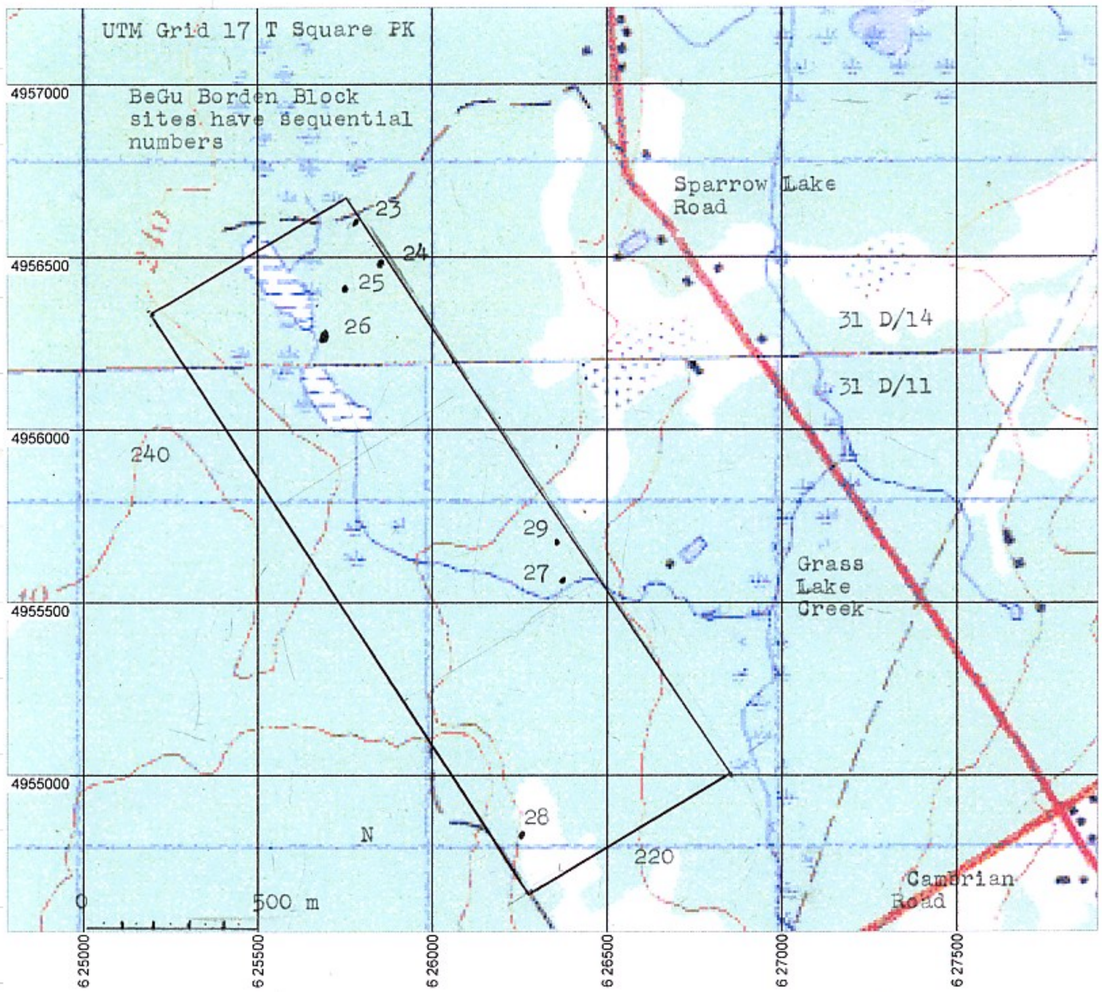


Figure 10: Results of Stage 2 survey, BeGu-23 to 29
Grid: UTM (NAD27)

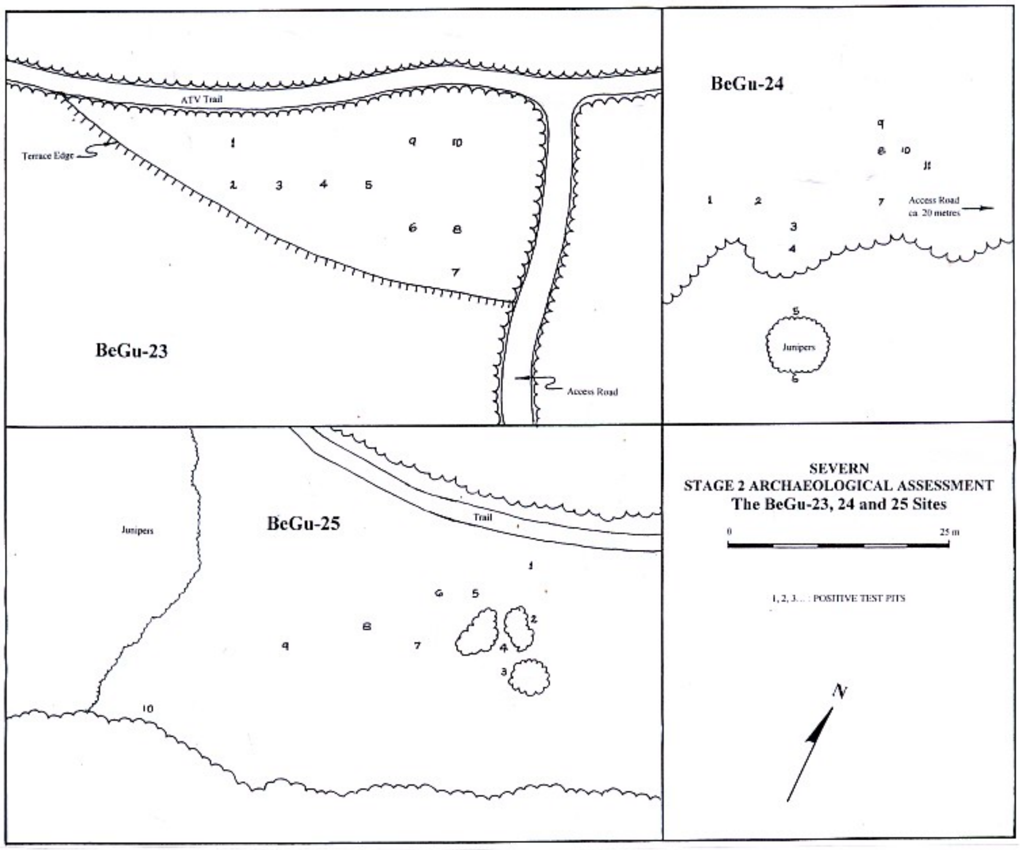


Figure 11: Positive test pit distribution at BeGu-23, 24, & 25

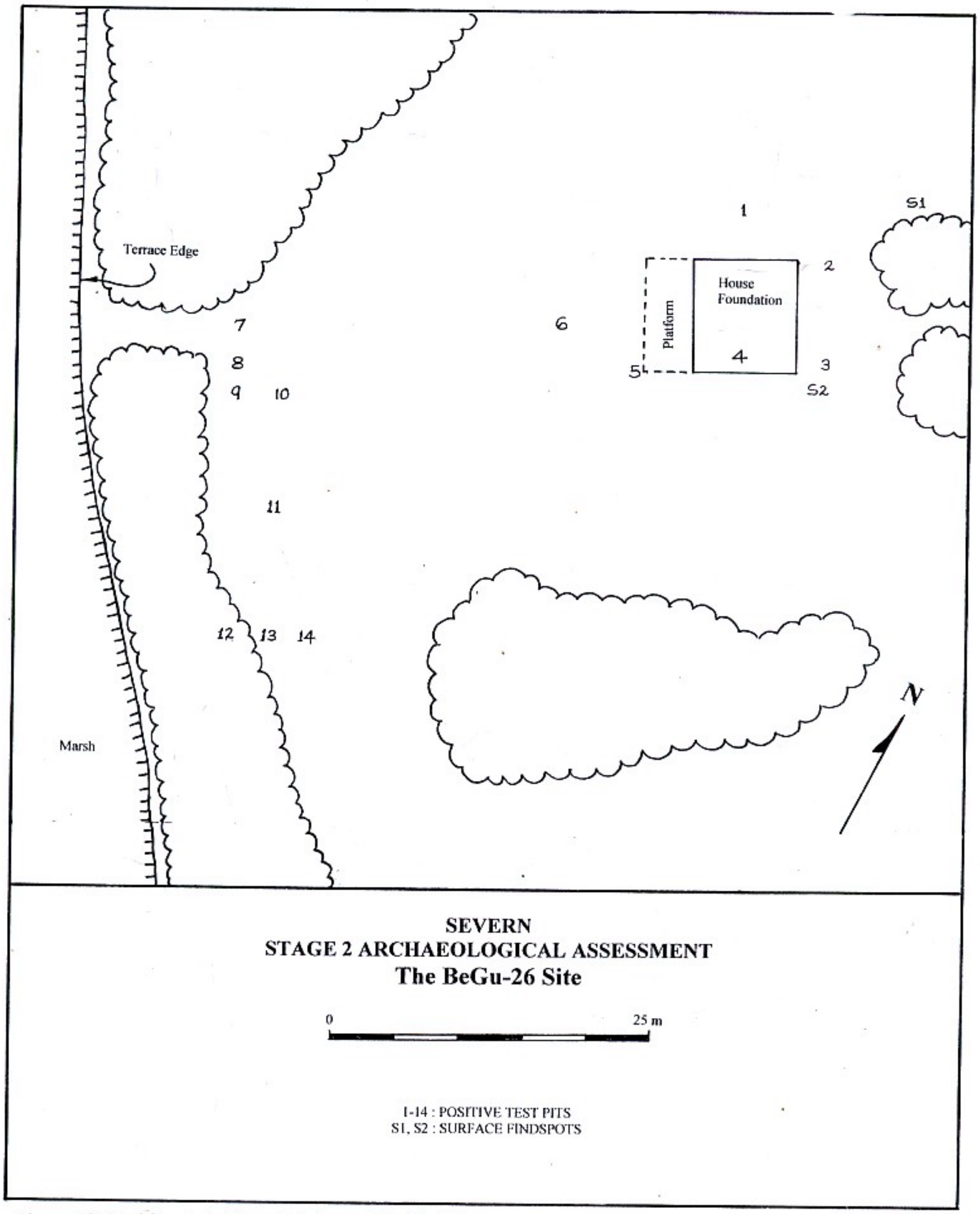


Figure 12: Positive test pits and features at BeGu-26

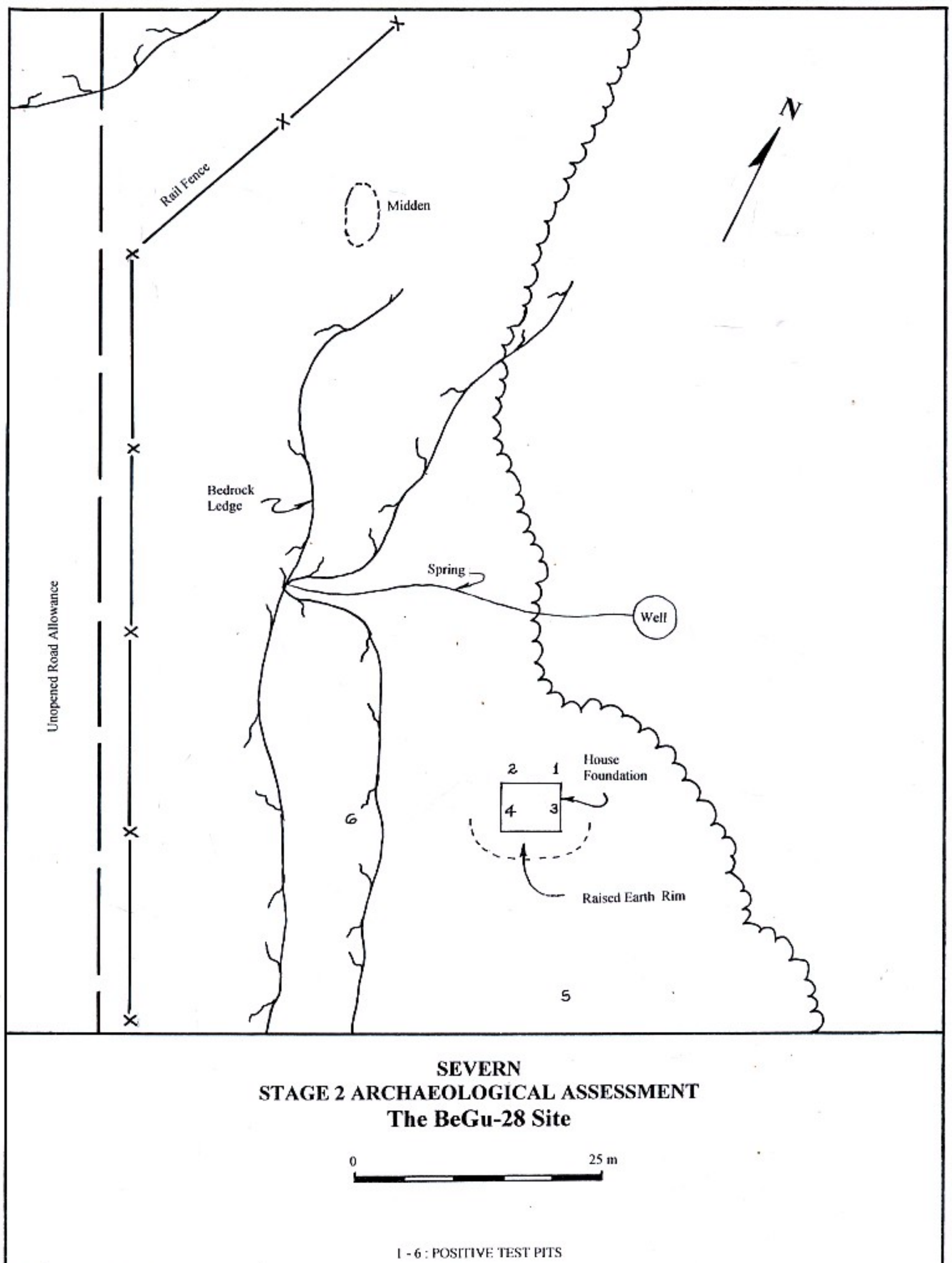


Figure 13: Positive test pits and features at BeGu-28

Figure 14A: Looking SE at BeGu-23

Figure 14B: Looking SSE at BeGu-23

Figure 14: Photographs of BeGu-23

Figure 15A: Looking S at BeGu-24, forested portion

Figure 15B: Looking N at BeGu-24, field portion

Figure 15: Photographs of BeGu-24

Figure 16A: Looking E at BeGu-25

Figure 16B: Looking S at BeGu-25

Figure 16: Photographs of BeGu-25

Figure 17A: Looking W at east wall of BeGu-26, cedar grows in house depression

Figure 17B: Looking S at north wall of house BeGu-26

Figure 17: Photographs of BeGu-26

Figure 18A: Looking E at BeGu-27

Figure 18: Photograph of BeGu-27

Figure 19A: Looking E at east foundation of house BeGu-28

Figure 19B: Close-up view of house midden

Figure 19: Photographs of BeGu-28

Figure 20A: Looking W at collapsed building BeGu-29

Figure 20B: Looking S at collapsed building BeGu-29

Figure 20: Photographs of BeGu-29


Figure 21: Artifact Plate 1 BeGu-23


Figure 22: Artifact Plate 2 BeGu-24


Figure 23: Artifact Plate 4 BeGu-26



Figure 24: Artifact Plates 3 and 5 BeGu-25&27

Figure 25: Artifact Plate 6 BeGu-28

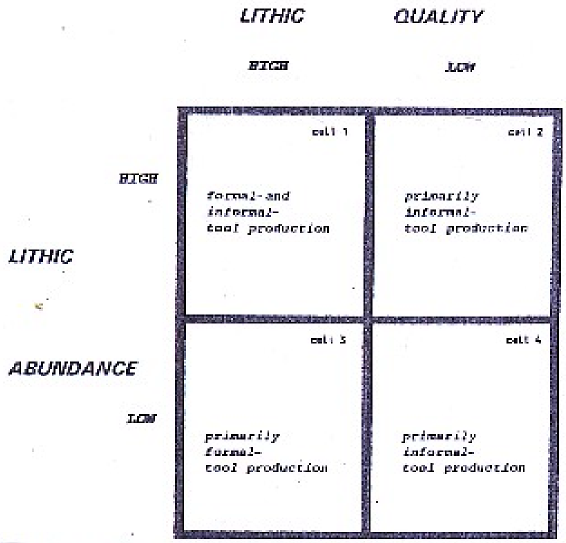


Figure 26a: Lithic contingency table, from Andrefsky 1994

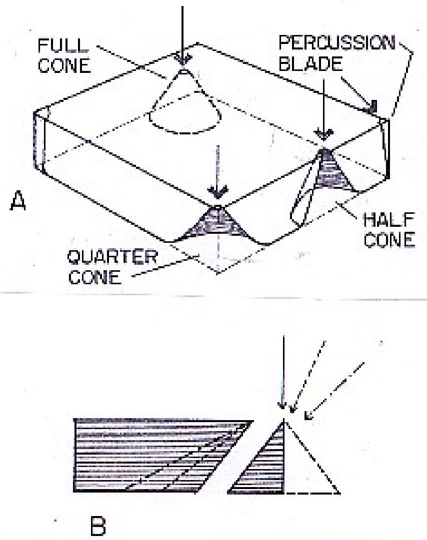


Figure 26b: Cone principal of breakage (A & B above)
From Crabtree 1973

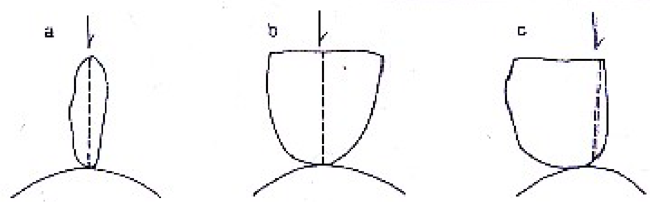


*Fig. 3 Schematic representation of bipolar percussion: a + b = splitting from center out (a = thin core; b = thick core); c = spalling from outside in.*

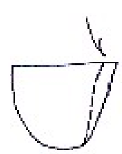

*Fig. 1 Schematic representation of freehand percussion. Unless otherwise indicated, this and following figures 1:1*

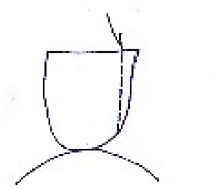

*Fig. 2 Schematic representation of anvil percussion.*

Figure 26c: Types of percussion (Figs 1, 2, & 3 above), from Callahan 1987

Figure 26: Diagrams to accompany the Discussion

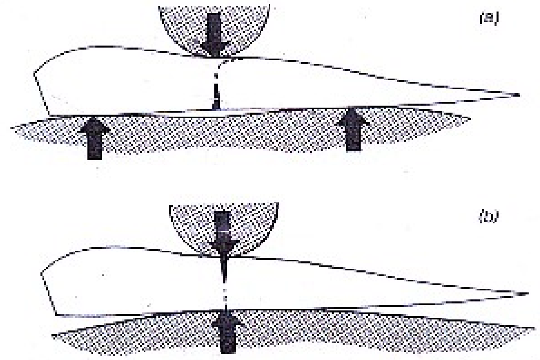


Figure 15. (a) A flake broken into two pieces by bending. (b) a flake broken into two pieces by compression.

Figure 27a: Compression & Bending Breaks, from Crabtree 1973

Figure 2. Symmetric Multiple Flaking.

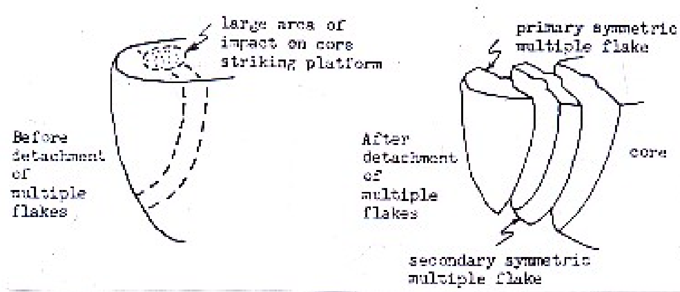


Figure 27b: Formation of multiple flakes, from Boksenbaum 1980

Figure 4. Asymmetric Multiple Flaking.

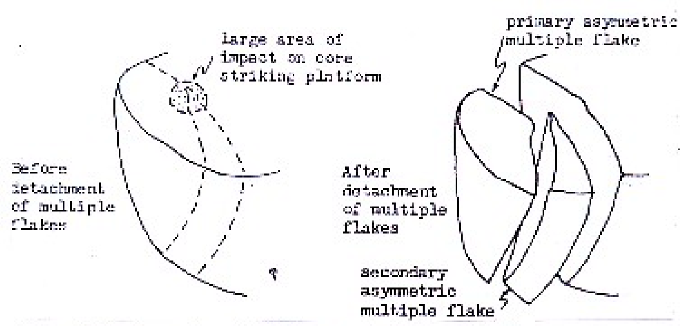


Figure 27c: Formation of a "citrus-wedge" shaped flake

Figure 27: Diagrams to accompany the Discussion

BeGu-23 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | 1 | 1 | gneiss | flake | complete; thick with cortical platform |
| 2 | 2 | 1 | gneiss | scraper | triangular shape and cross-sections; invasive unifacial retouch and notch (18 mm) on thin edge and abrupt retouch on ventral margins of both thick lateral edges; perpendicular arris on thick heel also possibly retouched; weathered; 65 x 64 x 40 mm |
| 3 | 2 | 1 | gneiss | shatter | small |
| 4 | 2 | 1 | quartz | notched fragment | marbled; tabular, irregular shape with single facet shallow notch (20 mm) with corner spur on 1 extremity; small rounded spur produced by 2 small facets on opposite extremity may be perforator; several other facets on abrupt edges; weathered; 68 x 49 x 23 mm |
| 5 | 3 | 1 | gneiss | perforator-scraper | on split pebble with several scars on ventral face; rounded asymmetric spur produced by short facet on 1 side and long flat bevelled facet on straight margin; weathered; 42 x 30 x 20 mm |
| 6 | 3 | 1 | quartz | split pebble fragment | 19 x 16 x 11 mm |
| 7 | 4 | 1 | gneiss | scraper | tabular fragment with roughly oval form, abrupt shaped lateral edges and flat ventral face produced by single facet; short irregular retouch on ventral margins of both lateral edges; possible retouch on thin margin of heel; weathered; 65 x 36 x 24 mm |
| 8 | 5 | 3 | gneiss | flakes | complete; 1 with possible small notch; weathered |
| 9 | 6 | 1 | gneiss | scraper | large asymmetric subtriangular flake with dorsal facets and snapped lateral edges; large denticulate retouch on convex distal edge; weathered; 57 x 57 x 25 mm |
| 10 | 6 | 1 | gneiss | shatter | small |
| 11 | 7 | 1 | gneiss | perforator-scraper | on worked pebble with pentagonal shape and rhombic cross-section; thick pointed extremity formed by 2 parallel facets, 1 broken face and cortical surface; short spur on straight margin of abrupt broken face; retouch on thin oblique edge; weathered; 49 x 36 x 22 mm |
| 12 | 8 | 1 | gneiss | core-scraper | large, wedge-shaped, with prepared platform and triangular cross-section; long linear facets on 1 edge and hinge-fractures on 1 face; unifacial retouch on opposite edge; 136 x 70 x 46 mm |
| 13 | 9 | 1 | gneiss | notched flake | large, triangular with shallow notch (19 mm) on 1 lateral edge and large ventral retouch on opposite broken edge; weathered; 98 x 72 x 28 mm |
| 14 | 9 | 1 | gneiss | retouched flake | thick transversal flake with ventral thinning scars, irregular, partly bifacial retouch on 1 thin lateral edge and short retouch on margin of opposite thick abrupt edge; possibly used as combination backed knife-scraper; weathered; 58 x 41 x 21 mm |
| 15 | 10 | 1 | gneiss | flake | complete; thick triangular shape; weathered |
| | Total | 17 | | | |

BeGu-24 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | 1 | 1 | gneiss | plane | large thick slab, with rhombic shape; large dual facets with central spur on abrupt end and possible retouch on margin of oblique proximal edge; 133 x 80 x 47 mm |
| 2 | 2 | 1 | quartz | flake | high feldspar content; pointed extremity possibly used as perforator; 25 x 18 x 9 mm |
| 3 | 3 | 1 | quartz | split pebble | weathered; 21 x 8 x 9 mm |
| 4 | 4 | 1 | quartz | worked fragment | elongated fragment with biconvex cross-section, 40 - 50% gneiss; linear facets on both faces and invasive bifacial flake scars with hinge-fractures on 1 rounded end; possibly used as chisel; 75 x 28 x 16 mm |
| 5 | 5 | 1 | feldspar | notched pebble | shallow notch (11 mm) with flake scars and hinge-fractures on 1 abrupt edge; 33 x 31 x 21 mm |
| 6 | 5 | 1 | quartz | shatter | small; weathered |
| 7 | 6 | 1 | quartz | shatter | small |
| 8 | 7 | 1 | quartz | split pebble | spur on broken end possibly used as perforator; weathered; 26 x 17 x 12 mm |
| 9 | 7 | 2 | quartz | shatter | small; weathered |
| 10 | 8 | 1 | quartz | shatter | marbled |
| 11 | 9 | 1 | gneiss | shatter | small |
| 12 | 10 | 1 | gneiss | worked pebble | flake scars on 1 corner and possible small notch (5 mm) on 1 edge; weathered; 52 x 45 x 31 mm |
| 13 | 11 | 1 | quartz | flake | complete; possibly used as wedge; heavily weathered; 21 x 20 x 12 mm |
| 14 | 11 | 1 | quartz | shatter | small |
| | Total | 15 | | | |

BeGu-25 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | 1 | 1 | grey chert | shatter | small |
| 2 | 1 | 1 | quartz | shatter | small; weathered |
| 3 | 1 | 1 | quartz | flake | small |
| 4 | 2 | 1 | quartz | graver | spur with rounded tip produced by 2 small facets on thin end of rectangular pebble; weathered; 19 x 14 x 13 mm |
| 5 | 2 | 5 | quartz | flakes | small; weathered |
| 6 | 3 | 1 | beige chert | flake | incomplete; weathered |
| 7 | 3 | 3 | quartz | shatter | small; weathered |
| 8 | 4 | 4 | quartz | shatter | small; weathered |
| 9 | 5 | 2 | quartz | shatter | 1 small; weathered |
| 10 | 6 | 3 | quartz | flakes | small; weathered |
| 11 | 6 | 1 | quartz | shatter | small; weathered |
| 12 | 7 | 2 | quartz | shatter | small |
| 13 | 8 | 3 | quartz | shatter | small |
| 14 | 9 | 2 | quartz | shatter | small |
| 15 | 10 | 1 | gneiss | flake | complete; large portion feldspar |
| 16 | 10 | 2 | quartz | shatter | small |
| | Total | 33 | | | |

BeGu-26 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | Surface 1 | 1 | sandstone | whetstone | complete; long, narrow bar originally with rectangular cross-section; heavily used, principally for sharpening scythe; 210 x 32 x 22 mm |
| 2 | Surface 1 | 1 | micaceous schist | whetstone | proximal half, in 2 pieces, with lenticular cross-section and long, shallow bilateral indentations for handle; principally used for sharpening scythe; 160 x 36 x 11 mm |
| 3 | Surface 2 | 2 | white glass | jar fragments | 1 bottom fragment with raised moulded lettering near side "MA.." and, in 2 rows, "RO.." and "CHE…" and cow or deer head in middle |
| 4 | Surface 2 | 3 | pale green glass | fragments | thick, resembling safety glass |
| 5 | Surface 2 | 2 | clear glass | bottle fragments | thick |
| 6 | 1 | 3 | coarse earthenware | crock fragments | lid fragments with brown speckled glaze; cross-mend |
| 7 | 2 | 3 | mortar | sample | |
| 8 | 3 | 1 | mortar | sample | |
| 9 | 4 | 2 | shell | jewellry | small snail shells, blue-tinted, each with small perforatoration; part of necklace or other jewellry |
| 10 | 4 | 67 | pale green glass | fragments | thick, resembling safety glass |
| 11 | 4 | 39 | clear glass | fragments | window pane |
| 12 | 4 | 1 | iron | wire-cut nail | 1 1/2 inch |
| 13 | 4 | 1 | iron | round nails | 3 inch |
| 14 | 4 | 1 | iron | carpet tack | |
| 15 | 4 | 4 | red brick | fragments | small |
| 16 | 5 | 1 | iron | barbed wire | early variety complised of narrow strap with large triangular teeth at regular intervals |
| 17 | 5 | 2 | copper | .22 cartridges | both crimped |
| 18 | 5 | 4 | iron | round nails | different lengths |
| 19 | 5 | 1 | iron | wire-cut nail | 1 1/2 inch |
| 20 | 5 | 1 | coarse earthenware | crock fragment | bottom and side fragment of large crock with cream glaze on interior and exterior surfaces |
| 21 | 5 | 1 | clear glass | bottle fragment | neck if small bottle with metal screw cap with single perforation |
| 22 | 5 | 16 | clear glass | fragments | 5 window pane fragments, 2 fragments of different bottles and 9 melted fragments |
| 23 | 5 | 36 | bone | fragments | 10 fresh fragments and 26 calcine or burnt fragments |
| 24 | 6 | 16 | iron | round nails | various lengths |
| 25 | 6 | 5 | iron | wire-cut nail | various lengths |
| 26 | 6 | 1 | iron | carpet tack | |
| 27 | 6 | 1 | white glass | fragment | |
| 28 | 6 | 2 | clear glass | fragments | window pane |
| 29 | 7 | 1 | schist | flake | distally incomplete; weathered |
| 30 | 8 | 1 | grey chert | shatter | nodule fragment |
| 31 | 8 | 2 | quartz | shatter | |
| 32 | 9 | 2 | quartz | shatter | small; weathered |
| 33 | 10 | 3 | quartz | shatter | small |

BeGu-26 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 34 | 11 | 2 | gneiss | flake | large and thick, similar to block fragments; weathered |
| 35 | 12 | 1 | quartz | flakes | marbled; large, thick |
| 36 | 12 | 2 | quartz | shatter | small |
| 37 | 13 | 1 | quartz | shatter | small |
| 38 | 14 | 1 | gneiss | scraper | discontinuous retouch on convex edge of bevelled face of split pebble; possible dual facets with central spur in opposite edge; 29 x 20 x 16 mm |
| 39 | 14 | 1 | quartz | shatter | small; weathered |
| | Total | 235 | | | |

BeGu-27 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | 1 | 1 | quartz | perforator | on cobble fragment; pointed extremity with rounded tip and fine retouch on 1 lateral edge; weathered; 34 x 24 x 19 mm |
| 2 | 2 | 1 | gneiss | scraper | large double facets with central arris on oblique side of subtriangular cobble; 92 x 56 x 54 mm |
| | Total | 2 | | | |

BeGu-28 Stage 2
Artifact Catalogue

| No. | Test Pit | Quantity | Material | Category | Comments |
|---|---|---|---|---|---|
| 1 | midden | 1 | iron | axe head | 3-lb splitting maul; 6 x 4 1/4 x 1 1/2 inches |
| 2 | midden | 1 | mauve glass | bottle fragment | bottom of hexagonal bottle, 2 1/2-inch diametre |
| 3 | midden | 2 | pale green glass | bottle fragments | neck of medicine bottle and bottom of large bottle |
| 4 | midden | 1 | fine white earthenware | plate fragment | moulded edge with dark green design of chain on rim, pearl strands and suspended decorations |
| 5 | 1 | 3 | clear glass | light bulb fragments | small |
| 6 | 1 | 5 | fine white earthenware | fragments | small pot with pale green leaf design |
| 7 | 2 | 1 | iron | round nail | 2 1/2 inch |
| 8 | 3 | 1 | red brick | fragment | burnt |
| 9 | 3 | 7 | iron | round nails | 2 1/2 and 3 1/2 inch |
| 10 | 3 | 1 | iron | hardware | circular piece with pivot, possibly part of spring-weighted cupboard hinge |
| 11 | 3 | 18 | fine earthenware | plate fragments | flow blue glaze |
| 12 | 4 | 20 | iron | round nails | various sizes |
| 13 | 4 | 1 | iron | half pipe | 3/4 inch diametre; possibly part of sleeve for joining small diametre hose |
| 14 | 4 | 1 | dark amber glass | bottle fragment | bottom fragment |
| 15 | 4 | 2 | clear glass | melted fragments | |
| 16 | 5 | 1 | dark green glass | bottle fragment | |
| 17 | 6 | 1 | gneiss | flake | partly bifacially worked; weathered; 76 x 45 x 22 mm |
| | Total | 67 | | | |

## Severn Stage 2 Photograph Log

Digital photographs taken with Ron Bernard's camera

| No. | Subject | Orient. |
|---|---|---|
| 1 | General environment, plateau in NW section of property | WNW |
| 2 | General environment, plateau in NW section of property | N |
| 3 | General environment, plateau in NW section of property | N |
| 4 | General environment, plateau in NW section of property, near escarpment | ENE |
| 5 | General environment, marsh in centre of property | NW |
| 6 | General environment, marsh in centre of property | W |
| 7 | General environment, marsh in centre of property | S |

Roll 1, 35 mm (continuation of Chaudière Island Roll 3. Digital duplicates unless otherwise stated)

| | | |
|---|---|---|
| 10 | General environment, plateau in Sw section of property | NE |
| 11 | General environment, plateau in Sw section of property | NE |
| 12 | General environment, plateau in Sw section of property | NE |
| 13 | SEV. 2 site, midden | S |
| 14 | SEV. 2 site, midden, detail | SE |
| 15 | SEV. 2 site, midden, detail | N |
| 16 | SEV. 2 site, rail fence near midden | S |
| 17 | SEV. 2 site, house foundation | E |
| 18 | SEV. 2 site, house foundation | E |
| 19 | SEV. 2 site, house foundation | S |
| 20 | SEV. 2 site, house foundation | N |
| 21 | SEV. 2 site, house foundation | W |
| 22 | SEV. 2 site, house foundation, east wall | E |
| 23 | SEV. 2 site, house foundation, north wall | N |

Roll 2

| | | |
|---|---|---|
| 1 | SEV. 1 site, general environment | E |
| 2 | SEV. 1 site, general environment | SE |
| 3 | SEV. 1 site, general environment | SSE |
| 4 | SEV. 3 site, general environment, north part in woods | SE |
| 5 | SEV. 3 site, general environment, north part in woods | S |
| 6 | SEV. 3 site, general environment, south part on edge of woods | E |
| 7 | SEV. 3 site, general environment, south part on edge of woods | N |
| 8 | SEV. 5 site, house foundation, north wall | S |
| 9 | SEV. 5 site, house foundation, south wall interior | S |
| 10 | SEV. 5 site, house foundation, east wall. Cedar has grown in house entrance | W |
| 11 | SEV. 4 site, general environment | WSW |
| 12 | SEV. 4 site, general environment | WNW |
| 13 | SEV. 4 site, general environment | NW |
| 14 | SEV. 4 site, general environment | E |
| 15 | SEV. 4 site, general environment | ENE |