

# STAGE 1 ARCHAEOLOGICAL ASSESSMENT

## Proposed Whitesand First Nation Biomass Cogeneration and Pellet Mill Project

Archaeological License # P276  
PIF # P276-024-2013  
Original Report  
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## **EXECUTIVE SUMMARY**

Neegan Burnside Ltd received a contract from the Whitesand First Nation to undertake the environmental permitting for a proposed Biomass Cogeneration Plant and Pellet Mill on Provincial Crown land on the outskirts of Armstrong Ontario (Fig. 1). Neegan Burnside subcontracted Scott Hamilton to undertake the Stage 1 Archaeological Assessment of the property. This report outlines the process and conclusions of the assessment.

Appendix 1 provides a list of the features that can indicate archaeological potential. The most obvious landscape features contributing to heritage potential on the property are Hodoo Creek, located over 300 metres northwest of the property, and a series of small internally draining wetlands located in a valley about the same distance to the southeast (Fig. 2). This valley appears to be an old glacial channel, with extensive gravel pit operations in the valley bottom. Much of the locality in question has been subjected to clear-cut logging, scarification and replanting, with the remains of an extensive logging camp and staging area on the proposed Plant development area. Extensive gravel quarrying operations within the nearby outwash channel valley, coupled with secondary road construction, has contributed to extensive modification through (Fig. 2 and Fig. 3 photo 3). The extensive modification of the ground surface has severely degraded any cultural heritage potential, leading to the following recommendation.

## **RECOMMENDATION**

1. The study area does not require further archaeological assessment.

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## **PROJECT PERSONNEL**

Scott Hamilton – Principal Investigator  
Licence Number – P276  
PIF # P276-024-2013

## **1.0 PROJECT CONTEXT**

### **1.1 Development Context**

Neegan Burnside Ltd received a contract from the Whitesand First Nation to undertake the environmental permitting for a proposed Biomass Cogeneration Plant and Pellet Mill on Provincial Crown land on the outskirts of Armstrong Ontario (Fig. 1). Neegan Burnside subcontracted Scott Hamilton to undertake the Stage 1 Archaeological Assessment of the property. This report outlines the process and conclusions of the assessment.

The study area is located at approximately N 50° 16.988' W 89° 02.601', about 2 km south of Armstrong, Ontario (Fig. 1). It is located on Provincial Crown land in a large cleared area found between a small stream (Hoodoo Creek) and a series of small unnamed wetlands and ponds located within a valley that appears to coincide with an old glaciofluvial outwash channel (Fig. 2). The proposed site boundary is located within a gently rolling upland area of approximately 750 by 600 metres extent. The proposed facility 'footprint' is expected to be smaller and contained within this site boundary (Fig. 2).

As part of the Renewable Energy Approval (REA) requirements of O. Reg. 359/09, a stage 1 archaeological assessment of the study area by a licensed archaeologist is required that conforms to the Standards and Guidelines for Consulting Archaeologists issued by the Ministry of Tourism and Culture.

The Ontario Ministry of Natural Resources, through Whitesand First Nation gave permission for the licensee to have access to the study area to conduct the property inspection.

### **1.2 Historical Context**

The study area is located in northern Ontario and on Canadian Shield terrain. It is contained within Borden Block EhJg. The broader study area has been subjected to extensive logging, site preparation by scarification, and replanting. This surface modification is amplified in the immediate area of interest by construction and operation of a now-abandoned logging camp and staging area (Fig. 2). The nature of these disturbances are described in more detail below.

All of the Pre-contact Aboriginal societies of northern Ontario were organized in small-scale

hunting and gathering groups, and were highly mobile in response to seasonal resource fluctuations. Archaeologists believe that stream systems were important for human settlement, but not exclusively so. In any case, the most intensively used locations that were attractive for encampment, travel and resource harvest include stream and lake shores. Consequently, it is thought that the density of archaeological deposits is higher along those features, and all land within 300 metres of such shores is deemed to have high archaeological potential (see Appendix 1). Virtually no archaeological reconnaissance has been conducted in the area, and the heritage inventory for an area 5 km in diameter around Armstrong currently reflects an information void. Information recovered from the surrounding region offers a general outline of the culture history for the area of interest.

The culture history of northern Ontario is broadly classified into four Cultural Traditions and time periods. These are Palaeo-Indian, Archaic, Woodland, and Post-contact, and reflect ancient hunting and gathering societies that are archaeologically defined by diagnostic artifacts.

The Palaeo-Indian period (9,500 to ca. 7,000 radiocarbon years Before Present or BP) is locally defined by the production and use of leaf-shaped spear points often manufactured from local silica-rich stone deriving from the Gunflint Formation. These people represent the first occupants of Subarctic Ontario, and they likely occupied the landscape as it was freed from glacial ice and became biologically capable of supporting plants and animals. The Archaic period (ca. 8,000-2,500 radiocarbon years BP) is characterized by a change in the size and shape of the stone spear points and also the extensive local use of copper in the Lake Superior basin. This copper use dates to as early as 7,500 years ago. The Middle and Late Woodland periods (2,500 – 400 years BP) are characterized by the introduction of bow and arrow technology, and the use of pottery cooking vessels. The Post-contact period (400 years ago to the present) begins with the introduction of European artifacts into the archaeological record, and extends into the era of direct contact between European and Aboriginal people in northern Ontario.

In the northern Lake Nipigon region, the contact period might have begun by the early 1600s, as European technology spread northwest through the hands of Aboriginal middleman traders. French traders, explorers and missionaries likely entered the Lake Nipigon basin shortly thereafter. The earliest reported French presence dates to the 1667 trek by Father Claude Allouez, a Jesuit missionary, in search of the Nipissing people who fled north to Lake Nipigon to escape the Iroquois wars of the 1650s (Anonymous 2003). European economic influence likely increased after the 1670 establishment of the Hudson's Bay Company, with trade posts along the shores of Hudson and James Bays. While the English traders did not move inland to trade until the 1780s, such goods were likely distributed throughout the Albany River basin through middleman traders by the late 1600s. The implications of inland indirect trade are illustrated by Heidenreich and Noel (1987: Plates 38, 39 and 40).

During the first half of the 1700s increasingly intensive fur trade competition occurred along the height of land between the Arctic and Atlantic watershed north of Lake Nipigon. After the 1759 conquest of New France, and the post 1780s development of Anglo-Scots trade companies based in Montreal, this escalated to unprecedented levels. This forced the Hudson's Bay Company to abandon its Bayside trade policy, and establish trade posts in the continental interior. At that point the Albany River became a major travel route from James Bay westwards as far as the northeastern Plains. This led to a 50 year era of competing trade posts dispersed throughout the interior, including the Upper Albany River system and the northern shore of Lake Nipigon (Moodie, Lytwyn and Kaye 1987:Plate 62). While no trade posts appear to have been established within the study area, the region is surrounded by outposts associated with diverse trade interests. No doubt the local Aboriginal populations were engaged in varying levels of trapping and trading in addition to subsistence foraging from at least the late 1600s onwards. This new economic activity provided access to new technology, some of which replaced traditional materials. While the fur trade drove a complex process of culture change that extends into the modern period, indigenous occupants of the region continued to make their living from hunting, trapping and fishing in ways not unlike their distant ancestors.

The pace of change underwent a new direction after the 1850 signing of the Robinson-Superior Treaty, and with the growing influence of federal and provincial government agencies. Whitesand First Nation, located adjacent to Armstrong, is the primary Aboriginal community in the immediate area. The Whitesand First Nation was established at its present location after the 1942 flooding of Lake Nipigon (to create a hydro-electric reservoir) displaced the community from its original homeland along the northwestern shores of Lake Nipigon. After the end of World War II, further disruptive influence came with trap line registration and regulation, and increasingly intensive pressure to aggregate into one or another reserve community. While providing better access to health, education and administrative services, the trends of the past 60 years have also seen the slow northward expansion of natural resource harvest industries, and more pervasive outside influence.

Another important consideration was the development of a second transcontinental railway system (later consolidated into the Canadian National Railway) that ran north of Lake Nipigon in the early 20<sup>th</sup> Century, and the establishment of Armstrong as a railway service town. This has culminated with the expansion of industrial forestry operations throughout the Lake Nipigon basin after WW II, with the establishment north/south road connections that in the 1960s was upgraded to become provincial highway 527. This has had the effect of opening the region to land transportation (rather than exclusively water-based travel).

### 1.3 Archaeological Context

A query of the archaeological database maintained by the Ontario Ministry of Tourism, Culture and Sport (MTCS) indicates that no archaeological sites have been reported within 5 km of the study area.

The study area has been subjected to forest harvest, with subsequent site preparation involving scarification, followed by replanting to Jack Pine. This process has resulted in systematic disturbance of the ground surface. While heavily overgrown with lower story vegetation (Fig. 3), ridges and trenches from the scarifier are evident when walking through the regenerating forest (Fig. 3). When examining the satellite imagery at high magnification (Fig. 1), trenches and ridges are visible, demonstrating the extent and severity of disturbance. Also of note is that the expanse of unharvested forest in Fig. 2 (southeast and east of the proposed plant location) reflects obsolete information, with much of this area being subsequently harvested. This indicates extensive mechanical disturbance of approximately the top 20 cm of the soil profile throughout the harvested area (see Fig. 2). The planted trees are Jack Pine, but moderately dense scrub bush also mantles the ground (Fig. 3). The only areas near the property that have not been harvested are the margins of Highway 527, the banks of Hoodoo Creek, and the steep slopes defining the spillway valley to the south and east of the study area (Fig. 2, 3). The extent of forest harvest and scarification is evident in Figure 2 and in Fig. 3: photo 3.

The study area is underlain by Precambrian bedrock deposits with a discontinuous glacial drift overburden (McQuay 1983). The area of immediate interest forms part of a zone of glaciofluvial deposition suggesting an outwash plain (Fig. 4). This is consistent with field observations of sandy/silty sedimentary deposition overlying ground moraine (Fig. 5). Well-sorted gravel deposits are found in the nearby valley that is interpreted to be an old outwash channel (Fig. 3: photo 3). Indeed, McQuay (1983) reports good sand and gravel deposits are to be found within the zone of glaciofluvial deposition (Fig. 4), and several active gravel barrow pits were noted in the area.

The study area forms part of the Ontario Boreal Shield ecoregion (3W-1). Older forest stands consist of predominately coniferous vegetation, with trembling aspen and white birch also common. As much of the property has been subjected to forest harvest, planted conifers with a mix of naturally occurring deciduous brush now dominate the property. While dense lower story vegetation is apparent, occasional tree-throws and cut bank exposures reveal that the upper part of the soil profile is characterized by reddish-tan sandy silt below a black organic LFH surface horizon (Fig. 5). However, extensive modification of the property is apparent due to construction and use of the logging camp and staging area. This involved scraping and leveling of the gently rolling surface, construction and surfacing of gravel service roads, and emplacement of subsurface water, power and sewer infrastructure. This extensive disturbance is described in more detail in the following

section.

## 2.0 PROPERTY INSPECTION

An inspection of the property and its periphery was conducted on June 27, 2013. The weather was overcast but not raining, allowing for good visibility of landscape features. After parking at the locked gate into the property (Fig. 6), inspection involved a walking traverse throughout the primary area of proposed development that coincides with the former logging camp and marshalling area, followed by a cursory pedestrian inspection to the southeast through the regenerating forest to the road that provides access to the gravel pits located within the outwash channel. Vehicle-based inspection was conducted along the former logging roads that have been maintained in the area. The latter revealed the spatial extent of forest harvest and regeneration operations in the area. The GPS track documenting this inspection is reported in Fig. 7. The locations of photographs included in this report are also reported in Fig. 7.

The balance of the area identified for proposed development coincides with an extensive area formerly used as a logging camp and staging area. A number of abandoned sheds, accommodation trailers, fuel storage and pumping facilities, barrow pits, abandoned vehicles, and other debris is found throughout the gated area. The nature of this area, and details of the disturbance are presented in a collage of photographs (Fig. 8 to 11). Several graded and gravelled roadways (forming loops) bisect the area, many with shallow graded ditches along the margins (Fig. 11: photo 1). These roadways provided access to a fuel storage and pumping area equipped with above-ground tanks (Fig. 8: photo 2). At least 2 or 3 recently drilled test wells were also located (Fig. 9: photo 2), coupled with recent barrow pits (Fig. 8: photo 3). Other areas were leveled to remove knolls (Fig. 11: photo 3), while depressions were filled with gravel. This surface modification also involved grading of parking areas (Fig. 10: photos 1 and 2), some still containing parked trucks, trailers, skidders and other equipment (Fig. 9 to 11). Abandoned fuel tanks, culverts, and other debris is scattered throughout the area. Of particular note are a number of abandoned accommodation trailers, each equipped with an underground power service (Fig. 10: photo 3, 11: photo 2). Other sub-surface infrastructure of unknown function was also observed. I suspect that this includes septic tanks or fields (Fig. 9: photo 3).

Appendix 1 provides a list of the features that can indicate archaeological potential. The area identified in Fig. 2 as the primary development area is between 100 and 350 metres from the nearest surface water source, suggesting that the balance of the property is removed from the most important indicator of archaeological potential. Inspection of Figure 2 reveals that the southeastern boundary of the property abuts a small pond. However this internally draining pond is within a spillway valley, and is at the base of a steep slope representing about a 30 metre elevation change

over a horizontal distance of less than 100 metres. Such a steeply inclined slope is not likely habitable. This steep grade was confirmed during the site inspection. More to the point, the area of interest has been extensively modified to develop the logging camp area, and any heritage potential associated with the valley wall or pond has been significantly degraded by landscape modification. Less than 10% percent of the property remains undisturbed forest. The area of proposed Plant development is relatively flat, but much of this reflects modification of the original gently rolling surface. This modification has severely degraded the heritage potential of the property. The area surrounding the logging camp is somewhat less affected by intensive earth moving, however it also has been severely affected by mechanized forest harvest and scarification in preparation for Jack Pine replanting. Thus, I believe that the heritage potential of the area surrounding the development area is also severely degraded.

No additional features of archaeological potential were found during the property inspection. There are no heritage structures, landscapes, cairns, monuments, plaques or reported cemeteries within the study area.

## **2.1 Record of Finds**

No archaeological materials were found.

## **2.2 Inventory of Documentation**

The following list represents all the documentation deriving from the fieldwork. These records are retained in the files of the licence holder (Scott Hamilton).

Field notes totalling 7 pages

67 digital photographs

GPS readings and tracks related to photo locations, observation points, geographic features and landmarks.

## **3.0 ANALYSIS AND CONCLUSIONS**

Appendix 1 provides a list of the features that can indicate archaeological potential. The most readily evident landscape feature within the study area affecting archaeological potential is proximity to water. The banks of Hoodoo Creek are over 300 metres removed from the proposed development area. The only other water source is a series of small ponds located southeast of property that are located at the base of a steep slope within a valley that is interpreted to be an ancient glacial spillway. This water source is not considered to be a useful predictor given the steep grade down into the valley. If this valley is, indeed a glacial spillway, this ancient watercourse might offer archaeological potential. However, the area has been extensively disturbed by mechanized

forest harvest, site scarification and replanting. Any archaeological deposits found along the upper edge of the valley wall would have been destroyed by these forestry operations. This leads to the conclusion that the property exhibits no archaeological potential, or that the potential represented by the spillway valley wall has been severely degraded by forest harvest and replanting.

#### **4.0 RECOMMENDATIONS**

1. The study area does not require further archaeological assessment.

#### **5.0 ADVICE ON COMPLIANCE WITH LEGISLATION**

- a. This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- b. It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.
- c. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the Ontario Heritage Act.
- d. The Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.
- e. Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts

removed from them, except by a person holding an archaeological licence.

## 6.0 BIBLIOGRAPHY

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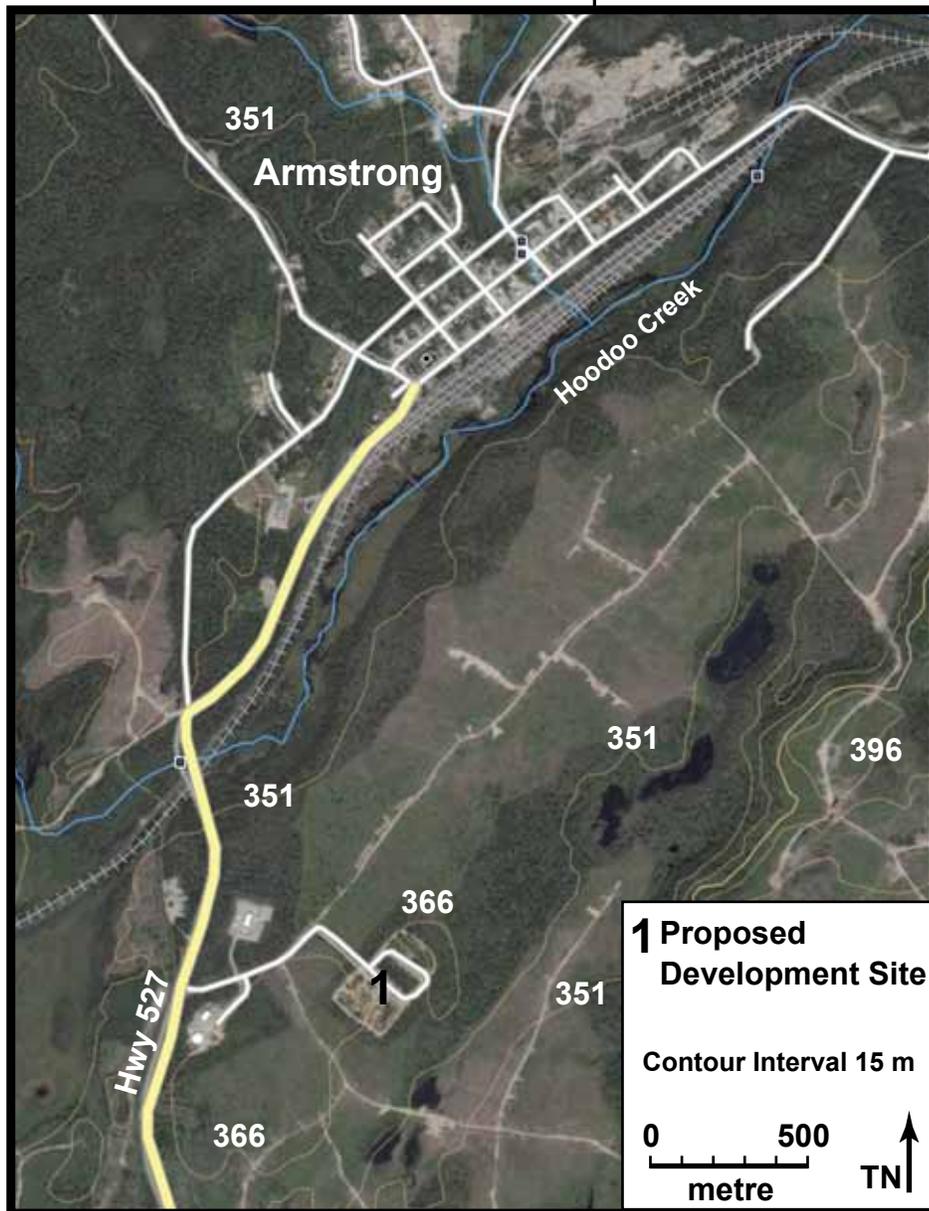
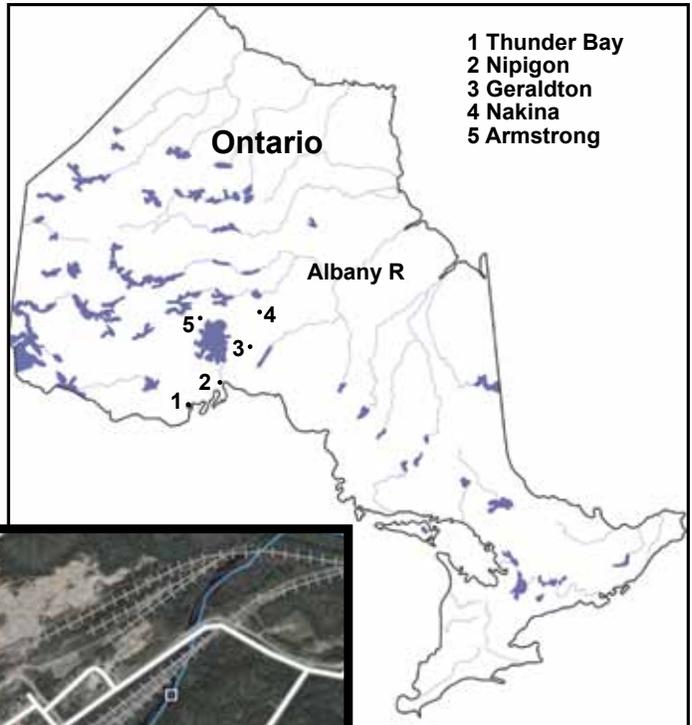
## Appendix 1

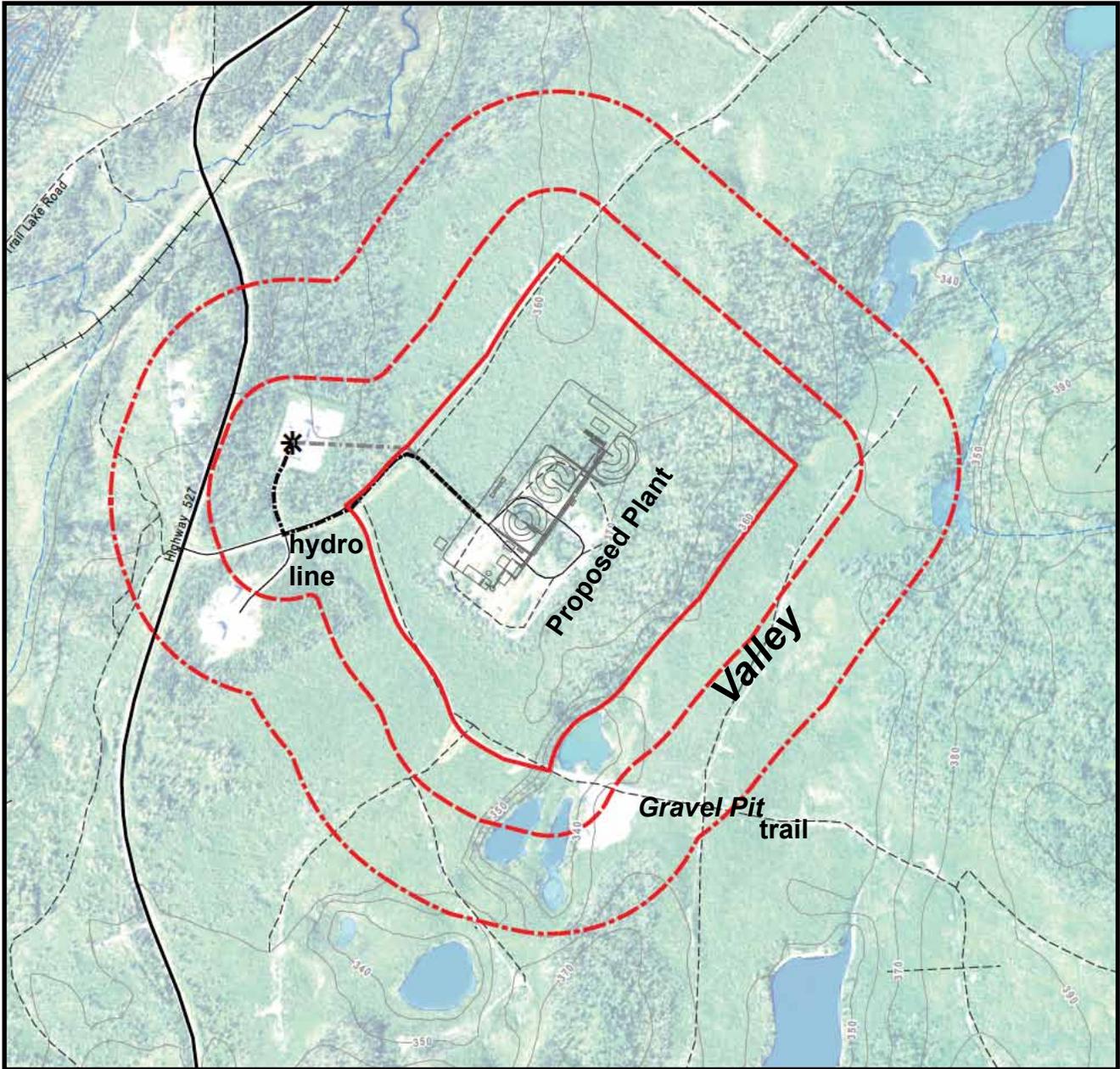
### Features Indicating Archaeological Potential for Northern Ontario and Canadian Shield Terrain

1. Previously identified archaeological sites
2. Reports of previous archaeological fieldwork
3. Within 300 m of water sources  
lakes, rivers, streams, creeks  
intermittent streams and creeks, springs marshes, swamps  
features indicating past water sources e.g. glacial lake shorelines, relic river or stream channels,  
shorelines of drained lakes or marshes, cobble beaches  
accessible or inaccessible shoreline e.g. high bluffs, swamp, sandbars
7. Elevated topography e.g. eskers, drumlins, large knolls, plateaux
8. Pockets of well-drained sandy soil near heavy soil or rocky ground
9. Distinctive land formations that might have been special or spiritual places e.g. waterfalls, rock outcrops, mounds, promontories
10. Resource areas including food, medicinal plants, scarce raw materials, early Euro- Canadian industry
11. Areas of early Euro-Canadian settlement
12. Early historical transportation routes e.g. trails, passes, roads, portage routes
13. Property listed as historic landmark or site
14. Local knowledge of archaeological sites, historical events, activities or occupations

Source: Ontario Ministry of Tourism and Culture 2010 Standards and Guidelines for Consultant Archaeologist

Figure 1 Study area located in a clearcut zone south of Armstrong, Ontario.





10 metre contour interval  
 0 500  
 metre



- Site Boundary
- 120 metre setback
- 300 metre setback

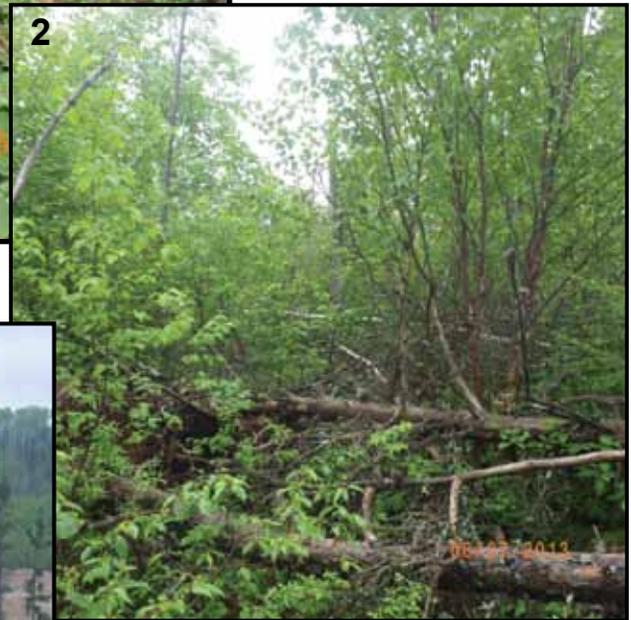
Figure 2 Detail of proposed development area with three setback zones surrounding it. Note the location of Hoodoo Creek beyond 300 metres to the northwest. Also note a series of small internally draining ponds and wetlands in the base of the shallow valley to the southeast of the proposed plant. This valley may be an old glacial spillway channel.



**1 Jack pine regenerating on clear-cut zones.**

**2 Dense thickets of regenerating scrub obscuring evidence of surface scarification.**

**3 View se of glacial spillway valley with regenerating forest. Unharvested forest mantles the skyline.**



**Figure 3 Photographs of clear-cut and regenerating forest surrounding the proposed development area.**

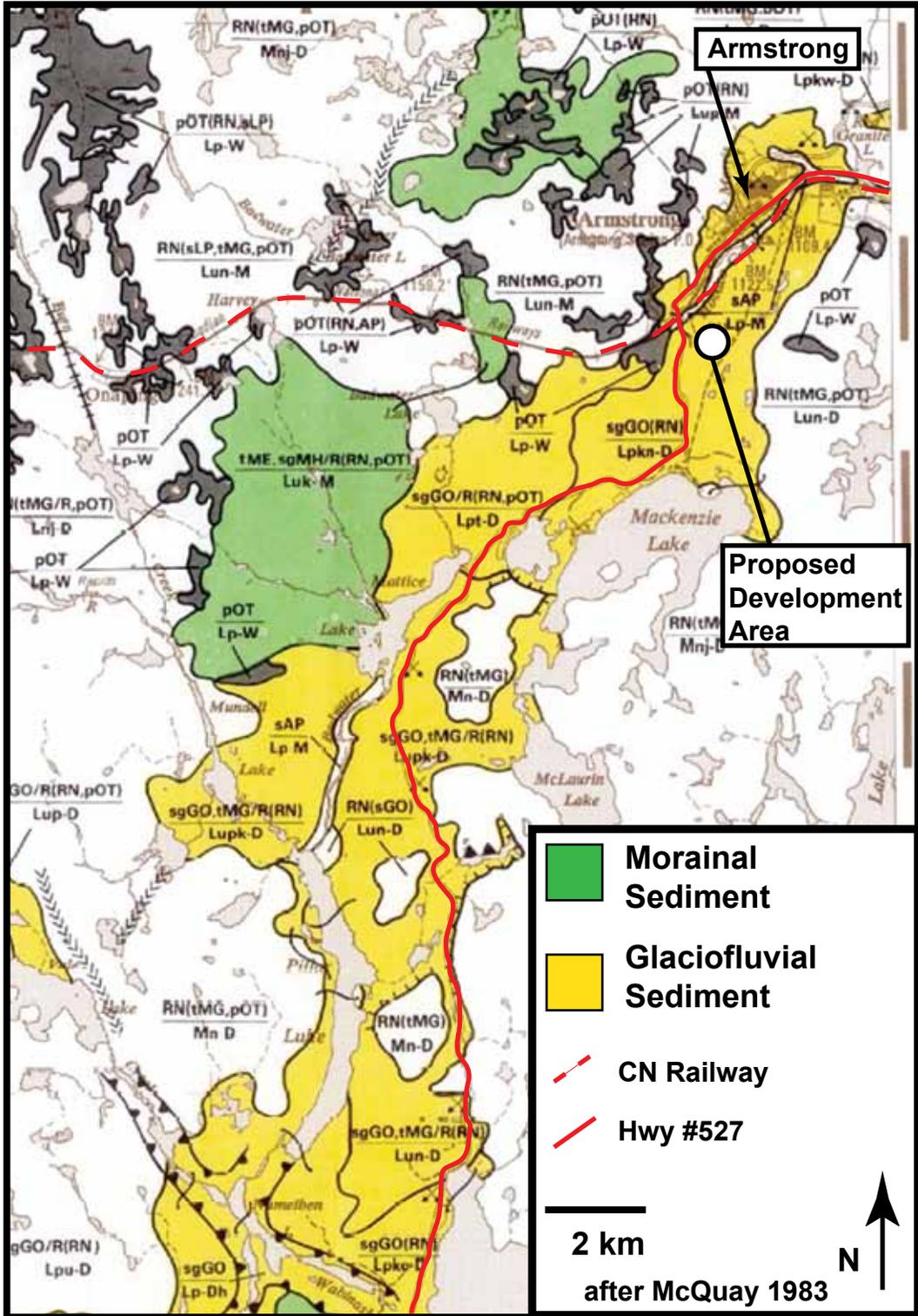
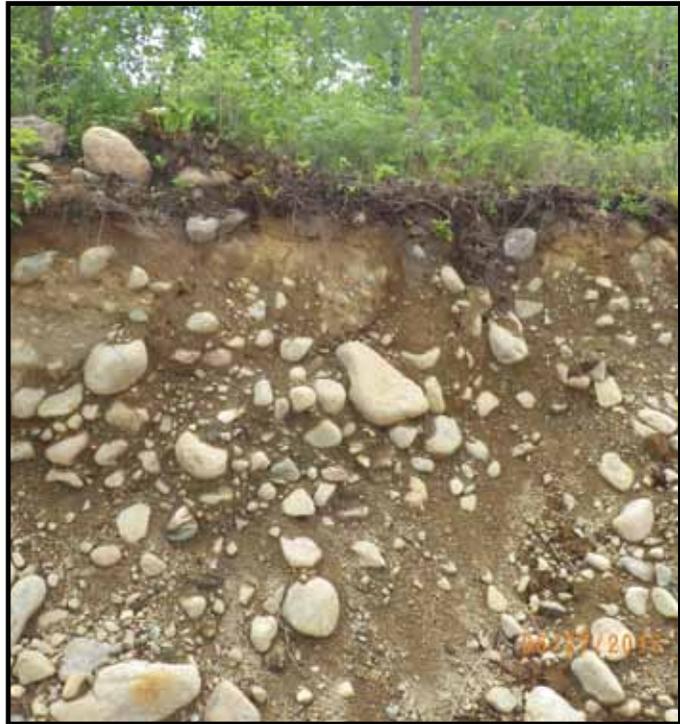


Figure 4 Detail of NOEGTS surface geology map of the Armstrong area (McQuay 1983).

**Figure 5 Cutbank exposure along access road illustrating the sedimentary sequence.**

Basal deposits are poorly sorted ground moraine overlaid with tan-orange sandy silt and capped with a black organic LFH forest floor. Basal sediments in the valley east of the development area (Fig. 3 photo 3) contain well sorted gravels consistent with the interpretation that the valley is an old glacial spillway channel.



**Figure 6 Gate and access road into the proposed development area. Note the well developed and maintained gravel road bed.**



- 1 Fig. 5
- 2 Fig. 6
- 3 Fig. 3: photo 1, 2
- 4 Fig. 3: photo 3
- 5 Fig. 6, Fig. 8: photo1, Fig. 11: photo 1
- 6 Fig. 8: photo 2
- 7 Fig. 8: photo 3, Fig. 9: photo 2
- 8 Fig. 9: photo 1
- 9 Fig. 9: photo 3
- 10 Fig. 10: photo 1
- 11 Fig. 10: photo 2
- 12 Fig. 10: photo 3, Fig. 11: photo 2
- 13 Fig. 11: photo 3

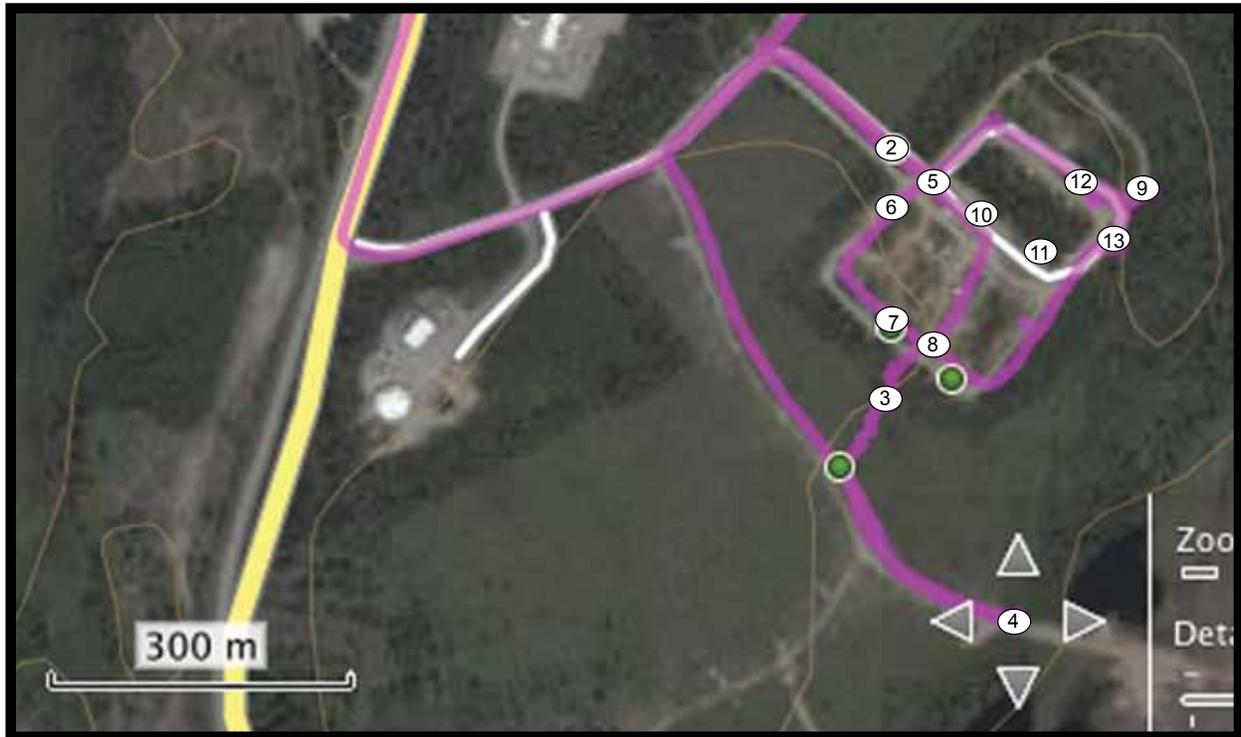


Figure 7 GPS tracks, key with location of key photographs reported. Purple line marks GPS track, while numbered ovals mark photo locations reported here.



1 View se along main access road through logging camp.



2 View se of fuel storae tanks and pumps. The gravel road on right of frame is ditched.

3 Recent barrow pit filled with trash.



Figure 8 Abandoned facilities and disturbance in development area.



1 View ne across development area illustrating gravel road lined with abandoned trucks, tanks, trailers, culverts and other equipment.

2 View of recent test well on development property.

3 View of fuel tank and black plastic pipe protruding vertically from the cleared gravel. These may represent septic fields or pits.



**Figure 9 Disturbance in development area.**

**1 View east of logging truck parking area equipped with overhead power outlets to plug in block heaters for the diesel trucks.**

**2 View north of trailers at the back of a graded and gravelled parking lot.**

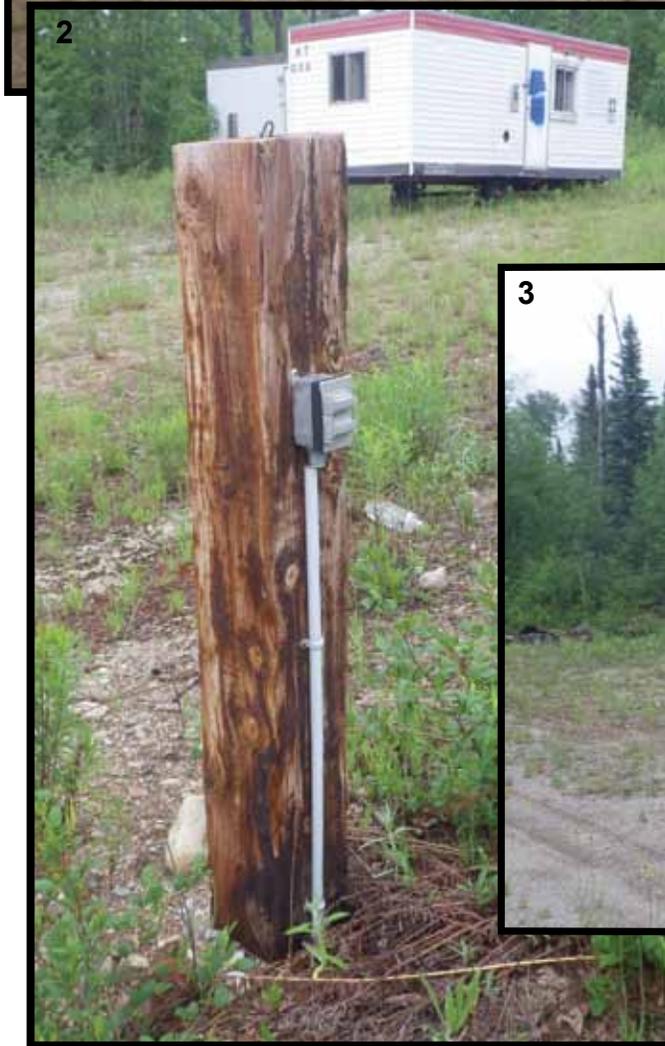
**3 View nw of accommodation trailers arranged in rows along each side of a gravelled road. Note power supply posts (railway ties) along the road edge.**



**Figure 10 Parking areas with abandoned trailers.**



**1** View ne of gravelled road to accomodation trailer area. Note shallow ditch along the left flank of the road.



**2** Closeup of buried power supply located in front of each lot prepared to receive an accomodation trailer. This underground service required excavation of extensive trenches.



**3** Rolling topography of property has been leveled and graded to facilitate occupation. This results in grading and sediment removal from some areas and filling in others.

**Figure 11** Disturbance in development area.

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Dec 10, 2013

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**RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 Archaeological Assessment: Proposed Whitesand First Nation Biomass Cogeneration and Pellet Mill Project", Dated Nov 12, 2013, Filed with MTCS Toronto Office on Nov 21, 2013, MTCS Project Information Form Number P276-024-2013, MTCS File Number 0000469**

Dear Doctor. Hamilton:

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.<sup>1</sup> This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figure 2 of the above titled report and recommends the following:

The study area does not require further archaeological assessment.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,  
Paige Campbell  
Archaeology Review Officer

cc. Archaeology Licensing Officer  
Chris Shilton, Neegan Burnside Ltd.  
Jeff Black, Ministry of Natural Resources

<sup>1</sup>In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures

may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.