PIF P039-160-2010

A STAGE 1 ARCHAEOLOGICAL ASSESSMENT OF FREYMOND QUARRY PART OF LOTS 51 & 52 CONCESSION WHR FARADAY TWP. (GEO.) HASTINGS COUNTY

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Summary: K. Swayze PIF P039-160 Kinickinick Heritage Consulting February 2011

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In late October Freymond Lumber Ltd. retained Ken Swayze, of Kinickinick Heritage Consulting, to prepare a Stage 1 archaeological assessment of property where they propose to develop a hard rock quarry. A Stage 1 archaeological assessment is a background review of surficial geology, post-glacial landscape evolution, historical land use, and considers the present condition of the property. The purpose of this Stage 1 assessment is to determine if the study area has archaeological potential and to plan appropriate procedures for Stage 2 assessment. Geographic terrain analysis is used to estimate the potential for pre-contact archaeological sites, while the potential for historical Euro-Canadian archaeological deposits is determined by a consideration of historical maps and aerial photographs.

The proposed quarry property is in the western ¾ of lots adjacent the southern boundary of Bancroft about 1 km southwest of the York River on the west side of a historical colonization route, the former Hastings Road. The characteristic landforms of the study area are steep-sided rocky ridges separated by a stream. The northern ridge has 56 m relief, while only the northern flank of the southern ridge is in the study area. The parcel is located at the intersection of the Canadian Shield and a Pleistocene spillway composed of a surface deposit of glacial outwash. Above 365 m asl, the terrain is bedrock with shallow drift cover. Below 365 m asl, the bedrock and boulders are mantled by sandy, gravelly, outwash that forms an apron at the foot of the hill. An escarpment rings the summit of the northern ridge and part of the north-facing hillside of the southern ridge. The east-facing hillside of the northern ridge is a steep 18^0 slope that fans out at the base.

The bedrock ridge in the study area would have become available for occupation by early postglacial hunter-gatherers by about 11,500 BP during the Early Palaeo-Indian period. By 11,200 BP the ice front would have withdrawn and the water level in the spillways would have dropped considerably, perhaps from 345 to 335 m asl. Then the level fell to 320 m asl, probably by 10,000 BP.

Archaeological potential occurs when the development zone is in proximity to a feature of archaeological interest. In eastern Ontario, a buffer zone of archaeological potential extends for 200 m around each feature of archaeological interest. Figure 9a shows the location of features of archaeological interest in the study area. Figure 9b shows the areas of high, moderate, and low archaeological potential.

The consultant concludes that some areas have potential for archaeological material from the Late Palaeo-Indian and Early Archaic cultural periods, because they would have been in proximity to early postglacial river shores. The terrain above 365 m asl has moderate archaeological potential, due to its proximity to the relatively short-lived relict shoreline that occurred at that elevation, as well as proximity to an existing secondary water source. The areas of potential areas require Stage 2 archaeological assessment to determine the presence or absence of archaeological material. Test pit survey at regular intervals is the recommended method of assessment. A test pit interval of 5 m is recommended for the high potential area and a 10 m interval for the moderate potential area.

However, given the nature of archaeological phenomena, it is possible that deeply buried archaeological deposits, or human remains may be disturbed during construction and quarry operation. If artifacts are discovered the Heritage Operations Unit should be notified immediately (416-314-7123); if human remains are disturbed, the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations should be notified (416-326-8404).

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A STAGE 1 ARCHAEOLOGICAL ASSESSMENT OF FREYMOND QUARRY PART OF LOTS 51 & 52 CONCESSION WHR FARADAY TWP. (GEO.) HASTINGS COUNTY

Introduction

In late October Lou Freymond, of Freymond Lumber Ltd. in Bancroft, retained Ken Swayze, of Kinickinick Heritage Consulting, to prepare a Stage 1 archaeological assessment of part of lots 51 & 52 Concession WHR Faraday Twp (geo.), where he proposes to develop a hard rock quarry (Figures 1, 2 & 3). This assessment follows the Ministry of Tourism and Culture standards and guidelines (OMTC 2009).

A Stage 1 archaeological assessment is a background review of surficial geology, post-glacial landscape evolution, historical land use, and considers the present condition of the property. It also reviews the OMTC data file on archaeological sites and previous archaeological studies in the vicinity. The purpose of this Stage 1 assessment is to determine if the study area has archaeological potential and, in the event that it does have potential, to plan appropriate procedures for Stage 2 assessment. Geographic terrain analysis is used to estimate the potential for pre-contact archaeological sites, while the potential for historical Euro-Canadian archaeological deposits is determined by a consideration of historical maps and aerial photographs.

STAGE 1

1.0 Description of the Property

The proposed quarry property is located at 2287 Bay Lake Road in the western ¾ of lots 51 & 52. Freymond Lumber Ltd. sawmill occupies the eastern ¼ fronting Bay Lake Road (Figure 3). The parcel is adjacent the southern boundary of Bancroft about 1 km southwest of the York River (Figure 2) on the west side of Bay Lake Road, which, is a remnant of the Hastings Road, a historical colonization route (Figure 4). A historical cemetery, near the northeast corner of the study area, is also located beside the former Hastings Road (Figure 6).

The characteristic landforms of the study area are steep-sided rocky ridges (sometimes called "hogs back" ridges), which are separated by a small-order stream. The northern ridge has 56 m relief, from 329 m asl, at the east end, to over 385 at the summit (Figures 3 and 9a). Only the northern flank of the southern ridge is within the study area and, given the lack of a development plan at this stage, it may not be in the extraction zone. The parcel is located at the intersection of the Canadian Shield and a Pleistocene spillway composed of a surface deposit of glacial outwash (Figures 7&8). Above 365 m asl, the terrain is bedrock with shallow drift cover. At the summit, the polished bedrock is visible in places despite the forest cover (Figure 11b). Below 365 m asl, the bedrock and boulders are mantled by sandy, gravelly, outwash that forms an apron at the foot of the hill (Figure 13b). An escarpment rings the summit of the

northern ridge and part of the north-facing hillside of the southern ridge. The east-facing hillside of the northern ridge is a steep 18^0 slope that fans out at the base.

The property is covered with secondary growth of hardwood, predominantly maple inter-mixed with conifers. It appears to have been logged several times in the past. Recently some maple sap has been collected and a small sugar shack has been built at the foot of the hill. The historical atlas (Figure 4) shows the location of the property in respect to the Hastings Road colonization route in the late 19^{th} century; however there is no built infrastructure portrayed. A18252-25, a historical aerial photograph (Figure 6) taken about 1946, show no indication of any homestead activities or historical buildings.

The consultant conducted a site inspection of the study area on November 16 2010 in order to ground truth maps and aerial photography and gain first-hand information about archaeological potential of the project. Permission to access the site was obtained from Freymond Lumber Ltd. The weather was ideal for the purpose and the consultant was able to walk the periphery and inspect all areas of the parcel. Several pertinent aspects that affect archaeological potential and do not apparent in maps and photographs were observed in the course of this inspection. The 5 m contour interval of the MNR base map (Figure 3) is not adequate to portray a fluted linear feature at 340 m asl at the base of the northern ridge that the consultant interprets as a fluvial landform, perhaps a relict beach formation from the early postglacial period. Similarly, the contour lines, which indicate hillsides with 15^0 to 18^0 slopes, do not truly portray the precipitous nature of the slopes in many places. The inspection also revealed the shallowness of the drift that barely covers the bedrock everywhere over 365 m asl. Based on what he saw, the consultant would say that the glacial outwash indicated in the preliminary surficial geology map (Figure 8) is quite thick at the base of the ridge (Figure 13b) and actually extends higher up the hillside (to about 365 m asl) than is indicated by the map.

2.0 Surficial Geology and Post-Glacial Landscape Evolution

The following account references the dates of geological episodes to cultural time periods in order to underline the effect these processes had upon the relative attractiveness of landscape features of the study area for human use, either for habitation or specific resource exploitation activities. The cultural periods referred to, and their approximate dates before present (BP) are: Palaeo-Indian 11,500-10,000 BP; Early Archaic 10,000-6,000 BP; Middle Archaic 6,000-4,500 BP; Late Archaic 4,500-2,500 BP; Woodland 2,500 BP-1600 AD and Historic 1600-1900 AD.

The most significant and dramatic effect of deglaciation in eastern Ontario was the creation of the Champlain Sea, which existed for thousands of years—first, as an arm of the North Atlantic Ocean, and later as a series of riverine lakes. Beginning about 12,700 BP the entire St. Lawrence Lowlands was submerged under the Champlain Sea (Gilbert 1994:6). The northwestern arm of this sea (Barnett 1988) occupied the upper Ottawa Valley. The maximum extent of the Champlain Sea has been

radiocarbon dated, from shells at 170 m a.s.l. near Shawville, to 11,400 BP and to 11,000 BP, at 160 m near Martindale in the Gatineau Valley. At Almonte and Rigaud, the high water level has been dated to 11,200 BP, at 154 m, and 160 m a.s.l., respectively (Fulton and Richard 1987: Table 7). Thus, the period of maximum extent of the Champlain Sea corresponded with the early Palaeo-Indian period.

The ice front did not recede north of the Mattawa River until about 10,500 BP (Lewis and Anderson 1989) and for several millennia before that the enormous glacial run-off poured off the Algonquin Dome into the Madawaska drainage network through a vast system of postglacial spillways (Chapman 1975 map 2228). After the ice withdrew, the drainage through the spillways on the flanks of the Algonquin Dome was greatly reduced and the modern Madawaska drainage network began to take shape. Because the land took some time to recover from the weight of the ice, many river basins in former spillways still held greater volumes of water than at present and the water levels fell successively lower through time.

The sands and gravels interpreted as out wash in the York River below Bancroft (Figure 7) are most likely a transitional sequence from a deltaic environment to that of large braided streams that deposited sediments up to an elevation of 365 m asl (Barnett and Leyland 1980). Surficial features related to this episode are clearly visible in A18252-25 taken about 1946 when the north side of the river was clear of trees, probably as a result of forest fire. An early postglacial relict shoreline occupies the interface between the outwash in the valley and the bedrock shield country above it to the north. After the ice withdrew from the Algonquin Dome, after 10,500 BP, the water level in the spillway basin would have dropped considerably through successive levels. Several of these lower river levels can be determined from the preliminary surficial geology map and aerial photograph (Figures 6 & 8). There is a fluvial terrace indicated near the arena at about 340 m asl and other cut banks at about 335 m asl several hundred meters back from the present river. The aerial photograph clearly shows where former river ox bows cut into the outwash up to 320 m asl.

The bedrock ridge in the study area would have become available for occupation by early postglacial hunter-gatherers by about 11,500 BP during the Early Palaeo-Indian period. At this time, the ice field still lay heavily on the Algonquin Dome and the spillways indicated on Chapman's (1975) map (Figure 7) would have been full of sediment-laden meltwater. By 11,200 BP the ice front would have withdrawn to the Nipissing-Mattawa Lowlands and the water level in the spillways would have dropped considerably, perhaps to 340 and 335 m asl, as indicated in Barnett and Leyland 1980 (Figure 8). It is not clear how long the water remained that high or when the level fell to 320 m asl, as indicated by the abandoned ox-bow channel in A18252-25 (Figure 6), but the transformation would probably be complete by 10,000 BP at the advent of the Holocene epoch and the Early Archaic cultural period.

3.0 Previous Archaeological Research and Known Sites in the Vicinity

The Ministry of Culture archaeological site data is based on the Borden System. (Borden 1952) that is used throughout Canada. A "Borden Block" is ten degrees latitude (long) and ten degrees longitude (wide) and is named by a co-ordinate system, which uses 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 quarry is in the BgGk Borden Block and there are no previously recorded archaeological sites within a 2 km radius of it.

4.0 Archaeological Potential of the Property

Archaeological potential occurs when there are previously identified archaeological sites within 2 km of the study area and when the development zone is in proximity to, or contains, a feature of archaeological interest. In eastern Ontario, a buffer zone of archaeological potential extends for 200 m around each feature of archaeological interest.

Figure 9a shows the location of features of archaeological interest in the study area. The blue line is a stream, a secondary water source. The red line on the 365 m elevation marks the approximate limit of sandy outwash deposit and the elevation of an early postglacial relict shoreline. The northern ridge at that time was a low bedrock islet surrounded by melt water and, although technically habitable, the islet was perhaps not an economically attractive place from a hunter-gatherer's perspective. The yellow lines along the 340 and 335 m contour lines indicate the water level in the study area when the fluvial terraces indicated by the surficial geology map were active riverbanks in the Palaeo-Indian period. By the Early Archaic period, beginning 10,000 BP, the river level had probably dropped to 320 m asl removed more than 200 m from the study area. The green line along the 380 m contour line indicates the summit of the northern ridge that would have afforded a 360 view of the surrounding terrain to early postglacial hunter-gatherers. By Middle Archaic times the ancestral York and Madawaska Rivers would have taken their modern form and would not be in proximity to the study area. The sole feature of archaeological interest from the Middle Archaic onwards, would have been the creek, a secondary water source. Therefore, the area within 200 m of the creek has moderate potential for post-Early Archaic potential. The consultant has no data to indicate that the study area has Euro-Canadian historical potential.

Figure 9b shows the areas of high (yellow), moderate (green), and low (gray) archaeological potential. The high and moderate potential areas indicate where Palaeo-Indian or Early Archaic archaeological material may be deposited, based on proximity to the identified features of archaeological interest. Low potential areas (indicated in gray) are steep slopes.

5.0 Conclusions and Recommendations

The consultant concludes that the summit of the northern ridge and the apron of outwash at its base have potential for archaeological material from the Late Palaeo-Indian and Early Archaic cultural periods, because they would have been in proximity to early postglacial river shores. High archaeological discovery potential occurs at the foot of the hill, where there is an apparent fluvial feature, and on the summit, where a hunter-gather lookout site may occur. The terrain above 365 m asl has moderate archaeological potential, due to its proximity to the relatively short-lived relict shoreline that occurred at that elevation, as well as proximity to an existing secondary water source.

The high and moderate potential areas require Stage 2 archaeological assessment to determine the presence or absence of archaeological material. Test pit survey at regular intervals is the recommended method of assessment. A test pit interval of 5 m is recommended for the high potential area and a 10 m interval for the moderate potential area, because of the shallowness of the drift. The low potential escarpment areas do not require field tests. When the quarry extraction process has been better defined, some of the areas of potential in Figure 9b may fall outside of the extraction zones and therefore need not be surveyed.

However, given the nature of archaeological phenomena, it is possible that deeply buried archaeological deposits, or human remains may be disturbed during construction and quarry operation. If artifacts are discovered the Heritage Operations Unit should be notified immediately (416-314-7123); if human remains are disturbed, the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations should be notified (416-326-8404).

6.0 References

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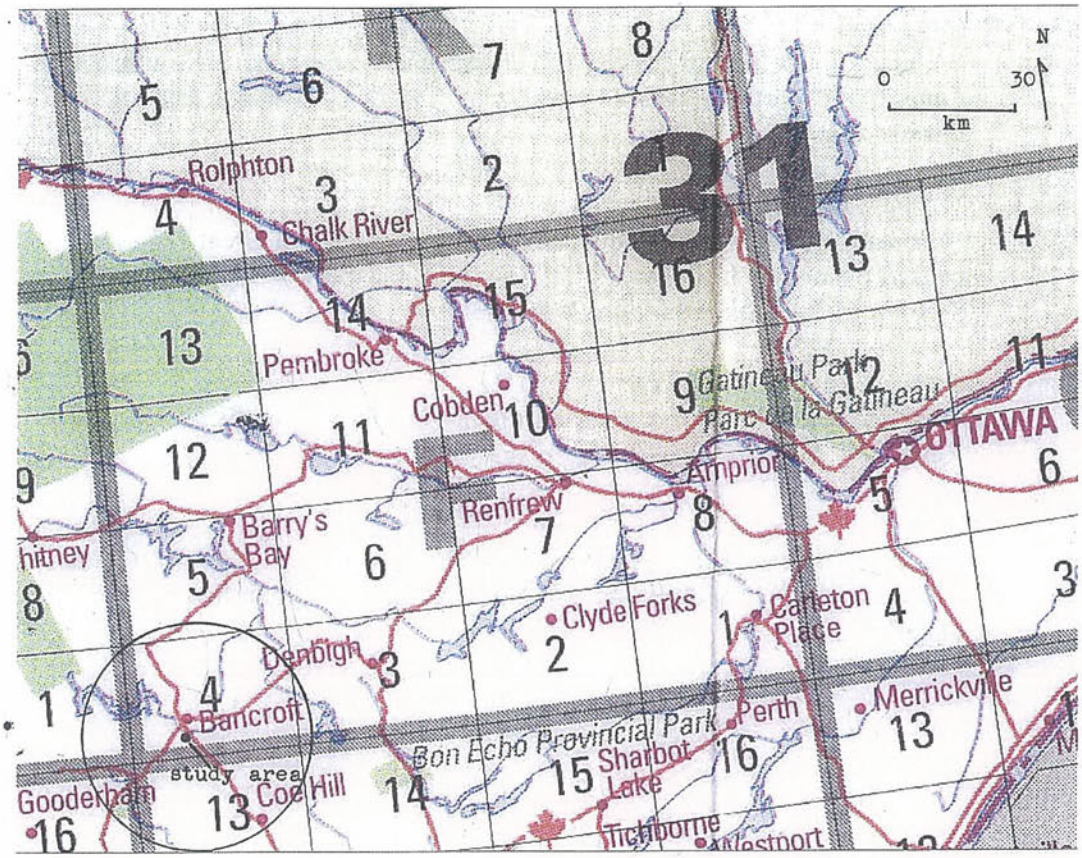


Figure 1: Location of the proposed quarry

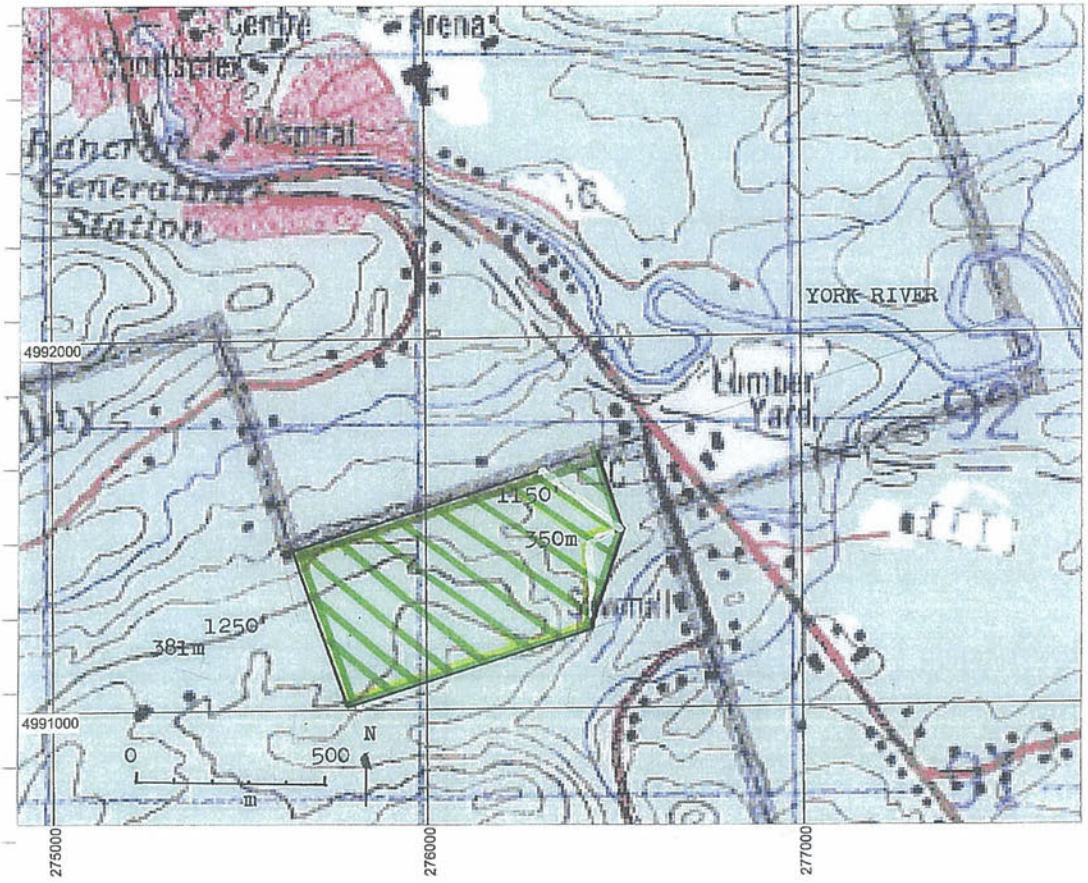
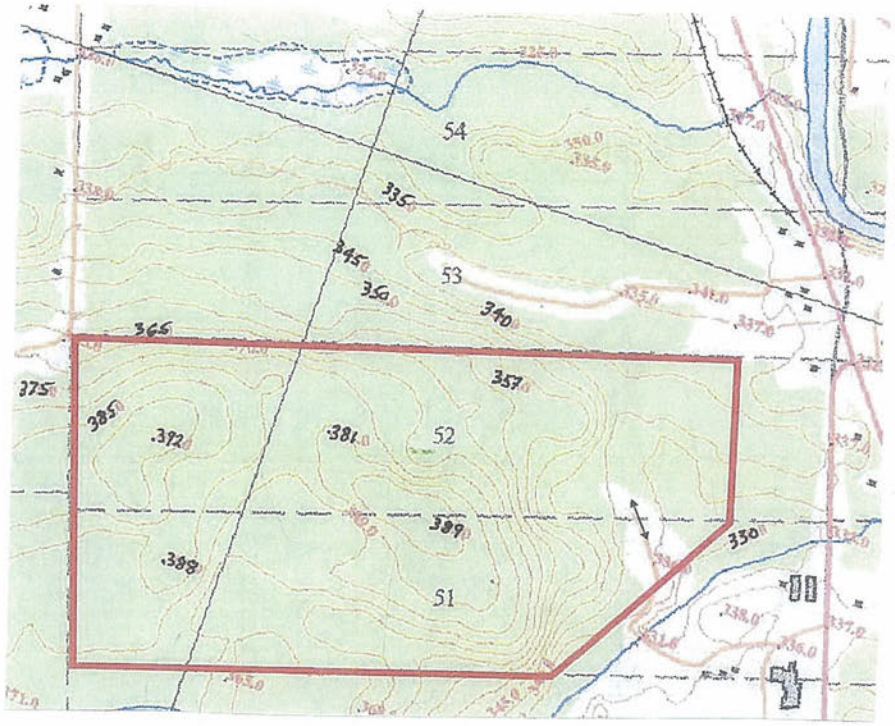


Figure 2: Topography, drainage and infrastructure, NTS 31 F/4.

Grid: UTM (NAD27)



APPLICATION	LOCATION	APPLICANT
CLASS 'A' LICENSE, CATEGORY 1 & 2 THIS LICENSE WILL OPERATE IN COMPLIANCE WITH THE OPERATIONAL STANDARDS THAT APPLY TO LICENSES (SECTION 5.0, AGGREGATE RESOURCES OF ONTARIO PROVINCIAL STANDARDS), EXCEPT AS LISTED BELOW:	FREYMOND LUMBER SITE LOT 51 & 52 CONCESSION WHR TOWNSHIP OF FARADAY COUNTY OF HASTINGS LICENSED AREA 35 HA	FREYMOND LUMBER LIMITED 2287 BAY LAKE ROAD RR#1 BANCROFT, ONTARIO K0L 1C0 SIGNATURE DATE
LEGEND — LIMITS OF AREA TO BE LICENSED ↔ ENTRANCE/EXIT	Scale 1:6,555 0 66 131 197 m	N W E S

Figure 3: Plan of the proposed quarry

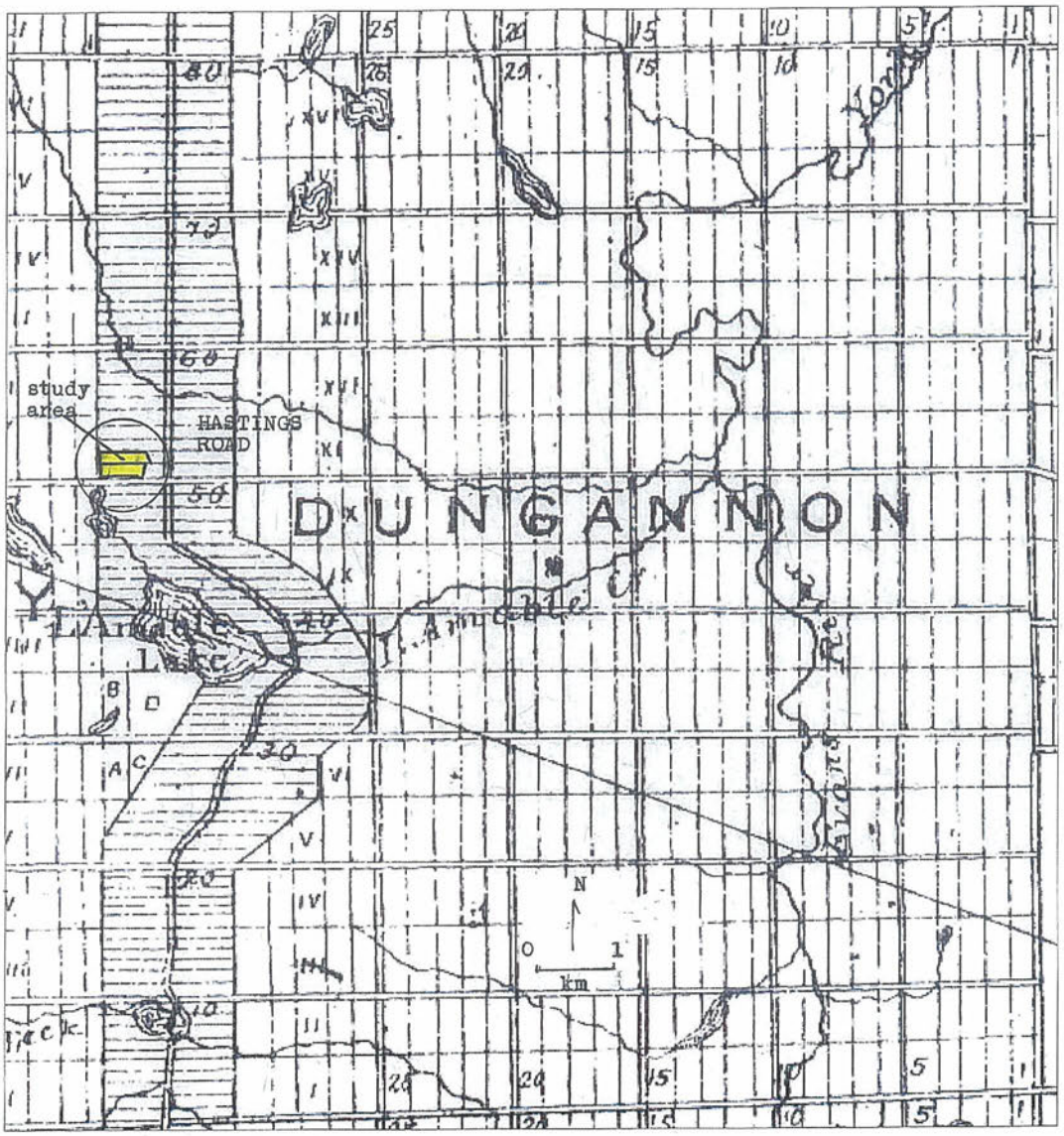


Figure 4: From the Historical Atlas of Hastings County (1881).

Figure 5: Modern aerial photograph of the proposed quarry

Figure 6: Historical aerial photograph A18252-25, about 1946.

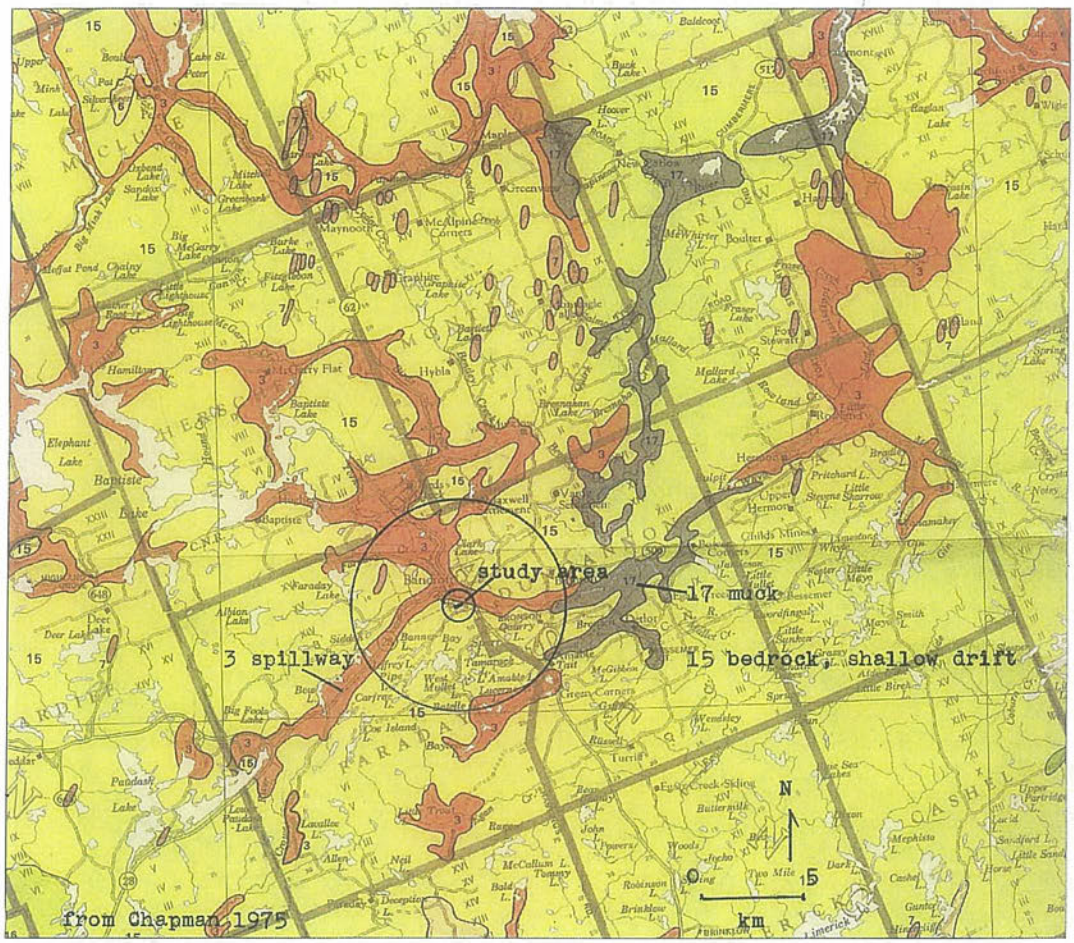


Figure 7: Physiography of the York River region.

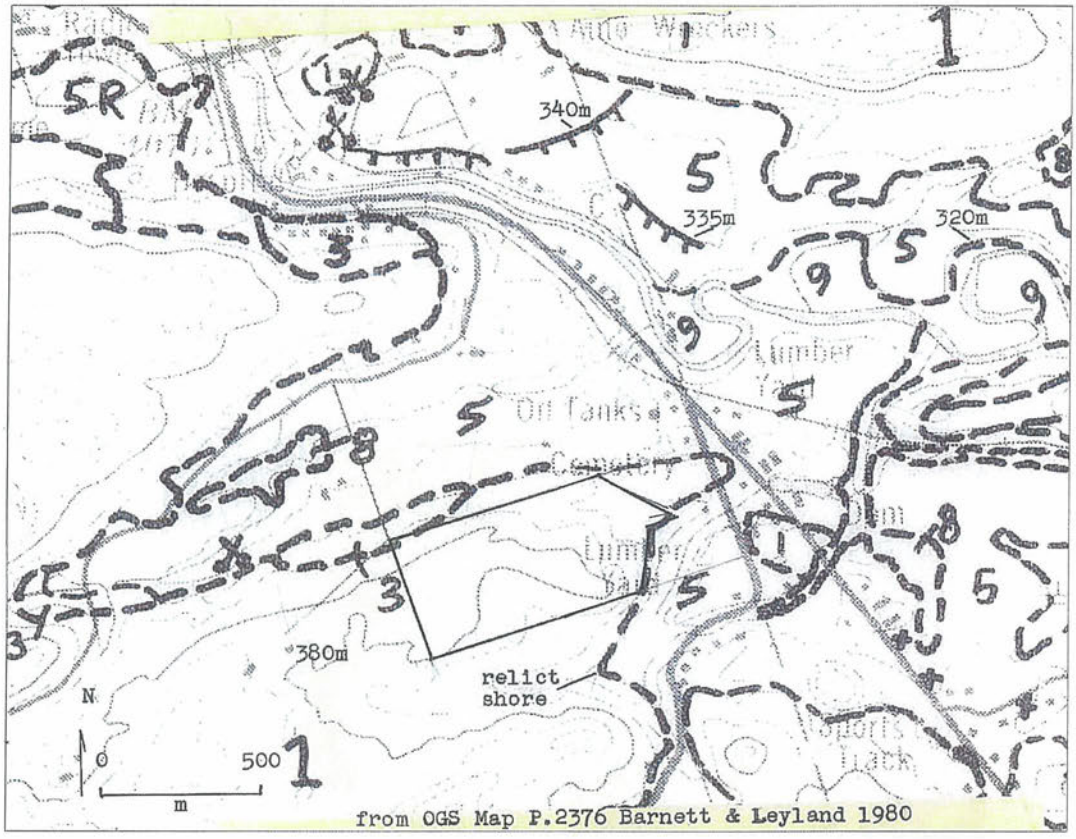
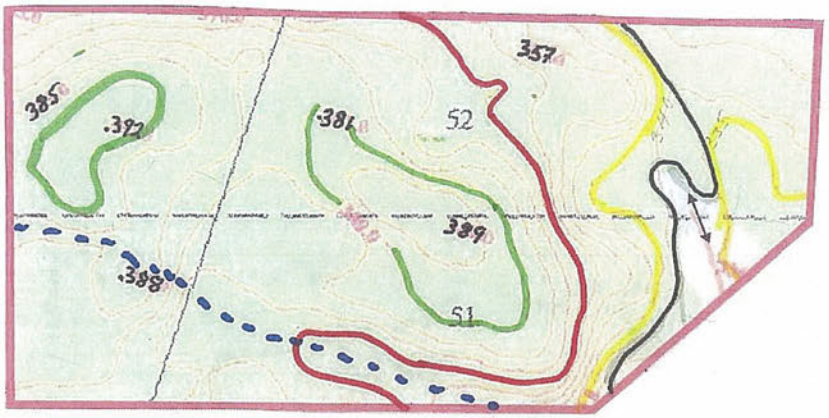


Figure 8: Surficial geology of the proposed quarry.



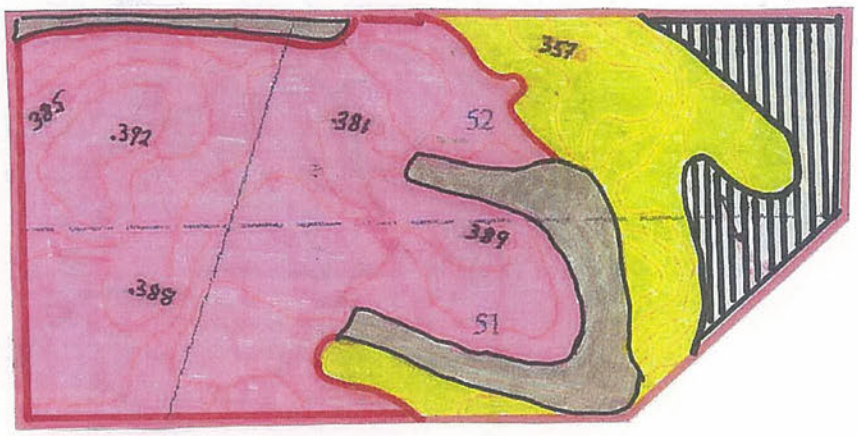
Stream
Secondary water source

Pleistocene relict shore
Bedrock-Drift above
Sandy outwash below
365 m asl

Holocene relict shore
335-345 m asl

Summit viewpoint
380-385 m asl

Figure 9a: Features of Archaeological Interest.



Potential for Late Pleistocene deposits.
Test pit survey at 5 m intervals.

Disturbed and/or previously developed area.
Omit from survey.

Potential for early Holocene deposits.
Test pit survey at 5 m intervals.

Steep slopes and escarpments.
Omit from survey.

Figure 9b: Areas of Archaeological Potential

Figure 9: Archaeological Potential of the proposed quarry

Figure 10a: Looking northwest at the proposed quarry.

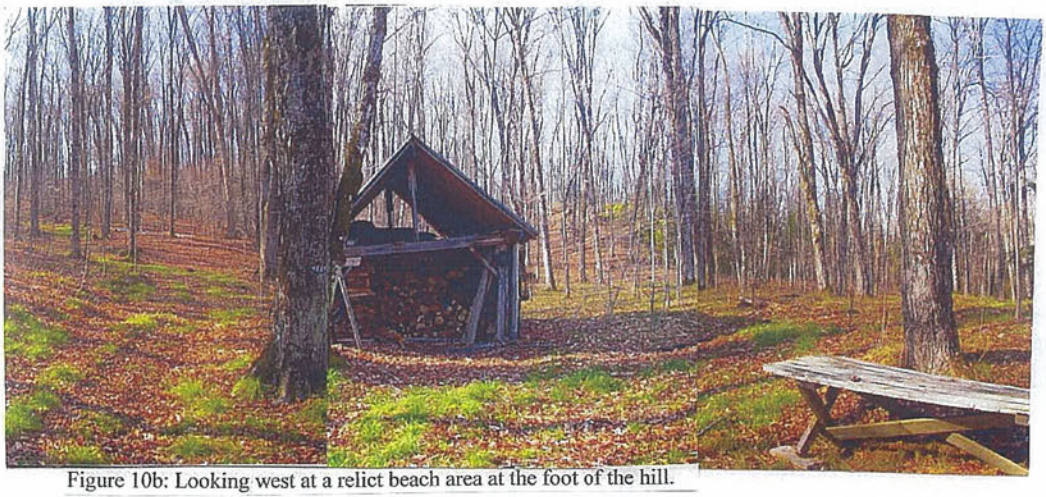


Figure 10b: Looking west at a relict beach area at the foot of the hill.

Figure 10: Photographs of the proposed quarry, November 16 2010.

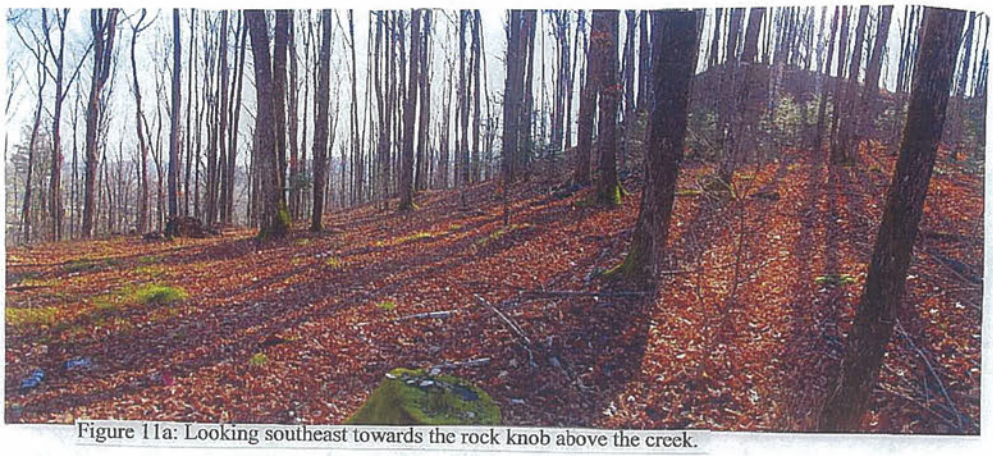


Figure 11a: Looking southeast towards the rock knob above the creek.

Figure 11b: Looking east at the summit of the rock knob.

Figure 11: Photographs of the proposed quarry, November 16 2010.

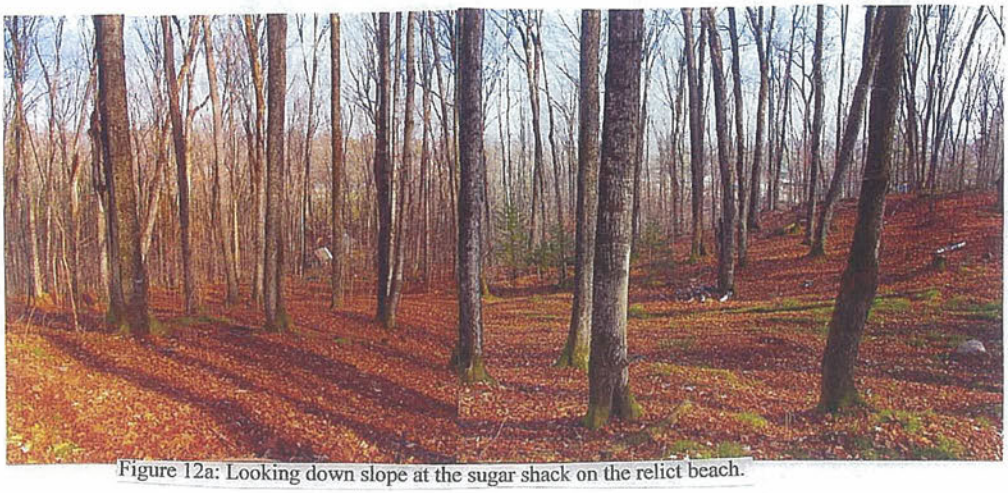


Figure 12a: Looking down slope at the sugar shack on the relict beach.

Figure 12b: Looking at a dune at about 335 m asl.

Figure 12: Photographs of the proposed quarry, November 16 2010.

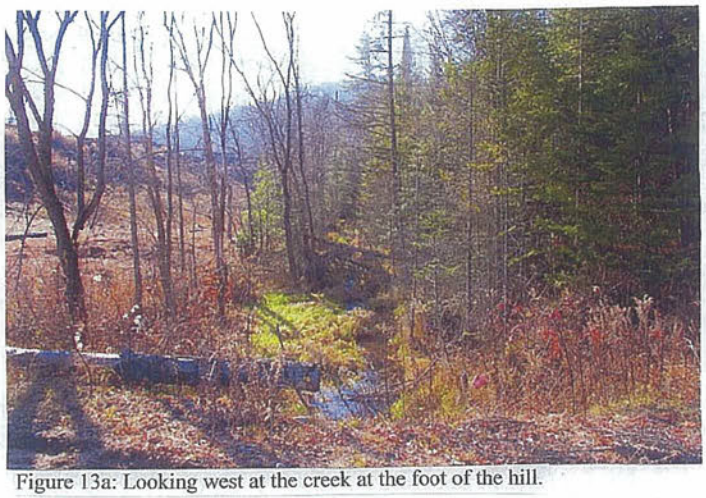


Figure 13a: Looking west at the creek at the foot of the hill.

Figure 13b: Looking northwest at outwash sand deposit.

Figure 13: Photographs of the proposed quarry, November 16 2010.