Appendix E

Archaeological Assessment

The 2007-2008 Stage 1 Archaeological Assessment of the Proposed NPS 12 Natural Gas Pipeline to Service, the Northland Power Plant, City of Thorold, Niagara Regional Municipality, Ontario

Submitted to

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Acknowledgments

This assessment was facilitated by the following individuals and their agencies:

- ***Melanie Adamson***, Project Manager, Stantec Consulting Ltd.; and
- ***Robert von Bitter***, Archaeological Data Coordinator, Heritage and Libraries Branch, Heritage Operations Unit, Ministry of Culture.

EXECUTIVE SUMMARY

Enbridge Gas Distribution Inc. is proposing to install a Nominal Pipe Size (NPS) 12-inch (305-mm) diameter steel pipeline to supply natural gas to serve the proposed Northland Power Plant, a Gas-Fired Cogeneration Station in the City of Thorold, Ontario. The power plant is being developed by Northland Power Inc. (NPI), in association with Abitibi Consolidated Company of Canada Inc. (ACCC).

In 2006 D.R. Poulton & Associates Inc. carried out a Stage 1 background study of the proposed power plant (D.R. Poulton & Associates 2006). In August 2007 the firm completed a Stage 1 archaeological assessment of the preferred route for the proposed NPS 12 pipeline to service the power plant (D.R. Poulton & Associates 2007). The alignment of the corridor passed by a small cemetery located in a copse of trees on a knoll immediately west of Thorold Townline Road. The cemetery was identified as a potential constraint. Stantec Consulting Ltd. subsequently revised a portion of the proposed alignment to avoid the cemetery. D.R. Poulton & Associates has completed a Stage 1 archaeological background study of the updated preferred route. This report details the rationale, methods and results of the 2007-2008 archaeological assessment of the updated preferred route for the proposed pipeline.

The archaeological assessment involved a Stage 1 level of assessment as defined in the technical guidelines for archaeological assessment formulated by the Ontario Ministry of Culture, Tourism and Recreation (now Ministry of Culture) (MCTR 1993). It also included a visual examination of the preferred alignment of the proposed pipeline.

The study determined that no past archaeological surveys have been carried out in the immediate vicinity of the proposed pipeline, and that no archaeological sites have been documented within several hundred metres of the alignment. The results of the background study and visual examination indicate that segments of the alignment with a combined length of approximately 1680 metres have been impacted to the extent that they are unlikely to retain a potential for extant archaeological remains. Those segments represent 60% of the length of the updated preferred route for the proposed pipeline.

The study also determined that corridor segments with a combined length of approximately 1020 metres are inferred to have some potential for extant archaeological remains and to warrant archaeological survey. Those segments represent 40% of the length of the updated preferred route. The other concerns for archaeological survey are the lands subject to impact from the directional drilling for the proposed Beaverdams Creek crossing and related land farming. It remains to be determined whether the directional drilling for the crossing of the channel west of Davis Road and the related land farming will be a concern for archaeological survey. Given the above comments, it is recommended that a Stage 2 survey be conducted once the detailed design for the proposed pipeline has been formulated. The purpose of the survey will be to effect a field-based assessment of any and all lands that are confirmed to be subject to impact from the undertaking and to retain a potential for extant archaeological remains.

1.0 INTRODUCTION

Enbridge Gas Distribution Inc. is proposing to install a Nominal Pipe Size (NPS) 12-inch (305-mm) diameter steel pipeline to supply natural gas to serve the proposed Northland Power Plant, a Gas-Fired Cogeneration Station in the City of Thorold, Ontario. The power plant is being developed by Northland Power Inc. (NPI), in association with Abitibi Consolidated Company of Canada Inc. (ACCC). The 255-megawatt (MW) (nominal) Thorold Cogeneration Project (TCP) is to be located at the ACCC paper mill. The facility will be owned by a single purpose company, Thorold Cogen L.P., and will be managed and operated by NPI.

In 2006 D.R. Poulton & Associates Inc. carried out a Stage 1 background study of the proposed power plant (D.R. Poulton & Associates 2006). In August 2007 the firm completed a Stage 1 archaeological assessment of the preferred route for the proposed NPS 12 pipeline to service the power plant (D.R. Poulton & Associates 2007). The alignment of the corridor passed by a small cemetery located in a copse of trees on a knoll immediately west of Thorold Townline Road. The cemetery was identified as a potential constraint. Stantec Consulting Ltd. subsequently revised a portion of the proposed alignment to avoid the cemetery. D.R. Poulton & Associates has completed a Stage 1 archaeological background study of the updated preferred route. This report details the rationale, methods and results of the 2007-2008 archaeological assessment of the updated preferred route for the proposed pipeline.

The 2008 archaeological assessment involved a Stage 1 level of assessment as defined in the technical guidelines for archaeological assessment formulated by the Ontario Ministry of Culture, Tourism and Recreation (now Ministry of Culture) (MCTR 1993). It also included a visual examination of the updated preferred route for the proposed pipeline.

The purpose of the study was to obtain information on past archaeological investigations and known and potential sites in the study area containing the proposed pipeline. More specifically, the study was intended to obtain information on potential archaeological constraints to the construction of the proposed pipeline, and on the requirements of any more detailed Stage 2 archaeological survey that might be required.

The Ministry of Culture designated this assessment as CIF#P053-090-2007 and #P053-123-2008. The assessment was conducted under Archaeological Consulting Licence P053, issued by the Province of Ontario to Christine Dodd of DPA. It was carried out in accordance with the provisions of the Ontario Heritage Act (Government of Ontario 1990) and with the technical guidelines for archaeological assessment formulated by the Ontario Ministry of Culture, Tourism and Recreation (now Ministry of Culture) (MCTR 1993).

The records pertaining to this project are currently housed in the corporate offices of D.R. Poulton & Associates Inc. In the event the opportunity arises, however, the project archive will be transferred to a suitable long-term repository.

2.0 LOCATION AND DESCRIPTION

The proposed pipeline has a length of approximately 2820 metres. It begins at the point where TransCanada PipeLine's existing natural gas pipeline crosses Thorold Townline Road in the rural portion of the City of Thorold, Ontario and ends just off Allanburg Road at the site of the proposed gas-fired power generation station to be located on the property of Abitibi-Consolidated – Thorold Division. Figure 1 shows both the preferred route assessed in 2007 and the updated preferred route assessed in 2008.

The 2007 archaeological assessment of the proposed pipeline included a visual examination of the route. It was carried out on July 31, 2007 by the Consulting Archaeologist, Dana Poulton of D.R. Poulton & Associates Inc. A visual examination of the updated preferred route for the proposed pipeline was carried out on March 17, 2008 by James Caldwell of D.R. Poulton & Associates Inc. Photographs from both visual examinations are illustrated in this report. They show existing conditions along the updated preferred route for the proposed pipeline.

From the starting point on the west side of Thorold Townline Road, the proposed pipeline will cross over to the east side of the road. The initial leg of the updated preferred route travels north from the start point along the east side of Thorold Townline Road for a distance of approximately 340 metres, to a point just north of the small cemetery described in the Stage 1 report of August 2007. Most of this segment parallels agricultural fields but the north end of it parallels the frontage of mid to late 20th century residential lots; in addition, another existing residential lot is located near the starting point for the proposed pipeline. As illustrated in Plate 1, the east side of the road right-of-way along this segment consists of a narrow graveled shoulder of the road and an adjacent shallow ditch. The ditch is partially filled with gravel from the shoulder of the road.

Thorold Townline Road is transected on a southwest to northeast axis by a hydro transmission corridor and the aforementioned cemetery is located in a small copse of trees on a knoll immediately west of Thorold Townline Road, to the south of the transmission corridor. At a point just north of the cemetery the proposed pipeline corridor switches to the west side of Thorold Townline Road. The route then continues northward approximately 220 metres to the proposed crossing of Beaverdams Creek. This segment of the route will require directional drilling under Beaverdams Creek to Beaverdams Road. It will also require land farming to accommodate the soils from the drilling. Plate 2 shows a view looking south from the hydro access road located south of the proposed Beaverdams Creek crossing; the cemetery is located in the small copse of trees atop the rise in the distance in this view.

From the intersection with Thorold Townline Road the updated preferred route for the proposed pipeline extends west for a distance of approximately 800 metres along the south side of Beaverdams Creek to the intersection of Davis Road (Highway 58). A 19th century limestone house is located adjacent to the corridor just west of the intersection of Thorold Townline Road and Beaverdams Road. A 19th century red brick house is located adjacent to the corridor in the segment west of Beaverdams Road. Plate 3 illustrates that segment of the corridor.

Just west of Davis Road the corridor crosses a channel about five-metres wide; it contains a tributary of Beaverdams Creek. From that point the corridor crosses over to the north side of Niagara Falls Road and onto the Abitibi property, then turns west. It extends westward to a series of existing residences, where it rejoins the road allowance, then continues west to Allanburg Road. The various segments from Davis Road to Allanburg Road have a combined length of approximately 1140 metres. Plate 4 illustrates the segment of the corridor on Niagara Falls Road just west of the channel. Plate 5 illustrates the segment of the corridor on Niagara Falls Road at the Norton Street intersection.

The last leg of the route extends north along the east side of Allanburg Road for a distance of approximately 200 metres to the site of the proposed power generation plant. Plate 6 illustrates the segment of the corridor on Allanburg Road, looking south toward the Niagara Falls Road intersection.

The area containing the proposed pipeline generally consists of low relief. As described above, the segment that parallels Thorold Townline Road transects Beaverdams Creek south of Beaverdams Road. It also transects a tributary of Beaverdams Creek just west of the intersection of Davis Road and Niagara Falls Road. The segments of the corridor west of Davis Road lie between Beaverdams Creek and a second stream course that was mapped in the 19th century. Both stream courses were interrupted by the construction of the Welland Canal in the 19th century.

3.0 STAGE 1: BACKGROUND RESEARCH

3.1 Methods

The initial element of an archaeological assessment of a proposed development undertaking consists of background research. This is defined as a Stage 1 level of assessment in the archaeological guidelines formulated by the Province of Ontario (MCTR 1993). Background research is carried out in order to:

- amass all of the readily available information on any previous archaeological surveys in the area;
- determine the locations of any registered and unregistered sites within and adjacent to the property;
- identify areas of archaeological potential which represent concerns for Stage 2 field survey; and
- develop an historical framework for assigning levels of potential significance to any new sites discovered during fieldwork.

The framework for assigning levels of potential archaeological significance is drawn from provincial environmental assessment guidelines (Weiler 1980). The information includes the identification and evaluation of any feature that has one or more of the following attributes:

> it has the potential through archaeological exploration, survey or fieldwork to provide answers to substantive questions (i.e. relate to particular times and places) about events and processes that occurred in the past and therefore add to our knowledge and appreciation of history;
>
> it has the potential through archaeological exploration, survey and fieldwork to contribute to testing the validity of general anthropological principles, cultural change and ecological adaptation, and therefore to the understanding and appreciation of our man-made heritage; or
>
> it is probable that various technical, methodological, and theoretical advances are likely to occur during archaeological investigation of a feature, alone or in association with other features, and therefore contribute to the development of better scientific means of understanding and appreciating our man-made heritage (Weiler 1980:8).

Preferred and alternative routes for the proposed pipeline were contained within a study area defined by Stantec Consulting Ltd. As illustrated in Figure 1, it is bounded to the north by the banks of the Beaverdams inlet for the Welland Canal, to the south by the lots fronting on the south side of Lundy's Lane, to the western by some of the businesses and residences along the west side of Allanburg Road, and to the east by lands just east of Thorold Townline Road.

Two collective sources were examined in the course of the background research. The first was the Archaeological Sites Database (ASDB) of the Ministry of Culture. It houses site record forms for registered sites as well as published and unpublished reports on past surveys, assessments and excavations. At the request of the consultant, Robert von Bitter, the Archaeological Data Coordinator of the Ministry of Culture, provided data on registered archaeological sites within the study area.

The other collective source for Stage 1 research was the library/archives of D.R. Poulton & Associates Inc. This source includes an extensive inventory of published and unpublished reports, as well as inventories of both registered and unregistered archaeological sites in the area.

The above sources included some documentation on potential Euro-Canadian archaeological planning concerns. They were supplemented by reference to the 1876 Historic Atlas of Lincoln and Welland Counties (Page 1876).

3.2 Results

The background research obtained information of relevance to the potential for historic and prehistoric sites within the study area containing the alignment of the proposed pipeline. For reference purposes, a cultural chronology of the region is presented in Table 1.

The results of the Stage 1 study may be divided into two separate but related categories: information on past archaeological investigations and known sites in the study area; and information on the history of land use in the area. These will be considered in turn.

Past Archaeological Investigations and Known Sites

The Stage 1 background study determined that three past archaeological studies have been conducted in the study area containing the proposed pipeline. The first was a 1992 Stage 1-2 assessment of a proposed TransCanada PipeLines Limited natural gas pipeline. The second was a 2005 Stage 1-2 assessment of a proposed residential subdivision. The third was the 2006 Stage 1 assessment of the proposed Northland Power Plant.

The Stage 1 background study determined that 14 archaeological sites have been registered within the 2-kilometre study area for the proposed pipeline. Based on the distribution of known sites, none of these assessments or sites was located within 200-300 metres of the alignment of the proposed pipeline.

Data on the archaeological inventory are presented in Table 2. Summary data on the inventory are presented in Table 3. As indicated in Table 3, the majority of the sites (10 of 14) are First Nations components; the exceptions are four Euro-Canadian components.

The Euro-Canadian components are all 19th century homesteads. The First Nations components are all of unknown age and cultural affiliation; they include six isolated find spots and four lithic scatters.

Table 1 Cultural Chronology for Southwestern Ontario

PERIOD	**GROUP**	**TIME RANGE**	**COMMENT**
PALEO-INDIAN			
	Fluted Point	9500 – 8500 B.C.	Big game hunters; small nomadic groups
	Hi-Lo	8300 – 7900 B.C.	
ARCHAIC			
Early	Nettling	7700-6900 B.C.	Nomadic hunters and gatherers.
	Bifurcate Based	6800 – 6000 B.C.	
Middle	Laurentian	3500 – 2500 B.C.	Transition to territorial settlements.
Late	Lamoka	2500 – 1800 B.C.	Polished/ground stone tools
	Broad Point	1800 – 1400 B.C.	
	Crawford Knoll	1500 - 500 B.C.	
	Glacial Kame	*ca*. 1000 B.C.	Burial ceremonialism
WOODLAND			
Early	Meadowood	1000 - 400 B.C.	Introduction of pottery
	Red Ochre	1000 – 500 B.C.	
Middle	Saugeen		Long distance trade networks. Incipient horticulture
	Princess Point	500 – 800 A.D.	
Late	Glen Meyer	800 - 1280 A.D.	Transition to village life and agriculture
	Uren	1280 – 1330 A.D.	Large village sites
	Middleport	1330 – 1400 A.D.	Widespread stylistic horizon
	Neutral	1400 – 1650 A.D.	Tribal differentiation and warfare
HISTORIC			
Early	Odawa, Ojibwa	1700 – 1875 A.D.	Social displacement
Late	Euro-Canadian	1800 A.D. – present	European settlement

Lithic scatters are among the most common types of archaeological sites found in southern Ontario. The term “lithic scatter” is used by archaeologists to refer to ploughed sites where most or all of the artifacts consist of chipped stone tools and debitage, the waste product of chipped stone tool manufacture and maintenance. In practice, lithic scatters and camp sites tend to be synonymous in that both refer to sites that are generally small in size and were occupied by small groups of people for relatively short periods of time. In most cases, lithic scatters represent temporary occupations by small groups of people, such as hunting camps.

Table 2 Inventory of Registered Archaeological Sites in the Study Area

Site Name	Borden Number	Site Type	Cultural Affiliation
Blackhorse Valve	AgGt-72	Find spot	Indeterminate Prehistoric
T. Brown	AgGt-130	Homestead	Euro-Canadian
Robert Spencer	AgGt-131	Homestead	Euro-Canadian
B. Williams	AgGt-132	Homestead	Euro-Canadian
K. Smith	AgGt-133	Homestead	Euro-Canadian
	AgGt-134	Find spot	Indeterminate Prehistoric
	AgGt-135	Find spot	Indeterminate Prehistoric
	AgGt-136	Find spot	Indeterminate Prehistoric
	AgGt-137	Find spot	Indeterminate Prehistoric
	AgGt-138	Find spot	Indeterminate Prehistoric
Glen Gordon 1	AgGt-139	Lithic scatter	Indeterminate Prehistoric
Glen Gordon 2	AgGt-140	Lithic scatter	Indeterminate Prehistoric
Glen Gordon 3	AgGt-141	Lithic scatter	Indeterminate Prehistoric
Glen Gordon 4	AgGt-142	Lithic scatter	Indeterminate Prehistoric

Table 3 Summary Data on Registered Archaeological Sites in the Study Area

Age & Culture		Site Type	Total
First Nations Components	Indeterminate Prehistoric	Find Spot	6
		Lithic scatter	4
	Subtotal – First Nations		***10***
Euro-Canadian	19th Century	Homestead	4
	Subtotal – Euro-Canadian		***4***
Total			**14**

19th Century Land Use in the Study Area

Figure 2 illustrates the location of the proposed pipeline alignment relative to a composite of the 1876 Historic Atlas maps of Thorold and Stamford Geographic Townships (Page 1876). As illustrated, the pipeline alignment as of 1876 was located in what was a rural area between the communities of Thorold and Allanburg. However, the Old Welland Canal and the New Welland Canal were prominent features in the landscape of this region in the 19th century, as they are today. The original Welland Canal was built between 1824 and 1829 and was an immediate success. In 1870, plans were initiated to build the new canal with a greater depth, capable of taking vessels with a larger draught. The New Welland Canal was still under construction by the mid 1870s, when the 1876 Historic Atlas illustrated in Figure 2 was published.

As illustrated in Figure 2, the 1876 Historic Atlas mapped four structures in proximity to the alignment. One is a church; it was situated on the west side of Thorold Townline Road, south of the proposed Beaverdams Creek crossing. This church is no longer standing. The mapping indicates that it was probably situated within the hydro transmission corridor or between the hydro transmission corridor and Beaverdams Creek. The cemetery described in Section 2.0 of this report and illustrated in Plate 2 appears to have been associated with this church. The cemetery occupies a rise overlooking the inferred site of the church. The updated preferred route for the proposed pipeline has been changed to avoid the cemetery. However, the site of the church is in close proximity to the segment of the corridor that follows the west side of Thorold Townline Road south of the Beaverdams Creek crossing (Plate 2). Whether any part of the structure extended into the corridor remains to be determined, although that does not seem likely as the church was more likely to have been set back from the road right-of-way.

The other three mapped structures depicted in the 1876 Historic Atlas map are farmsteads with associated orchards. All are situated on the north side of Beaverdams Creek and are oriented to Beaverdams Road and Niagara Falls Road (Figure 2). Two of them are on the same side of the road right-of-way as the updated preferred route for the proposed pipeline. Those structures, the 19th century the red brick house (Plate 3) and the limestone house described in Section 2.0 of this report, are still standing. Other 19th century structures located in proximity to the alignment are a farmhouse situated in Lot 47, at the southeast corner of Niagara Falls Road and Allanburg Road, and a toll booth that was located on the west side of the intersection of Allanburg Road and Niagara Falls Road.

4.0 EVALUATION OF ARCHAEOLOGICAL POTENTIAL

There are two basic categories of possible archaeological planning concerns for any property subject to impact from a proposed development. The first consists of known sites that are of demonstrable or potential significance as cultural resources and planning concerns. The second consists of the potential for as-yet undiscovered sites. These two categories will be addressed in turn.

4.1 Known Sites of Demonstrable or Potential Significance

The original framework for assigning levels of archaeological significance in Ontario was drawn from Provincial environmental assessment guidelines (Weiler 1980). The information included the identification and evaluation of any site that met one or more of the following criteria:

> *it has the potential through archaeological exploration, survey, or fieldwork to provide answers to substantive questions (i.e. relate to particular times and places) about events and processes that occurred in the past and therefore add to our knowledge and appreciation of history;*
>
> *it has the potential through archaeological exploration, survey, and fieldwork to contribute to testing the validity of general anthropological principles, cultural change and ecological adaptation, and therefore to the understanding and appreciation of our man-made heritage; or*
>
> *it is probable that various technical, methodological, and theoretical advances are likely to occur during archaeological investigation of a feature, alone or in association with other features, and therefore contribute to the development of better scientific means of understanding and appreciating our man-made heritage (Weiler 1980:8).*

The document quoted above was prepared a quarter of a century ago and while the principles it was based upon are still current, some of the language is now dated, including phrases such as "*man-made*". The issue of archaeological site significance is also covered in a more recent publication entitled *Conserving a Future for Our Past: Archaeology, Land Use & Development in Ontario* (Ministry of Citizenship, Culture and Recreation 1997). As stated in that document, the key factors an archaeologist considers in evaluating the significance of an archaeological site include the following:

1. The Integrity of the site (e.g. is it in pristine or near pristine condition; despite past disturbances; can important data still be recovered from it?).

2. The Rarity or Representativeness of the site (e.g. is it one of a kind, locally, regionally or provincially; is it a good comparison to similar sites from other regions, etc?).

3. The Productivity of the site (e.g. does it have the potential to contain large quantities of artifacts or exceptionally detailed data about what occurred there; etc?).

4. The Age of the site.

5. The Potential for Human Remains within the site.

6. The Geographic or Cultural Association (e.g., does the site have a clear and distinct relationship with the surrounding area or to a particular geographic feature, such as a unique rock formation, historic transportation corridor, etc.; is the site associated with a distinctive cultural event, ceremony or festival, etc.?).

7. The Historic Significance of the site (i.e., is the site associated with a renowned event, person or community?).

8. Community Interest (e.g., is the site important to a particular part of the community; does it represent a significant local event; etc.?).

As summarized in Section 3.2 of this report, no past archaeological investigations have ever been carried out within the lands transected by the updated preferred alignment for the proposed pipeline. Accordingly, possible archaeological planning concerns for the proposed pipeline were limited to the potential for as yet undiscovered or unconfirmed archaeological remains. That potential is discussed below.

4.2 Potential for as-yet Undiscovered Sites

The inherent potential for prehistoric and historic archaeological resources in an area subject to impact from a proposed development is generally evaluated on the basis of three factors. One is the presence of known sites in the area. The second is the intrinsic nature of the property itself, including factors such as topography and drainage. The third factor is the extent to which past impacts may have degraded or altogether eradicated the potential of the property to contain extant archaeological remains.

The proposed pipeline has not been staked and detailed plans are not available at this time. Given the diameter of the proposed pipeline, however, it is assumed that the construction easement will be relatively narrow. It is further assumed that the existing roads can be used as the working easement for the entire length of the proposed pipeline.

The visual examinations conducted on July 31, 2007 and March 17, 2008 indicate that most of the length of the updated preferred route has been disturbed to the extent that it is unlikely to retain a potential for as-yet undiscovered archaeological remains and does not warrant archaeological survey. That is the case for the 340-metre segment that follows the east side of Thorold Townline Road, the 1140-metre length of the route that extends along Niagara Falls Road and the 200-metre long segment that follows Allanburg Road. These segments have a combined length of approximately 1680 metres and represent 60% of the length of the proposed pipeline.

Notwithstanding the above comments, it should be noted that deeper archaeological deposits could potentially survive even in areas that have been graded, such as existing road rights of way. That would be the case for features such as root cellars relating to houses that were oriented to historic roads such as Allanburg Road, Niagara Falls Road, Beaverdams Road and Thorold Townline Road, the road rights-of-way the updated preferred route follows. It would also be the case for unmarked graves in the cemetery on Thorold Townline Road, the cemetery that the updated preferred route is avoiding.

Subject to a review of the detailed design for the proposed pipeline, there are certain segments or areas along the updated preferred route that are considered to have a potential for archaeological remains and to warrant a definite or possible Stage 2 survey. They have a combined length 1,020 metres, representing approximately 40% of the length of the proposed pipeline.

One is the segment of the corridor on the west side of Thorold Townline Road south of the proposed Beaverdams Creek crossing. This segment has a length of approximately 220 metres.

Further to the above, it is assumed that the proposed Beaverdams Creek crossing itself will require land farming for the soils from the directional drilling. The area involved in the land farming will presumably be located in the field south of the proposed Beaverdams Creek crossing (Plate 2). That area may contain the site of the church depicted on the 1876 Historic Atlas map of Thorold Township (Figure 2). It has archaeological potential and, were it to be subject to possible impact by the land farming, would also be a concern for Stage 2 archaeological survey.

The 800-metre long segment of the updated preferred pipeline route along the south side of Beaverdams Road from Thorold Townline Road to Davis Road is also considered to have some potential for archaeological remains and to warrant a definite or possible Stage 2 survey. Potential remains for that segment include artifacts and below-ground structural remains of outbuildings related to the two standing 19th century residences on the south side of Beaverdams Road: the red brick house (Plate 3); and the limestone house.

As described in Section 2.0 of this report, just west of Davis Road the corridor crosses a channel containing a tributary of Beaverdams Creek. If that crossing is to be done by directional drilling and if it will involve land farming, an archaeological survey of the area of impacts may be required, depending on the extent of past impacts in the lands in question.

5.0 RECOMMENDATIONS

As detailed in Section 4.2 of this report, the results of the background study and visual examination indicate that segments of the alignment with a combined length of approximately 1680 metres have been impacted to the extent that they are unlikely to retain a potential for extant archaeological remains. Those segments represent 60% of the length of the updated preferred route for the proposed pipeline.

The study also determined that corridor segments with a combined length of approximately 1020 metres are inferred to have some potential for extant archaeological remains and to warrant archaeological survey. Those segments represent 40% of the length of the updated preferred route. The other concerns for archaeological survey are the lands subject to impact from the directional drilling for the proposed Beaverdams Creek crossing and related land farming. It remains to be determined whether the directional drilling for the crossing of the channel west of Davis Road and the related land farming will be a concern for archaeological survey.

Given the above comments, it is recommended that a Stage 2 survey be conducted once the detailed design for the proposed pipeline has been formulated. The purpose of the survey will be to effect a field-based assessment of any and all lands that are confirmed to be subject to impact from the undertaking and to retain a potential for extant archaeological remains. In the event that the survey should discover archaeological sites that represent significant planning concerns, it is recommended that measures for mitigating the concern be implemented. Options for those sites include preservation by avoidance or mitigation by salvage excavation in advance of development.

The above conclude the site-specific recommendations of this report. Nevertheless, it should be emphasized that no archaeological survey can be considered to totally negate the potential for deeply buried cultural remains, including human burials. In recognition of that fact, the archaeological assessment technical guidelines formulated by the Province of Ontario require that all reports on archaeological assessments include recommendations to address the possibility that deeply buried remains may be encountered during grading and construction (MCTR 1993:12).

In accordance with the above, it is recommended that archaeological staff of the Ontario Ministry of Culture be notified immediately if any deeply buried archaeological remains should be discovered during earthmoving or construction within the proposed pipeline alignment. It is similarly recommended that in the event that human remains should be encountered, the proponent immediately contact Shari Prowse, Heritage Planner, Ontario Ministry of Culture (519 675-6898) and Michael D'Mello, the Registrar of the Cemeteries Regulation Unit of the Ministry of Government Services (416 326-8404).

6.0 REFERENCES CITED

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FIGURES

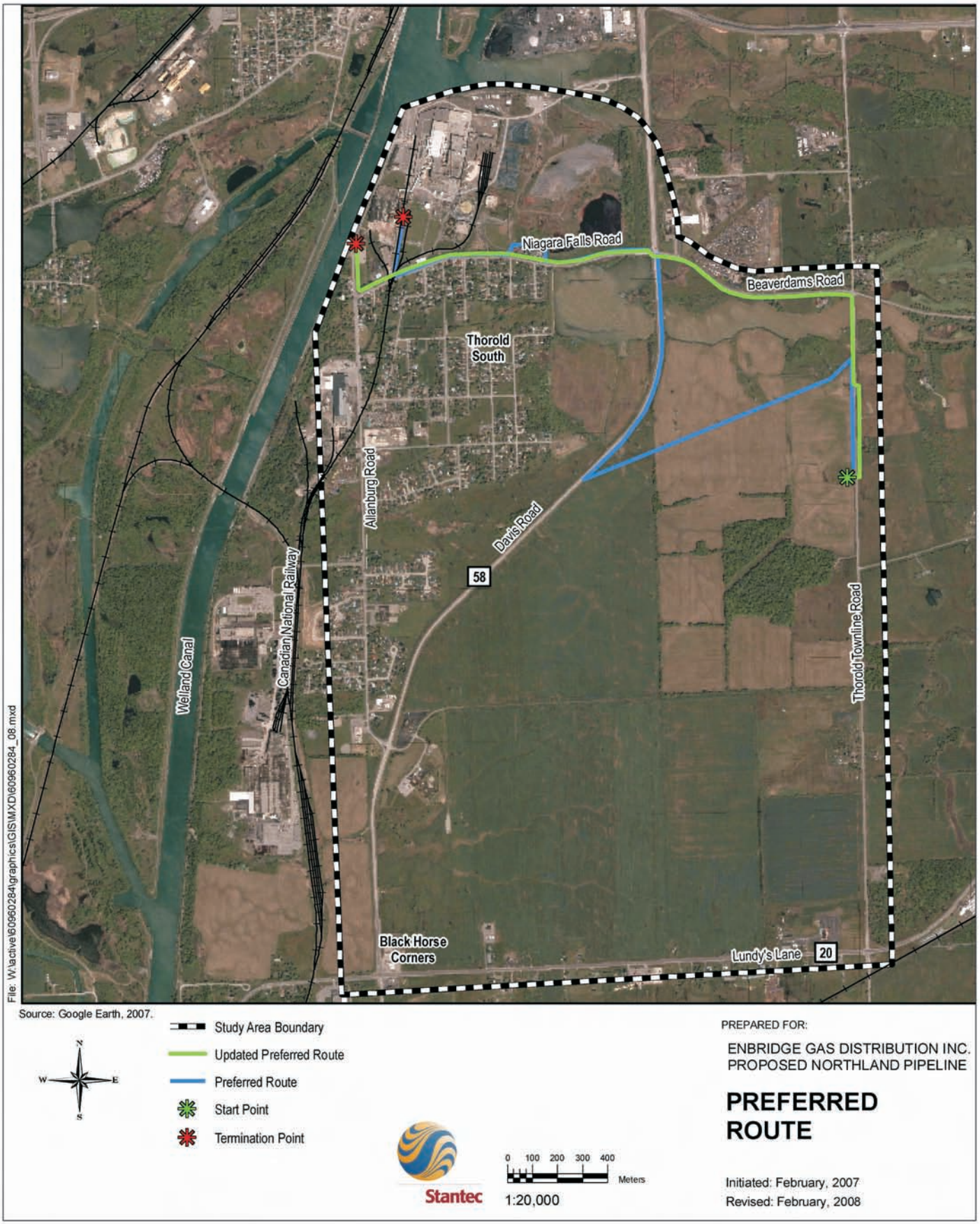

Figure 1 Aerial Photograph of the Preferred Pipeline Route

Figure 2 Composite Facsimile of the 1876 Historical Atlas Maps

PLATES

Plate 1 South End of Thorold Townline Road Segment, View North

Plate 2 Thorold Townline Road Segment, View South

Plate 3 19th Century Red Brick House on Beaverdams Road

Plate 4 Niagara Falls Road Segment West of Davis Road, View West

Plate 5 West End of Niagara Falls Road Segment at Norton Street, View West

Plate 6 Segment along Allanburg Road, View South to Niagara Falls Road