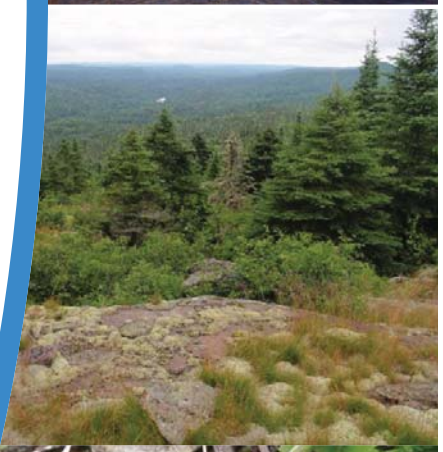
ENVIRONMENTAL ASSESSMENT FOR THE MARATHON PGM-Cu PROJECT AT MARATHON, ONTARIO



STILLWATER CANADA INC. MARATHON PGM-Cu PROJECT

SUPPORTING INFORMATION DOCUMENT No. 27 -

STAGE 1 AND STAGE 2 ARCHAEOLOGICAL ASSESSMENT OF HARE LAKE AND HARE CREEK, NORTH OF MARATHON, McCOY TOWNSHIP, ONTARIO

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A STAGE 1 AND 2 ARCHAEOLOGICAL ASSESSMENT OF HARE LAKE AND HARE CREEK NORTH OF MARATHON, MCCOY TOWNSHIP, ONTARIO

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Archaeological License # P-044
PIF # P-044-049-2009
December 3, 2009

EXECUTIVE SUMMARY

Marathon PGM Company asked Ross Archaeological Research Associates to complete an addendum to the Stage I and II Archaeological Assessment of the Marathon PGM property, north of Marathon, Ontario. Golder Associates Ltd. CIF-P065-066-2007 to identify the archaeological implications if mine activity caused the Hare Lake and Hare Creek water levels to rise.

During the aerial survey, eight high potential areas were identified on Bamoos Lake that were outside of the boundaries of the original report's mandate. As Bamoos Lake is part of the same water system as Hare Lake and Hare Creek, this addendum must include a recommendation for Bamoos Lake that reflects these observations.

Study Results

A stage 1 examination of area landforms, relevant site records and a checklist for archaeological potential indicated that the study area has a high potential for archaeological resources.

A stage 2 field assessment resulted in the conclusion that Hare Lake and Bamoos Lake have high potential areas for archaeological resources amd Hare Creek has a low potential for archaeological resources.

Recommendation

If mine activity will impact the high potential sites on Hare Lake and Bamoos Lake:

1) a stage 2 assessment must be completed for the four high potential sites on Hare Lake and the eight high potential sites on Bamoos Lake

2) based on the conclusions of the stage 2 assessment, stage 3 and 4 assessments may be required.

The Ministry of Culture must approve all recommendations in this report in accordance with Section 65 (1) of the Ontario Heritage Act, R. S. O. 1990.

Acknowledgments

The author would like to thank Paige Campbell for assistance with the Provincial Site Registration Database, Marathon PGM for providing maps, Scott Hamilton for assistance in the field and Brian Fraser for providing guidance, transportation and local knowledge. I would also like to thank the staff of the Pic River First Nation for showing us their land use maps.

All errors and omissions are the responsibility of the author.

Stage 1 and Stage 2 Archaeological Assessment

1.0 Procedures and Methods

As outlined in the Archaeological Assessment Technical Guidelines (1993), a stage 1 background study provides the consulting archaeologist and the Ministry of Culture report reviewer with information about the known and potential cultural heritage resources within the study area. It is recommended that the consulting archaeologist:

- examine the Provincial Site Registration Database to determine the presence of known archaeological sites in and around the project area
- review the land use history and present condition of the study area
- examine the geomorphological history of the land during the period of human habitation to evaluate the potential for buried cultural deposits.

A stage 2 assessment provides an inventory of all archaeological sites in the study area. The assessment consists of a pedestrian (surface) survey of the entire area and test pit surveys of all medium and high potential areas. The archaeologist uses field observations and the stage 1 conclusions to determine the moderate and high potential areas.

This archaeological assessment is an addendum to the Stage I and II Archaeological Assessment of the Marathon PGM property, north of Marathon, Ontario. Golder Associates Ltd. CIF-P065-066-2007. The original study area included the proposed mine location and small areas of Bamoos Lake and Hare Lake (map 3). The archaeological fieldwork did not find any archaeological sites. The report concluded that the study area has low potential for archaeological resources and recommended that no additional archaeological assessment was required. (Dalla Bona:2008) The Ministry of Culture has accepted this report into the provincial register of archaeological reports.

As with many large scale projects, adjustments are made to the project area as the operating plan is developed. Marathon PGM asked Ross Archaeological Research Associates to identify the archaeological implications if mine activity caused the Hare Lake and Hare Creek water levels to rise. A stage 1 and stage 2 assessment is sufficient to answer this question.

1.1 Study Area Description

The study area is the shorelines of Hare Lake and Hare Creek located approximately 8 kilometres north of Marathon (map 2).

The study area is located in Borden blocks Delo and Delm.

The study area is located in ecoregion 3W (Racey et al: 2000). The majority of older forest in the ecoregion is black spruce dominated. There is a high recruitment of poplar, black spruce and jack pine and a fairly high percentage of younger stands in these forestry units. Young balsam fir stands are also present on the landscape. Mature stands are well represented by white birch, jack pine, black spruce and poplar. There is heavy representation of the 70 year age class in most of the species types in this ecoregion.

The bedrock is middle to late Precambrian carbonatite-alkalic complexes with carbonatite, nepheline and alkalic syenites, fenite and associated mafic and ultramafic rocks. (Ontario Geological Map 2199). The surficial geology is a mixture of sand and gravels, large clay silt deposits including both shallow and deepwater glaciolacustrine and glaciomarine deposits (Ontario Geological Survey map 2518).

2.0 Assessment Methodology

2.1 Background

The archaeology of Northern Ontario, while not completely understood, has been classified into four specific cultures and time periods (Phillips and Ross: 1995).

These cultures are based on artifact characteristics that can be found on an entire site or in layers on the same site and represent material changes through time of prehistoric and historic peoples.

The four cultural traditions that appear in the archaeological history of the area are: Palaeo Indian, Archaic, Woodland, and Historic. Each cultural tradition has specific tools that are present in the archaeological record and can be shown to have changed over time. The Palaeo Indian period (9500 + to 7500 years BP) is characterized by leaf shaped spear points manufactured for the most part from local cherts. The Archaic period (7500-2500 years BP) is characterized by a change to the size and shape of the spear points and the extensive use of copper that appears as early as 7000 years ago. The Woodland period (2500 - 400 years BP) is characterized by the introduction of the bow and arrow and ceramic pots. The Historic period (400 years BP to the present) begins with the introduction of European artifacts into the archaeological record as a result of Europeans moving into Northern Ontario. While the presence of Europeans was not synchronous throughout the area, Europeans and/or their artifacts would probably have appeared in the Marathon area by the early to mid 17^{th} Century.

2.2 Stage 1 Assessment

The stage 1 asessment concluded that the study area has a high potential for archaeological resources. The assessment was based on an analysis using a checklist developed by the author for Northwestern Ontario (Appendix 1). A score of 50 points or more indicates high potential for archaeological resources. The study area achieved a score of 115 points. The study area's location within 150 metres of a primary water source and within 100 metres of rapids or waterfalls and its proximity to major well-drained shoreline features, portage access points and known resource extraction areas pushed the total to 115 points. There are 18 registered archaeological sites within 20 km of Hare Lake. Most are located on Lake Superior with clusters at Neys Provincial Park and the mouth of the Pic River.

2.3 Stage 2 Assessment

A stage 2 field assessment was completed on August 10, 11 and 12, 2009. Two archaeologists examined the study area.

The weather was sunny with a clear sky throughout the three days. Access to the area was provided by boat to survey Hare Lake and the mouth of Hare Creek. A helicopter flight over the entire area was completed on August 12.

On August 10, a partial stage 2 assessment was completed at Hare Lake. The entire shoreline was examined with Brian Fraser of EcoMetrix Inc., who provided the boat access (map 4).

Archaeological site Delo-5 was found on a sandy beach on the north side of Hare Lake approximately .5 km west of where the creek from Bamoos Lake enters Hare Lake (photos 1,2) The surface collection produced 16 cobbles of Hudson Bay Lowland chert, of which a minimum of 13 appear to have been split. A retouched Hudson Bay Lowland chert flake and two pieces of fossilized coral were also found (photo 3). There was no shovel testing as the beach fronted a cabin on private property.

Four additional high potential areas were identified on Hare Lake through an examination of the landscape (map 4). One high potential area was not approached because it is private property (photo 3). The beach located at the boat landing was eliminated as a high potential area after an extensive surface survey found no artifacts. The rough sand texture on the beach and the extensive road erosion that ran towards the beach lead to the conclusion that the beach was, at least partially, artificially created by runoff. The outlet of Hare Lake into Hare Creek was eliminated as a high potential area because both sides are bedrock resulting in it being an unlikely habitation site.

The high potential area for Hare Creek is where it empties into Lake Superior. On August 11, a complete stage 2 was completed. Brian Fraser of EcoMetrix Inc. provided the boat access.

On the ground the mouth of the creek did not hold up to the high potential suggested by the aerial photographs as the sand beaches on either side of the river were low and wet (map 6).

Inland the higher land on the west side of the creek appeared to have high potential. The surface examination identified "hobo camp" remains (photo 7), a large depression without any artifacts (photo 5) and a flattened area that may have been a ramp or road. The road may have been associated with past logging activities but ended in a pointed dead end that did not provide access to the creek. Nothing was found in the test pits that were dug on the west side of the creek (photo 6). A surface examination of the 3 metre high west bank profile (see map 6) did not find any cultural resources. The east side of the creek had a lower elevation and was comprised of moss covered bedrock outcrops with wet, shallow deposits of soil between the bedrock. We dug test pits, where feasible, and nothing was found (map 6). The mouth of Hare Creek was downgraded to a low potential area as a result of this investigation.

On the return trip to Marathon, we stopped at Monmouth Island to examine a cobble beach that we had noticed on our way to Hare Creek. A brief examination of the series of cobble beaches on the island's north end resulted in the documentation of two previously unrecorded pukaskwa pits (map 7, photos 8, 9 and 10). The pits are located on the fifth terrace above Lake Superior. The northern pit is approximately 6 m x 3m and has a small ridge cutting through the centre dividing the pit in half. A small deciduous shrub is growing in the eastern half. A smaller, very shallow pit is located approximately 5m south of the larger pit. This site has been registered with the Provincial Site Registration Database as Delo-6.

We visited the Pic River First Nation Band Office during the remainder of the afternoon. Jamie Michano, Lands & Resources Coordinator was unavailable to meet with us but other staff members showed us a land use map that the First Nation is compiling. The Pic River First Nation has used the Hare Creek, Hare Lake and Bamoos Lake system for hunting, fishing and trapping. The map identified very little land use in the study area of the original report.

We completed a helicopter flight survey over the entire area on August 12. We identified eight high potential areas on Bamoos Lake that were outside of the boundaries of the original report's mandate (see maps 3 and 5). As Bamoos Lake is part of the same water system as Hare Lake and Hare Creek, this addendum must include a recommendation for Bamoos Lake that reflects these observations.

This aerial view confirmed that the interior lands west of the Pic River, where the mine will be located and the subject of the original report is extremely rough terrain that would have low potential for archaeological resources. The overview confirmed the high potential identified during the field examination of the Hare Lake shoreline and the low potential at the inflow and outflow of Hare Creek.

The artifacts from Delo-5 are shown in photograph 3. Appendix 2 contains the measurements for all the recovered artifacts.

3.0 Results, Recommendations

3.1 Results

A stage 1 examination of area landforms, relevant site records and a checklist for archaeological potential indicated that the study area has a high potential for archaeological resources.

A stage 2 field assessment resulted in the conclusion that Hare Lake and Bamoos Lake have high potential areas for archaeological resources amd Hare Creek has a low potential for archaeological resources.

3.2 Recommendations

If mine activity will impact the high potential sites on Hare Lake and Bamoos Lake:
1) a stage 2 assessment must be completed for the four high potential sites on Hare Lake and the eight high potential sites on Bamoos Lake
2) based on the conclusions of the stage 2 assessment, stage 3 and 4 assessments may be required.

The Ministry of Culture must approve all recommendations in this report in accordance with Section 65 (1) of the Ontario Heritage Act, R. S. O. 1990.

4.0 Caveat

As required by the Ontario Heritage Act Regulations, all archaeological reports must state that there is always a possibility of deeply buried, undetected archaeological remains existing in the study area. If such materials are found during construction activities, the proponent must immediately stop construction and contact the Ministry of Culture at 416-314-7144.

In the event that human remains are encountered during construction, the proponent must immediately stop all work in the area and contact the local Police Department, the Ministry of Culture at 416-314-7452 and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations at 416-326-8393.

5.0 Bibliography

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1984 Soils of the Fort Frances-Rainy River Area, Soil Survey Report No. 51, Land Resource Research Institute, Research Branch, Agriculture Canada.

Anonymous
1993 Archaeological Assessment Technical Guidelines, Ministry of Culture, Tourism and Recreation, Ontario.

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1993 The Glacial Period and Early Peoples. In Thunder Bay From Rivalry to Unity, Thunder Bay Historical Museum Society. pp. 2-15.

Racey, G.D., R.O. Wiltshire and D.J. Archibald
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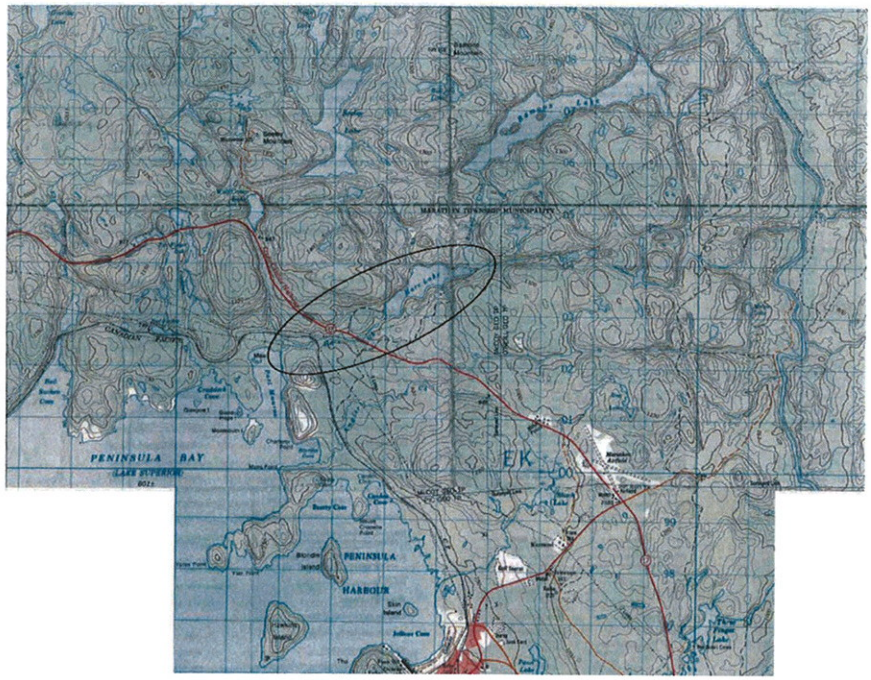
1987 Surficial Geology of Northern Ontario: Ontario Geological Survey. Map 2518, Scale 1:1200000.

Map 1 – Area of interest – source - PMG Marathon



Map 2 – Study Area

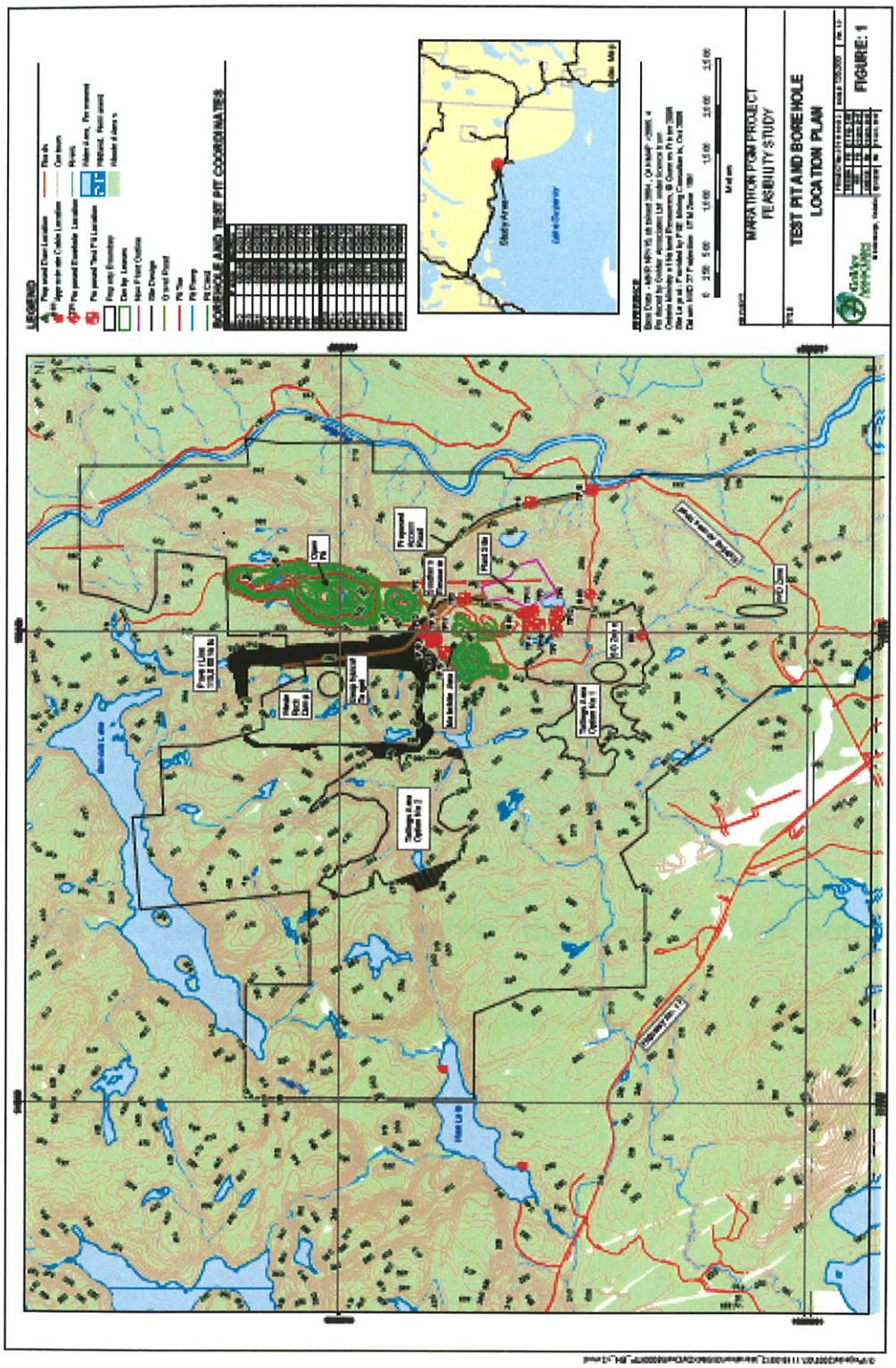
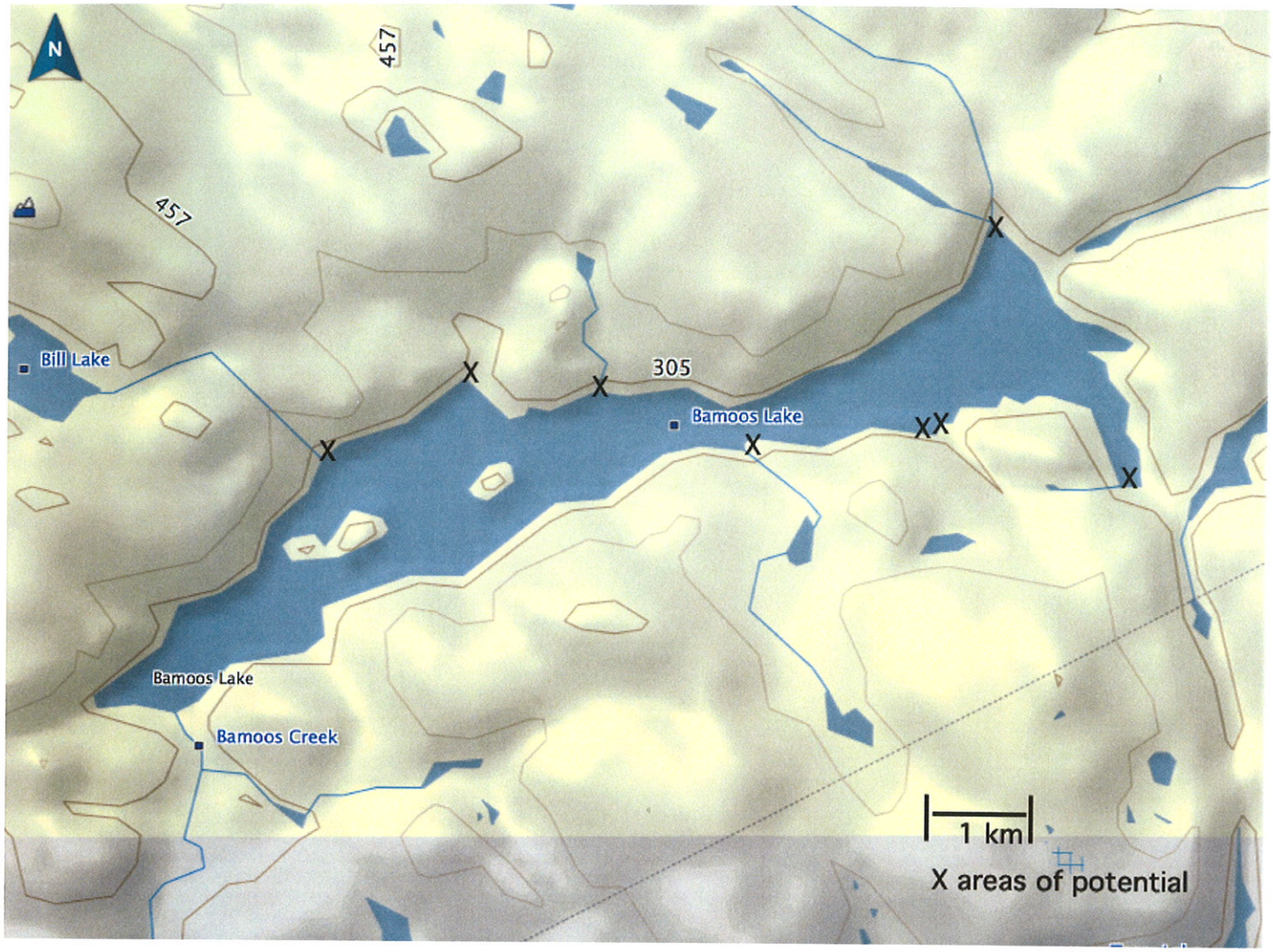


Figure 2. A map showing the boundaries of the study area, north of Marathon, Ontario.

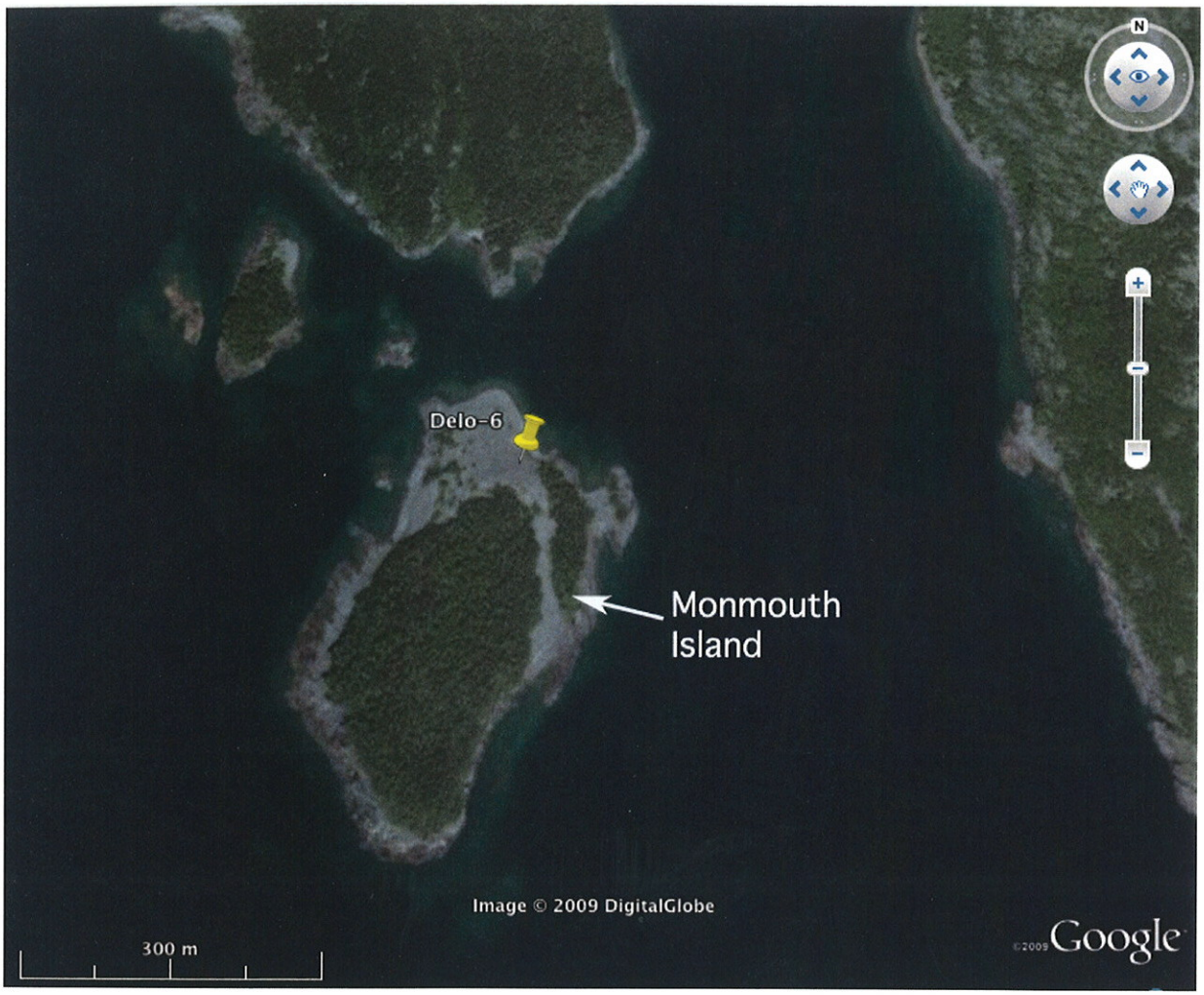
Map 3 – Study Area Boundaries – from Dalla Bona:2008

Map 4 – Hare Lake - X shows the areas of high potential



Map 5 - Bamoos Lake - X shows the areas of high potential

Map 6 - Areas Examined at the Mouth of Hare Creek



Map 7 - Monmouth Island - Location of the Pukaskwa Pits

Photo 1 – Location of Delo-5 – artifacts recovered from the beach in front of the cabin

Photo 2 – Beach at Delo-5

Photo 3 – Artifacts Recovered from Site Delo-5

Photo 4 – Hare Lake High Potential Site – not tested as it is private property

Photo 5 – Inland from the Mouth of Hare Creek on the West Side -Scott Hamilton standing at the edge of large depression

Photo 6 – Test Pit – inland from the mouth of Hare Creek

Photo 7 Tin Can - cut open with knife - mouth of Hare Creek

Photo 8 – Ross at the Edge of the Larger Pukaskwa Pit Monmouth Island

Photo 9 – Pukaskwa Pit – Monmouth Island

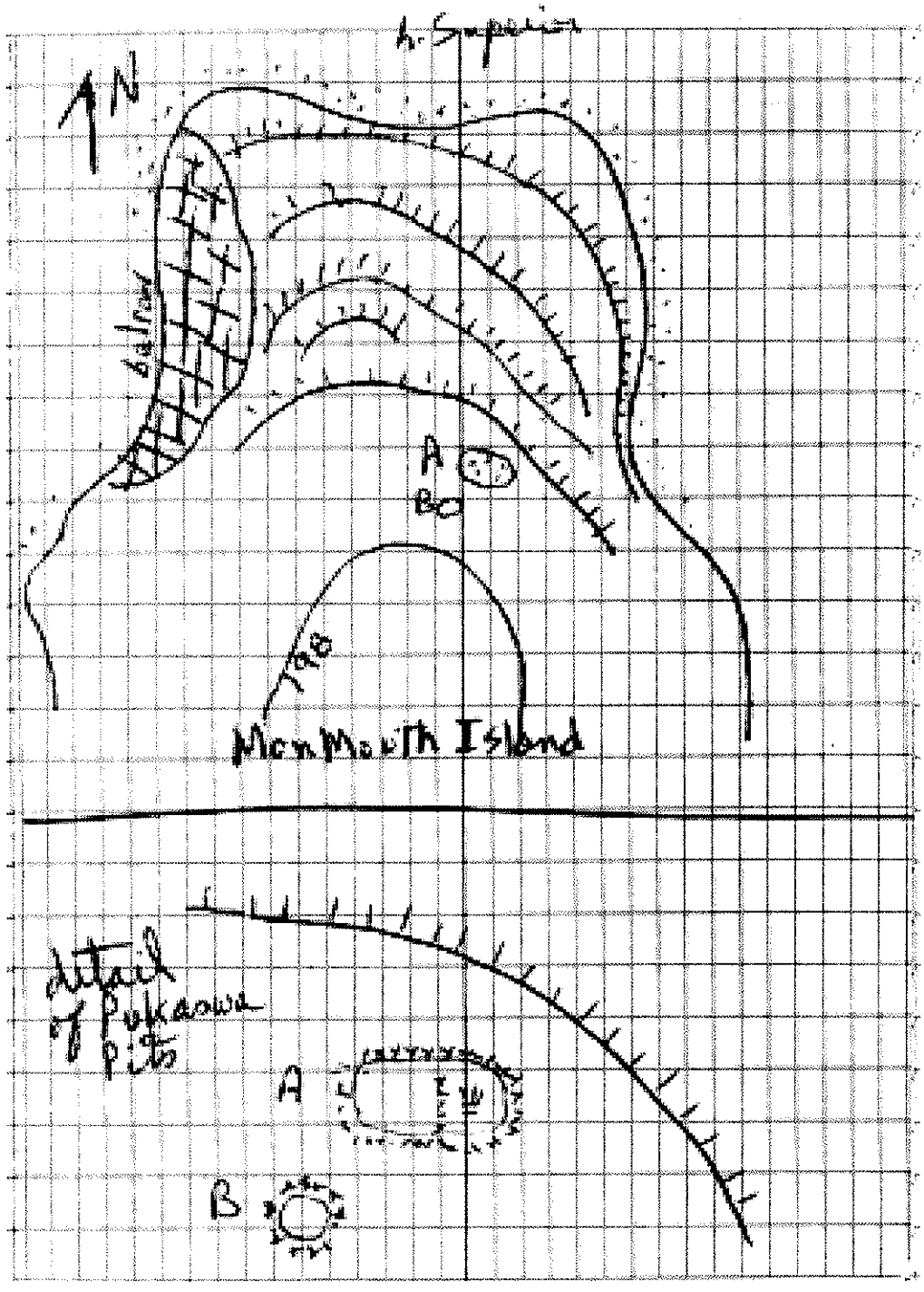


Photo 10 – Sketch Map of Pits on Monmouth Island
Field notes – Scott Hamilton

Archaeological and Cultural Heritage Site Potential Checklist

FACTORS	SCORE	
1. Within 150 metres of a primary water source	30	**30**
2. Within 100 metres of a secondary water source	10	
3. Major well-drained shoreline features (points, bays)	20	**20**
4. Within 300 metres of mouth or exit of major river	20	
5. Portage access points	25	**25**
6. Glacial lake shorelines	25	
7. Other glacial features such as eskers in area	10	
8. Recorded archaeological sites within 250 metres	25	
9. Known lithic raw material source within 500 metres	20	
10. Within 100 metres of rapids or waterfalls	20	**20**
11. Known resource extraction area	25	**20**
12. Unrecorded sites/artifacts within 250 metres	25	
Total		**115**

These criteria are based on 30 years of field experience in the boreal forest, reviews of other checklists and discussions with colleagues. A total score of 50 or more indicates high potential. A score of less than 50 indicates low potential.

Appendix 1

Artifact #	length	Width	Thickness	Weight	Description
DeIo-5.a	22.5	13.1	2.6	.6 gm	HBL Chert, small thinning flake
DeIo-5.b	36.5	21.9	9	7.9 gm	HBL Chert, split cobble
DeIo-5.c	32.3	17.5	8.1	3.5 gm	HBL Chert, split cobble
DeIo-5.d	17.6	15.4	7.5	2.4 gm	HBL Chert, split cobble
DeIo-5.e	25.7	21.3	4.7	2.1 gm	HBL Chert, split cobble
DeIo-5.f	42.2	30.3	13	14.3 gm	HBL Chert, split cobble
DeIo-5.g	24.4	22.7	6.3	3.0 gm	HBL Chert, split cobble
DeIo-5.h	27.1	20	10	6.4 gm	HBL Chert, split cobble
DeIo-5.I	18.6	15.3	6.1	2.5 gm	HBL Chert, split cobble
DeIo-5.j	26.4	23.9	17.4	12.5 gm	HBL Chert, split cobble
DeIo-5.k	19.2	18	9	3.2 gm	HBL Chert, split cobble
DeIo-5.l	24.2	13.5	5.1	1.2 gm	HBL Chert, split cobble
DeIo-5.m	25.2	19.5	9.9	4.7 gm	HBL Chert, split cobble
DeIo-5.n	22.3	16.8	8.8	3.9 gm	HBL Chert, split cobble
DeIo-5.o	12.4	11.4	3.6	0.5 gm	HBC Chert, cobble
DeIo-5.p	12.8	12.1	4.1	0.6 gm	HBC Chert, cobble
DeIo-5.q	19.3	16	9.3	3.6 gm	HBC Chert, cobble
DeIo-5.r	18.2	11.7	9.1	1.3 gm	fossil coral
DeIo-5.s	32.6	31.1	16.4	9.8 gm	fossil coral

Note – all measurements are in millimetres

Site Delo-5 Artifact Mesurements

Appendix 2

Ministry of Tourism and Culture

Culture Programs Unit
Programs and Services Branch
Culture Division
435 S. James St., Suite 334
Thunder Bay, ON P7E 6S7
Tel.: 807 475-1632
Fax: 807 475-1297

Ministère du Tourisme et de la Culture

Unité des programmes culturels
Direction des programmes et des services
Division de culture
Bureau 334, 435 rue James sud
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Tél.: 807 475-1632
Téléc.: 807 475-1297

Ontario

June 29, 2010

W. A. Ross
189 Peter St.
Thunder Bay, ON P7A 5H8

Dear Bill,

Re: Review and acceptance into the provincial register of reports the archaeological assessment report entitled "A Stage 1 and 2 Archaeological Assessment of Hare Lake and Hare Creek North of Marathon, McCoy Township, Ontario" written on December 3, 2009, received on December 15, 2009.
PIF: P044-049-2009
MTC: 58EA003

This office has reviewed the above-mentioned report, which has been submitted to this Ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. This review is to ensure that the licensed professional consultant archaeologist has met the terms and conditions of their archaeological licence, that archaeological sites have been identified and documented according to the 1993 technical guidelines set by the Ministry and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario.

The report recommends that:

"If mine activity will impact the high potential sites on Hare Lake and Bamoos Lake:

1) a Stage 2 assessment must be completed for the four high potential sites on Hare Lake and the eight potential sites on Bamoos Lake.
2) Based on the conclusions of the Stage 2 assessment, Stage 3 and 4 assessments may be required.

The Ministry of Tourism and Culture concurs with these recommendations and accepts this report into the provincial register of archaeological reports.

Please feel free to contact me with any concerns or questions regarding this letter.

Yours,

A Hinshelwood.

Andrew Hinshelwood
Archaeology Review Officer