

**Archaeological Investigation of
Preliminary Geotechnical
Boreholes for the Centre Block
Rehabilitation Project.**

Parliament Hill, Ottawa, Ontario



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Executive Summary

Stantec Consulting Ltd (Stantec) was retained by the Parliamentary Precinct Branch (PPB), a part of the Public Works and Government Services Canada (PWGSC), as part of the Centre Block Rehabilitation Project. This program was undertaken for the development of concept stage options and to permit evaluation of geologic conditions (*Geotechnical Report, Centre Block Project, Parliament Hill, ONP, Stantec 2015*). A substantial number of archaeological investigations have already been conducted around Centre Block that indicates generalized archaeological potential exists across much of Parliament Hill. The purpose of the archaeological component of the project was to allow archaeological monitors the opportunity to examine material raised through the geotechnical study to identify whether there were specific archaeological resources present in the locations of the boreholes and to aid in delineating areas of archaeological concern while minimizing costs associated with a completely separate archaeological study. The intent of the proposed preliminary geotechnical investigation is to provide a basis for the development of concept stage options and add to the current knowledge of geologic and archaeological conditions, including a better understanding of archaeological potential. Although the scope of the Centre Block Rehabilitation project is not fully known, it is understood that it will include excavating a full or partial basement beneath the Centre Block (likely about 4 m high); and a seismic upgrade (retrofit) of the Centre Block. It will also include completion of a 3-phased Visitor Welcome Centre (VWC). VWC Phase 1, to the southwest of Centre Block, is currently being designed and constructed with the West Block Rehabilitation. VWC Phases 2 and 3 are part of the Centre Block project. VWC Phase 2 is north-northwest of the East Block, and VWC Phase 3 is immediately south of Centre Block, full length beneath the entire paved area in front of the Peace Tower. Both will extend 3 storeys below grade. In addition, the Centre Block project also contains the East Block Underground Services (EBUS) building, another 3 storey below-grade structure located north of East Block. New tunnels will connect this underground complex to both the Centre and East.

The subject site is the Centre Block located on a promontory overlooking the Ottawa River between the West Block and East Block on Parliament Hill. The Centre Block was built between 1916 and 1927 to replace the original Centre Block building destroyed by fire. The Centre Block site and building in the Parliamentary Precinct is part of a designated National Historic Site and is also a Classified Federal Heritage Building. As such it is intention of the Government of Canada to maintain the Centre Block in perpetuity. The Centre Block is surrounded primarily by paved access lanes and some grassed areas.

The preliminary geotechnical investigation included the drilling of 16 boreholes around the study area. 10 boreholes were drilled in the basement of the Centre Block building and the remaining six were drilled around the exterior of Centre Block. Archaeologists were present or on-call for the entire drilling program and were present to inspect any soils encountered for the possibility of artifacts or archaeological materials.

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Due to the intensive and extensive disturbances from basement construction both historic and modern to the land beneath Centre Block no natural soil layers were encountered in the boreholes inside of Centre Block and there is low potential for the presence of soils that retain archaeological remains. No further archaeological assessment is recommended for the interior of Centre Block

Due to the presence of potential cultural soils in all exterior borehole soil profiles, as well as the findings of previous studies within close proximity to the study area, there is moderate to high potential for the presence of soils that retain archaeological potential. More archaeological assessment is recommended for the exterior portions of the study area.

It is recommended that:

1. Any associated construction conducted below grade exterior to Centre Block portion of the study area be monitored by a licensed archaeologist until excavations reach sterile soil or bedrock.
2. Should intact archaeological resources be identified construction should be halted and a full archaeological excavation of the intact resources should be conducted by a licensed archaeologist and a protection plan should be discussed.

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1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

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1.2 HISTORICAL CONTEXT

1.2.1 Pre-Contact Aboriginal Resources

Overall, archaeological research in many parts of Eastern Ontario has been fairly limited, at least compared to adjoining areas in Southern Ontario and northern New York State, resulting in only a limited understanding of the cultural processes that occurred in this part of the province. The following summary of the prehistoric occupation of Eastern Ontario (see Table 1 for chronological chart) is based on syntheses in Archaeologix (2008), Ellis and Ferris (1990), Jacques Whitford (2008), Pilon (1999), St-Pierre (2009) and Wright (1995).

Identifiable human occupation of Ontario begins just after the end of the Wisconsin Glacial period. The first human settlement can be traced back 11,000 years, when this area was settled by Native groups that had been living to the south of the emerging Great Lakes. This initial occupation is referred to as the "Palaeo-Indian" archaeological culture.

Early Palaeo-Indian (EPI) (11,000-10,400 before present BP) settlement patterns suggest that small groups, or "bands", followed a pattern of seasonal mobility extending over large territories. In the Ottawa Valley it appears that the palaeo-environment had not recovered sufficiently from the former glaciations to have allowed an EPI occupation. There is, however, some evidence of EPI incursion to the Rideau Lakes area.

Table 1 Cultural Chronology of Eastern Ontario

Period	Time	Characteristics
Early Paleo-Indian	11,000–10,400 BP	caribou and extinct Pleistocene mammal hunters, small camps
Late Paleo-Indian	10,400–10,000 BP	smaller but more numerous sites
Early Archaic	10,000–8,000 BP	slow population growth, emergence of woodworking industry, development of specialised tools
Middle Archaic	8,000–4,500 BP	environment similar to present, fishing becomes important component of subsistence, wide trade networks for exotic goods
Late Archaic	4,500–3,100 BP	increasing site size, large chipped lithic tools, introduction of bow hunting
Terminal Archaic	3,100–2,950 BP	emergence of true cemeteries with inclusion of exotic trade goods

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Period	Time	Characteristics
Early Woodland	2,950-2,400 BP	introduction of pottery, continuation of Terminal Archaic settlement and subsistence patterns
Middle Woodland	2,400-1,400 BP	increased sedentism, larger settlements in spring and summer, dispersed smaller settlement in fall and winter, some elaborate mortuary ceremonialism
Transitional Woodland	1,400-1,100 BP	incipient agriculture in some locations, seasonal hunting & gathering
Late Woodland (Early Iroquoian)	1,100-700 BP	limited agriculture, development of small village settlement, small communal longhouses
Late Woodland (Middle Iroquoian)	700-600 BP	shift to agriculture as major component of subsistence, larger villages with large longhouses, increasing political complexity
Late Woodland (Late Iroquoian)	600- 350 BP	very large villages with smaller houses, politically allied regional populations, increasing trading network

The Late Palaeo-Indian (LPI) period (10,400-10,000 BP) is poorly understood compared to the EPI, the result of less research focus than the EPI. As the climate warmed the spruce parkland was gradually replaced and the vegetation of Southern Ontario began to be dominated by closed coniferous forests. As a result many of the large game species that had been hunted in the EPI period either moved north with the more open vegetation, or became locally extinct. Like the EPI, LPI peoples covered large territories as they moved around to exploit different resources. Environmental conditions in Eastern Ontario and the Ottawa Valley were sufficient to allow for a Late Palaeo-Indian occupation, although the evidence of such is still very limited. There is some evidence of LPI occupation on Thompson Island, in the St. Lawrence River near the junction of Ontario, Québec and New York State.

The development of more diversified tool technology continued into the Middle Archaic period (8,000-4,500 BP). The presence of grooved stone net-sinkers suggests an increase in the importance of fishing in subsistence activities. The increased reliance on local, often poor quality chert resources for chipped stone tools suggests that in the Middle Archaic groups inhabited smaller territories lacking high quality raw materials. In these instances lower quality materials which had been glacially deposited in local tills and river gravels were used.

During the later part of the Middle Archaic (5,500-4,500 BP) a distinctive occupation, or tradition, known as the Laurentian Archaic, appears in south-eastern Ontario, western Quebec, northern



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New York and Vermont. Laurentian Archaic sites are found only within the transitional zone between the deciduous forests to the south and coniferous forests to the north known as the Canadian Biotic Province and are identifiable through the association of certain diagnostic tool types, including ground slate semi-lunar knives (or "ulus"), plummets for use in fishing, ground slate points and knives, and ground stone gouges, adzes and grooved axes. It is thought that there was less reliance on plant foods and a greater reliance on hunting and fishing in this region than for Archaic peoples in southern and south-western Ontario. Laurentian Archaic sites have been found in the middle Ottawa River valley, along the Petawawa River and Trent River watersheds and at Brockville.

The trend towards decreased territory size and a broadening subsistence base continued during the Late Archaic (4,500-2,900 BP). Late Archaic sites are far more numerous than either Early or Middle Archaic sites. The appearance of the first true cemeteries occurs during the Late Archaic. Prior to this period, individuals were interred close to the location where they died. However, with the advent of the Late Archaic and local cemeteries individuals who died at a distance from the cemetery would be returned for final burial at the group cemetery often resulting in disarticulated skeletons, occasionally missing minor bone elements (e.g. finger bones). The emergence of local group cemeteries has been interpreted as being a response to both increased population densities and competition between local groups for access to resources, in that cemeteries would have provided symbolic claims over a local territory and its resources.

Increased territoriality and more limited movement are also consistent with the development of distinct local styles of projectile points. The trade networks which began in the Middle Archaic expand during this period, and begin to include marine shell artifacts (such as beads and gorgets) from as far away as the Mid-Atlantic coast. These marine shell artifacts and native copper implements show up as grave goods, indicating the value of the items. Other artifacts such as polished stone pipes and slate gorgets also appear on Late Archaic sites. One of the more unusual of the Late Archaic artifacts is the "birdstone", small, bird-like effigies usually manufactured from green banded slate.

The Early Woodland period (2,900-2,200 BP) is distinguished from the Late Archaic period primarily by the addition of ceramic technology. Other than the introduction of this rather limited ceramic technology, the life-ways of Early Woodland peoples show a great deal of continuity with the preceding Late Archaic period.

In terms of settlement and subsistence patterns, the Middle Woodland (2,200 B.C.-1,100 BP) provides a major point of departure from the Archaic and Early Woodland periods. While Middle Woodland peoples still relied on hunting and gathering to meet their subsistence requirements, fish were becoming an even more important part of the diet. Middle Woodland vessels are often heavily decorated with hastily impressed designs covering the entire exterior surface and upper portion of the vessel interior. It is also at the beginning of the Middle Woodland period that rich, densely occupied sites appear along the margins of major rivers and lakes. While these

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areas had been utilized by earlier peoples, Middle Woodland sites are significantly different in that the same location was occupied off and on for as long as several hundred years. Because this is the case, rich deposits of artifacts often accumulated. Unlike earlier seasonally utilized locations, these Middle Woodland sites appear to have functioned as base camps, occupied off and on throughout the course of the year.

In eastern Ontario, especially in the Ottawa River Valley, there is considerable overlap of people continuing to practice a hunting and gathering economy and those using limited horticulture as a supplement to gathered plants. For the most part, however, classic Late Woodland sites in eastern Ontario are limited to an area at the east end of Lake Ontario and along the St. Lawrence River valley. Early Iroquoian components have been identified near Pembroke on the Muskrat River; however, there is evidence for only limited use of cultivated plants. Middle Iroquoian sites have not been identified east of the Kingston area.

During the Late Iroquoian period a distinctive material culture emerges at the east end of Lake Ontario and along the St. Lawrence River up to Québec City, known as the St. Lawrence Iroquois (SLI). SLI sites are characterised by large semi-permanent villages and associated satellite settlements. The inhabitants of these villages and satellites practiced horticulture of staple crops which made up the bulk of their diet. Other food resources were hunted, fished and gathered. SLI village sites can be extensive, up to 10 acres or more in size and composed of a number of longhouse structures. Special purpose satellite settlements, such as hunting and fishing camps, are smaller in area and in the number and size of structures within the settlement.

While the early-contact period descendants of the Late Woodland SLI and Huron used the Ottawa River and its tributaries as transportation routes between the St. Lawrence River and the interior, Late Woodland village sites are have not been identified along this area.

1.2.2 Post-Contact Aboriginal Resources

The post-contact Aboriginal occupation of Eastern Ontario was heavily influenced by the aboriginal involvement and contributions to the fur trade. The success of the 17th century fur trade rested predominantly with the Algonkian-speaking groups. It was their knowledge of the land and their use of the canoe that facilitated the start of the Huron-French fur trade (ASI 1999). The Algonkian-speakers acted as intermediaries in the system, transferring goods between the French travelling up the St. Lawrence River and the interior groups located in the Great Lakes Region. Eventually, through French intervention, the Algonkians were pushed out and the French began to deal directly with the Huron. As a result the Algonkian allied with Dutch fur traders and worked to disrupt French trade (ASI 1999).

The most historically significant post-contact change to eastern Ontario was the disappearance of the St. Lawrence Iroquois. Jacques Cartier recorded interactions with the St. Lawrence Iroquois during his explorations in the early and mid-16th century, when Champlain returned in the early 17th century there was no trace of them and the St. Lawrence area was a sparsely

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populated warzone. Popular theories of the disappearance blame the invasion of the Five Nations Iroquois or Huron and Algonkian aggression (Trigger 1985). Smallpox epidemics and the depletion of the beaver populations led to the dispersal of various Iroquoian-speaking communities from Southwestern Ontario by the New York State Iroquois and the subsequent arrival of Algonkian speaking groups from northern Ontario at the end of the 17th century and the beginning of the 18th century (Konrad 1981; Schmalz 1991). In 1649 The Huron-French fur trade collapsed and the Five Nations Iroquois raided and destroyed the French Mission at Ste. Marie and several Huron villages. Huronia was abandoned, with the surviving Huron destroying their own remaining villages and moved further inland, now within the province of Quebec. The Algonkian-speaking communities were briefly dispersed from the Ottawa Valley from 1650 to 1675, and were replaced as middlemen by the Odawa people, who were later in turn replaced by the French *courier de bois*. Further colonization of Eastern Ontario and Quebec led to more changes in the fur trade. Despite the adjustments the fur trade remained a strong and lucrative venture with aboriginal involvement up until the mid-19th century (ASI 1999).

The study area first enters the Euro-Canadian historic record on October 9, 1783 as part of Crawford's Purchase from the Algonquin and Iroquois, which "includes the Counties of Leeds, Grenville, Dundas, Stormont, and Glengarry, Russell Prescott, and the eastern part of Carleton and the southern part of Lanark" (Morris 1943: 17).

While it is difficult to exactly delineate treaty boundaries today, Figure 3 provides an approximate outline of the limits of Crawford's Purchase from the Algonquin and Iroquois (denoted by the letter "B").

The presence of the Ottawa River supplied enough natural resources to serve as hunting grounds or areas for resource extraction for nearby Algonquin groups. The nearby area of the Chaudiere Falls was considered sacred by the local Algonquin.

1.2.3 Historic Euro-Canadian Resources

Recorded history of the area begins in 1610, when Étienne Brûlé travelled up the Ottawa River and made note of the water falls, which are located to the west of the study area (DeVolpi 1964). Champlain followed in 1613, and subsequently named them, Chaudière Falls in reference to their resemblance to a boiling kettle or cauldron. Despite the early mention of the area, the Ottawa region did not become settled until the early 1800s, when Philemon Wright arrived from Boston with a small group of settlers and established a community on the north side of the Ottawa River (Holzman and Tosh 1999, DeVolpi 1964, Nagy 1974). He started trading timber in 1806. The region became known for the square timber trade, and thus, European settlers slowly began to enter the region (Nagy 1974).

The site of Barracks Hill, and later the Parliament Buildings, has long been a landmark due to its location along the Ottawa River, and likely served as a landmark to guide both early First Nations traveler's and European explorers. In 1818, soldiers arrived at Richmond's Landing on the

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LeBreton Flats, which became the location of the first settlement on the south side of the Ottawa River (Holzman and Tosh 1999, Nagy 1974). Until the building of the Rideau Canal, the area was sparsely settled, and consisted of a collection of smaller communities known by several different names: Iles aux Chaudière, Barrière, Place des Rideaux, Chaudière Falls, The Point, Bellows' Landing, Richmond Landing, Collins Landing, and Nepean (DeVolpi 1964, Holzman and Tosh 1999). These communities were based around timber/lumber mills, and were comprised mostly of log cabins.

However, it was the construction of the Rideau Canal (1826 to 1832) that spurred the first real settlement on the current site of Ottawa (Nagy 1974). Colonel By, along with overseeing the construction of the Rideau Canal, was charged with subdividing the land into lots. Hence, Bytown was founded in 1826, and the Byward market installed in 1827. During the mid-1800s, the squared timber trade was replaced with the sawn lumber trade, requiring the construction of sawmills (Nagy 1974).

The building of the canal increased the population rapidly, and by 1831 Nepean Township, including Bytown, which consisted of Upper and Lower town, had a population of approximately 3,000 (DeVolpi 1964).

The original Crown patent for the Hill area was issued to Jacob Cameron in 1802, and sold to Thomas Frasier in 1819. In 1823 the land was purchased by Lord Dalhousie to connect the planned Rideau Canal to the Ottawa River. The land was surveyed in 1836 by Colonel John By and the western section of the large lot was split into town lots for what would become Upper Bytown. Colonel By selected the Hill as the location for the barracks for the garrison that would construct the Rideau Canal (Heritage Quest 1998a) Figures 4 and 5 are plans of Barracks Hill from 1842 and 1853 which show the locations of the buildings and other features on the Hill, as well as the old roadways. Both plans depict three large structures along the north edge of the Hill, the two western most are labelled as *Ruins*, and the one to the east as *Soldiers Barracks*. These were all barracks built for the Soldiers and Royal Sappers during the construction of the Rideau Canal. The two western barracks burned down and were not replaced after the Canal was constructed due to the decreased population of soldiers stationed at Barracks Hill. The western most barracks building was later re-built to house workers during the construction of the Parliament buildings (Heritage Quest 1998a).

During and post-construction of the Parliament Buildings from 1859-1880 there were extensive disturbances to the Barracks Hill buildings. Any that were not destroyed to build Parliament were demolished after construction to complete the landscaping of the Hill. The construction of the below grade ventilation tunnels which ran from the escarpment face into the Parliament buildings to circulate fresh air and heat would have also contributed to the disturbance and destruction of the military installation, also documented in many of the reports are the construction trenches for water and sewer lines and other associated infrastructure of the Parliament buildings (Heritage Quest 1998a).

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In February of 1916 a fire destroyed the entire Centre Block building with the exception of the Parliamentary Library, which was protected by large iron doors. The demolition of the ruined building, as well as the construction of the new Centre Block building, which would have included temporary structures to house workers and supplies, further destroyed the previous archaeological deposits (Heritage Quest 1998a).

1.2.4 Previously Identified Archaeology Sites and Surveys

In Canada archaeological sites are registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometres east to west and approximately 18.5 kilometres north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are number sequentially as they are found. The study area under review is within Borden Block BiFw, and the overall Parliament Hill site is registered as BiFw-12.

PWGSC provided Stantec with previous studies documenting archaeological work conducted within the study area. The reports are listed below in Table 2. Previous studies have identified pre-contact Aboriginal as well as early Euro-Canadian artifacts in a disturbed context. Also documented in many of the reports are the construction trenches and associated infrastructure of the Parliament buildings.

Table 2 Studies Conducted Within the Study Area

Project Location	Reference	Findings	Boreholes in Close Proximity
Queen Elizabeth Statue	CARF. 1992. Archaeological Assessment of the Area for the Queen Elizabeth Statue, Parliament Hill, Ottawa, ON.	Modern and Historic Euro-Canadian fill. 2/3 pieces of pre-contact Aboriginal pottery	BH 15-5, BH 15-8
North of Parliamentary Library	Heritage Quest. 1995. <i>Archaeological Recording of a Nineteenth Century Ventilation Tunnel North of the Parliamentary Library, Parliament Hill, Ottawa, Canada.</i>	Historic Euro-Canadian ventilation tunnels recorded.	BH 15-9
The Peace Tower	Heritage Quest. 1996. <i>Archaeological Monitoring and Recording of Excavation and Boring around the Peace Tower, Parliament Hill (BiFw-12) Ottawa, Ontario.</i>	Historic Euro-Canadian construction of Centre Block and associated infrastructure.	BH 15-4
East of Parliamentary Library	Heritage Quest. 1996. <i>Archaeological Monitoring and Recording of the Excavation of 19th Century Ventilation Tunnel</i>	Historic Euro-Canadian ventilation tunnels recorded.	BH 15-9



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Project Location	Reference	Findings	Boreholes in Close Proximity
	(C4).		
CBUS Building	Heritage Quest. 1996. <i>Stage 1 Archaeological Investigation CBUS Building Site, Parliament Hill (BiFw-12), Ottawa, Ontario.</i>	Historic Euro-Canadian ventilation tunnels recorded	N/A
CBUS Building	Heritage Quest. 1997. <i>Stage 2 and 3 Assessment of CBUS Building Site Parliament Hill, (BiFw-12) Ottawa, Ontario.</i>	Modern and Historic Euro-Canadian fill. A few pieces of pre-contact Aboriginal pottery	N/A
CBUS Building	Heritage Quest. 1997. <i>Archaeological Monitoring of the CBUS Building Site Test Blast Sites 1 and 2, Parliament Hill (BiFw-12), Ottawa, Ontario.</i>	Historic Euro-Canadian construction of Centre Block and associated infrastructure.	N/A
West of Parliamentary Library	Heritage Quest. 1997. <i>Archaeological Recording of the 19th Century Ventilation Tunnel Rear of Centre Block, West of Library, Parliament Hill, (BiFw-12) Ottawa, Ontario.</i>	Historic Euro-Canadian ventilation tunnels recorded	N/A
North-East of Parliamentary Library	Heritage Quest. 1997. <i>Stage 2 Investigation of a Cavity Feature to the North-East of the Parliamentary Library, Parliament Hill (BiFw-12), Ottawa, Ontario.</i>	No archaeological features or artifacts identified.	BH 15-9
Near Peace Tower and Senate Entrance, Centre Block	Heritage Quest, 1998. <i>Archaeological Monitoring of Excavation near the Peace Tower and the Senate Entrance, Centre Block, Parliament Hill (BiFw-12), Ottawa, Ontario.</i>	Historic Euro-Canadian construction of Centre Block and associated infrastructure. Modern and Historic Euro-Canadian fill, possible insitu deposits in some areas.	BH 15-4, BH 15-5, BH 15-8
CBUS Building	Heritage Quest, 1998. <i>Archaeological Monitoring and Recording of Soil Stripping for the CBUS Site, Parliament Hill (BiFw-12), Ottawa, Ontario.</i>	Historic Euro-Canadian construction of Centre Block and associated infrastructure. Modern and Historic Euro-Canadian fill, possible insitu deposits in some areas.	N/A
Centre Block (Senate Foundation)	HCP. 1999. <i>Senate Foundation Masonry Repair & Drainage, Centre Block.</i>	Archaeological finds noted but not detailed.	BH 15-5
South-East Corner of	Heritage Quest. 1999.	Historic Euro-Canadian	BH 15-5, BH 15-8



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Project Location	Reference	Findings	Boreholes in Close Proximity
Centre Block	<i>Archaeological Monitoring and Recording of Test Units Excavated near the South-East Corner of the Centre Block Parliament Hill, (BiFw-12) Ottawa, Ontario.</i>	construction of Centre Block and associated infrastructure.	
Peace Tower	Parks Canada. 2005. <i>Archaeological Investigations Underneath the Peace Tower, Parliament Hill, Ottawa, Ontario.</i>	Historic Euro-Canadian construction of Centre Block and associated infrastructure.	BH 15-4
South-East Corner of East Block	Parks Canada. 2009. <i>Archaeological Monitoring for the East Block, Southeast Corner Rehabilitation Project, Parliament Hill, Ottawa, Ontario.</i>	Historic Euro-Canadian construction of East Block and associated infrastructure.	BH 15-6, BH 15-7
North-East of Centre Block	Paterson Group Inc. 2015. 2014 <i>Parliament Hill east Barracks Archaeological Investigations.</i>	Historic Euro- Canadian, related to Barracks Hill and Centre Block artifacts, and associated infrastructure	BH 15-7 , BH 15-8

In December 2005 an Archaeological Potential map was completed that showed areas of archaeological potential as well areas where archaeological investigations have been undertaken (Figure 6) The 2005 map shows the interior of Centre Block as either not requiring archaeological assessment (green) or where archaeological investigations are recommended (red). This 2005 map reflects a misunderstanding of the Centre Block Building. The courtyards within the building are shown as red, and recommended for archaeological assessment, but these courtyards sit on the first floor and the basement of the building extends beneath (Nixon 2015). All but one exterior borehole (BH 15-9) are shown in areas that require archaeological monitoring. Figures 4 – 8 show the locations of the boreholes over historic plans, aerial photos and potential mapping. Because the interior boreholes are in areas of extensive disturbance the focus is on the exterior boreholes.

Pre-contact Aboriginal artifacts, including pottery, have been identified in a disturbed context during previous archaeological investigations within and in close proximity to the study area. There is the potential for pre-contact Aboriginal resources within the study area.

Both historic plans of Barracks Hill show several structures within close proximity of the borehole locations. Anticipated resources from the Barracks Hill occupation of the Hill could include:

- soldiers barracks;
- an aboveground tank;
- two privies



ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

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- a cook house;
- a guard house;
- the magazine (partially uncovered in 2014 by Paterson Group);
- fuel yard;
- a well;
- evidence of a quarry; and
- an old road running approximately north-south from the road crossing sappers bridge to the magazine.

A 1923 aerial photograph (Figure 7) shows the study area in similar conditions to present-day conditions. A building presumably associated with the construction of the Centre Block building is shown in the study area east of Centre Block. Anticipated resources from the construction of the Parliament buildings could include temporary construction buildings as well as associated infrastructure and building materials.

The infrastructure of the Parliament Buildings includes ventilation tunnels that connect all three Parliament buildings and most have been filled in to protect against collapse and for security. Figure 8 shows the approximate locations of the tunnels. Tunnels connecting Centre and East Blocks, spanning from in front of the Peace Tower to the east side of Centre Block, from the east side of Centre Block to the east edge of the hill and from the Parliamentary Library are located within the study area and could be encountered during construction of the project.

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Monitoring Geotechnical BoreHoles
April 7, 2015

2.0 MONITORING GEOTECHNICAL BOREHOLES

A total of 16 boreholes were completed to inform the development of the concept stage options for the Centre Block Project. Ten boreholes were located in the basement of the Centre Block building (Figure 2) and the remaining six were exterior, located between Centre Block and East Block (Figure 2). Archaeologists Colin Varley and Paige Glenen were on-call for the project and onsite to monitor the borehole excavations where soil was present.

2.1 INTERIOR BOREHOLES

A total of ten boreholes were drilled in the basement of Centre Block (Figures 2, 6 and 7). The location, composition and depths of the boreholes are detailed in Table 3.

Table 3 Interior Boreholes

Borehole	Location	Composition and Depth	Potential Cultural Soils
BH 15-1	In west side of building	1. 20 cm of concrete. 2. Limestone bedrock. Max depth 24 m.	No soil encountered.
BH 15-2	Near centre of building	1. 66 cm of concrete 2. Limestone bedrock. Max depth 24 m.	No soil encountered.
BH 15-3	Near southeast side of building	1. 10 cm of concrete 2. 55 cm of sand, gravel cobbles fill 3. Limestone bedrock. Max depth 24 m.	No soil encountered.
BH 15-10	Near southwest corner of building	1. 10 cm of concrete 2. 19 cm of gravel/granular material with slag, 3. Limestone bedrock. Max depth 6.90 m.	No soil encountered.
BH 15-11	Near west edge of building	1. 18 cm of concrete 2. 1.71 m of gravel/granular material with slag 3. Limestone bedrock. Max depth 2.90 m.	No soil encountered.
BH 15-12	Near northeast side of building	1. 10 cm of concrete 2. 20 cm of gravel fill 3. Limestone bedrock. Max depth 6.70 m.	No soil encountered.

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Monitoring Geotechnical BoreHoles
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Borehole	Location	Composition and Depth	Potential Cultural Soils
BH 15-13	Near northeast corner of building	1. 10 cm of concrete 2. 6 cm of gravel fill 3. Limestone bedrock. Max depth 6.90 m.	No soil encountered.
BH 15-14	Near east edge of building	1. 13 cm of concrete 2. 38 cm of fill mixture of gravel and old concrete 3. Limestone bedrock. Max depth 2 m.	No soil encountered.
BH 15-15	Near east side of building	1. 10 cm of concrete 2. 51 cm of gravel and sand fill 3. Limestone bedrock. Max depth 7 m.	No soil encountered.
BH 15-16	Near southeast side of building	1. 1.10 m of concrete wall (angled borehole) 2. limestone bedrock. Max depth 2.20 m.	No soil encountered.

No natural soil deposits were encountered during the drilling of any interior borehole.

2.2 EXTERIOR BOREHOLES

A total of six boreholes were drilled around the exterior of Centre Block and East Block (Figure 2). The location, composition and depths of the boreholes are detailed in Table 4.

Table 4 Exterior Boreholes

Borehole	Location	Composition and Depth	Potential Cultural Soils
BH 15-4	In the roadway near south east corner of the Peace Tower	1. 10 cm asphalt 2. 25 cm gravel/dense sand 3. 2.70m brown silty sand with clay. 4. 35 cm compact grey silt. 5. Limestone Bedrock, Max depth 34.70m.	Level 3 contains potential cultural soils. Natural soil was identified in the sample.
BH 15-5	In the roadway near the south east corner of the building.	1. 10 cm asphalt 2. 2.95m compact grey to brown sand. 3. 1.35m brown silty sand. 4. 51 cm loose grey silty sand. 5. Limestone Bedrock, Max depth 24 m.	Levels 2 and 3 contain potential cultural soils. Natural soil was identified in the sample.

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Monitoring Geotechnical BoreHoles
April 7, 2015

Borehole	Location	Composition and Depth	Potential Cultural Soils
BH 15-6	In the roadway immediately south of the east stairs.	<ol style="list-style-type: none"> 1. 10 cm asphalt 2. 65cm dark brown sand and gravel. 3. 2.85 m brown silty sand. 4. 30 cm dense grey sandy gravel. 5. Limestone Bedrock, Max depth 23.90 m 	Levels 2 and 3 contain potential cultural soils. Natural soil was identified in the sample.
BH 15-7	In the grass north of East block and immediately east of the William Lyon MacKenzie King Monument.	<ol style="list-style-type: none"> 1. 20 cm sod and topsoil 2. 2.06m dense brown silty sand. 3. 1.09 m compact grey silty sand. 4. Limestone Bedrock, Max depth 24m 	Level 2 contains potential cultural soil, red brick and mortar fragments were observed on site.
BH 15-8	In the grass near the Famous Five Monument	<ol style="list-style-type: none"> 1. 15 cm sod and topsoil 2. 1.46 m compact brown silty sand. 3. 2.29 m loose-compact brown sand with gravel 4. 76cm compact grey silty sand. 5. Limestone Bedrock, Max depth 23.60 m 	Levels 2 and d3 contain potential cultural soils. Red brick and mortar fragments were observed in Level 2.
BH 15-9	In the roadway near north east corner of building	<ol style="list-style-type: none"> 1. 10 cm asphalt 2. 60 cm dark brown sand and gravel 3. Limestone Bedrock, Max depth 24.10 m. 	Level 2 contains potential cultural soils. Natural soil was identified in the sample.

The boreholes revealed very different soil profiles for the boreholes drilled in the paved areas than those in the manicured lawns. Borehole profiles in paved areas showed a greater disturbance and bedrock was encountered at much shallower depths. The two boreholes drilled in manicured lawns, BH 15-8 and BH 15-7, had more complex soil profiles with observed red brick and mortar fragments. Figure 6 is an aerial photograph of the study area taken in 1924 just after the completion of the re-build of Centre Block. The general layout of the study area is very similar to the current conditions.

Although there were fragments of red brick and mortar identified in boreholes 15-7 and 15-8 no samples were large enough to warrant collection for archaeological purposes.

2.3 ANALYSIS

2.3.1 Interior Boreholes

No soils were encountered during the drilling of the interior boreholes. It is likely that the majority if not all soil was removed during the construction of the first Centre Block Building and was further



ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Monitoring Geotechnical BoreHoles
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disturbed or removed during the subsequent demolition of the burnt remains of the original Centre Block Building and the construction of the current Centre Block building. The study area beneath Centre block is considered to have low archaeological potential and is not likely to retain any potential cultural soils.

2.3.2 Exterior Boreholes

All six exterior boreholes identified soil profiles that suggest that there is moderate to high archaeological potential within portions of the study area. Although the integrity of the natural soil layers may have been altered during construction or landscaping projects, any artifacts contained therein could be useful for understanding and interpreting the early use, and change in use patterns, of Parliament Hill. It would be imprudent to use the narrow below-grade window of a split spoon borehole to predict soil integrity and potential archaeological feature integrity over a wider area.

Boreholes BH 15-7 and BH 15-8 are located in manicured lawn and both boreholes contained sandy soil layers that showed evidence of historic Euro-Canadian construction with the presence of red brick and mortar fragments. Previous studies conducted identified this soil layer as a natural deposit due to the changes in soil elevation across the site (Daechsel 1992). However, a recent study conducted in the same area indicates that this soil layer was identified on the exterior and interior of the foundations of the 1827 powder magazine and could not therefore be natural as previously suggested (Paterson 2015). It is likely that this soil is fill and, due to the historic Euro-Canadian building fragments identified, was associated with one or both of the building phases of the Parliament Buildings. This soil, while fill, is likely associated with, and contains artifacts related to, the historic Euro-Canadian occupation of Parliament Hill and more assessment of the area is needed to understand the context. The previous archaeological investigations in the study area and around Parliament Hill (Section 1.2.4) have identified the entire Parliament Hill site as BiFw-12. These previous investigations have documented pre-contact and Euro-Canadian artifacts as well as evidence of historic construction phases, including infrastructure.

As of December 2005 an Archaeological Potential map was completed that showed areas of archaeological potential as well as areas where archaeological investigations have been undertaken (Figure 6). The 2005 map shows the interior of Centre Block as either not requiring archaeological assessment or as not requiring archaeological investigations. All exterior boreholes, with the exception of Borehole 15.9, are shown in areas that require archaeological monitoring. Figures 4 – 8 show the locations of the boreholes over historic plans, aerial photos and potential mapping. Because the interior boreholes are in areas of extensive disturbance the focus is on the exterior boreholes.

Pre-contact Aboriginal artifacts including pottery has been identified, in a disturbed context during previous archaeological investigations within and in close proximity to the study area, there is the potential for pre-contact Aboriginal resources within the study area.

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Monitoring Geotechnical BoreHoles
April 7, 2015

Both historic plans of Barracks Hill show several structures within close proximity of the borehole locations, anticipated resources from the Barracks Hill occupation of the Hill could include any of the resources previously identified in Section 1.2.4.

The 1923 aerial photography (Figure 7) shows the study area in similar conditions to current conditions. Two buildings associated with the construction of the Centre Block building are shown in the study area east of Centre Block. The larger building to the south is likely the model, carpenter and blacksmith shop, while the smaller northern building is likely the office of the general contractor of the project, Lyall & Sons (Nixon 2015). Anticipated resources from the construction of the Parliament buildings could include these and other temporary construction buildings as well as associated infrastructure and building materials.

The infrastructure of the Parliament Buildings includes ventilation tunnels that connects all three Parliament buildings and have been almost all filled in to protect against collapse and for security. Figure 8 shows the approximate locations of the tunnels:

1. A branch of the old steam tunnel constructed in the 1960's that runs diagonally across the front lawn and under the East Block. It is very deep - at the main steps of the central walkway it is about 13 metres below the grass;
2. The 1860's ventilation tunnels in front of the Peace Tower; on the east, west and north sides of Centre Block;
3. From the East Block to Centre Block a pedestrian tunnel (1999) and a metre or so north of this, an old utility tunnel (construction date unknown, but before 1965).

These are all located within the study area and could be encountered during construction of the project.

The portion of the study area, exterior to Centre Block is considered to have moderate to high archaeological potential based on historical documentation of the site as well as previous archaeological assessments and likely retains potential cultural soils.

2.4 RECOMMENDATIONS

2.4.1 Interior Boreholes

Due to the intensive and extensive disturbances both historic and modern to the land beneath the Centre Block building no natural soil layers were encountered in the boreholes inside the Centre Block building and there is no potential for the presence of soils that retain archaeological potential. No further archaeological assessment is recommended for the interior of Centre Block.

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Monitoring Geotechnical BoreHoles
April 7, 2015

2.4.2 Exterior Boreholes

Due to the presence of potential cultural soils in all exterior borehole soil profiles as well as the findings of previous studies within close proximity to the study area there is moderate to high potential for the presence of soils that retain archaeological potential. More archaeological assessment is recommended for the exterior portions of the study area.

It is recommended that:

1. Any associated construction conducted below grade exterior to Centre Block portion of the study area be monitored by a licensed archaeologist until excavations reach sterile soil or bedrock.
2. Should intact archaeological resources be identified construction should be halted and a full archaeological excavation of the intact resources should be conducted by a licensed archaeologist and a protection plan should be discussed.

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

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April 7, 2015

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ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Maps

April 7, 2015

4.0 MAPS

All maps with follow on succeeding pages



Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

Legend

- ★ Project Location
- Highway
- Major Road
- Local Road
- Contour 10m
- Watercourse
- Waterbody
- Residential area
- Wooded Area
- Railway

Client/Project

PWGSC
 Centre Block, 111 Wellington St.,
 Ottawa, ON

Figure No.

1



Title

Project Location

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Revised: 2015-04-24 By: ncrulikshank



Legend

-  Exterior Borehole
-  Interior Borehole

Notes

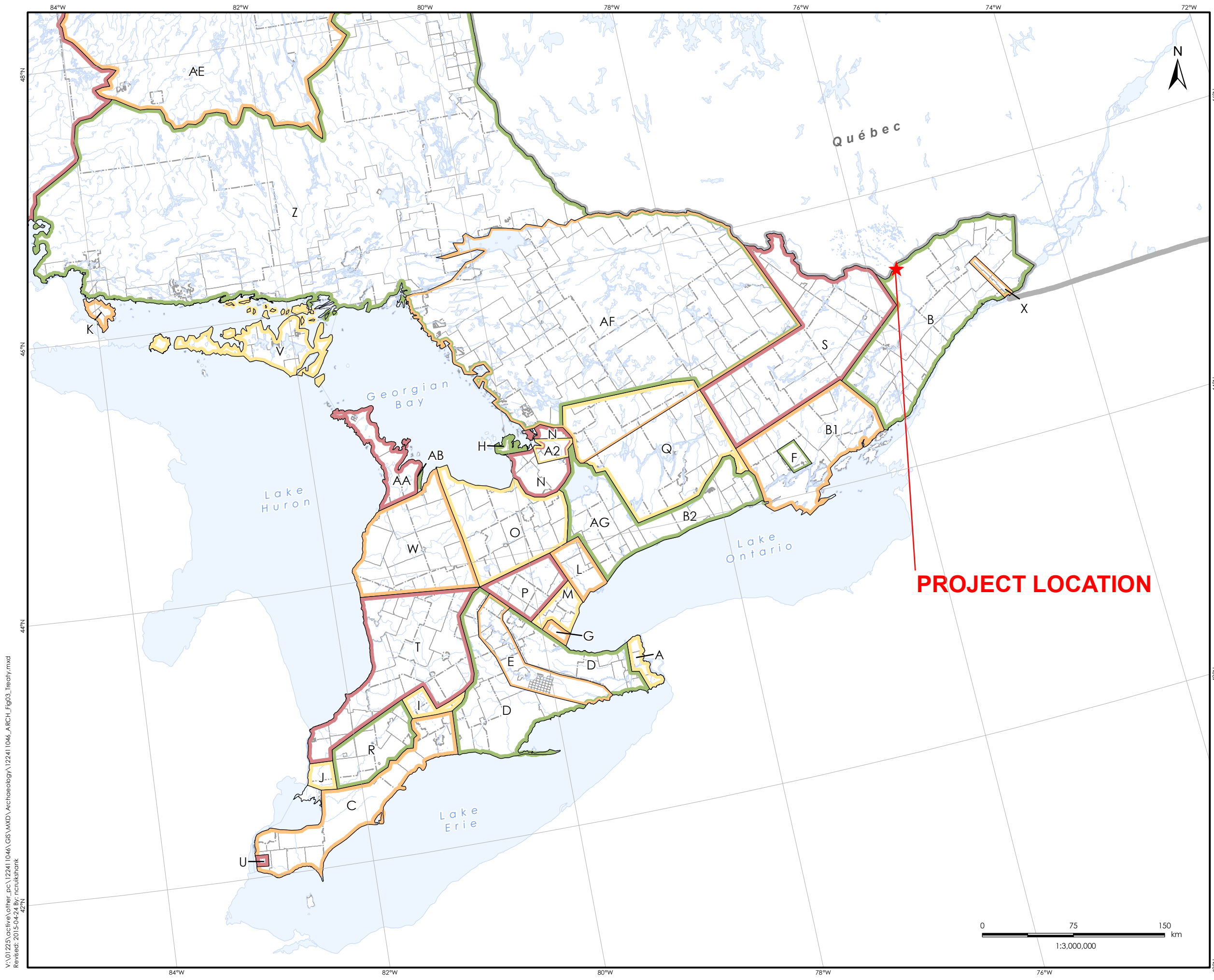
1. Coordinate System: NAD 1983 CSRS MTM 9
2. Microsoft Screenshot(s) used with permission from Microsoft Corporation, 2015.

Client/Project
PWGSC
Centre Block, 111 Wellington St.,
Ottawa, ON

Figure No.
2

Title
**Borehole Location Map
Current Conditions**

April 2015
Project No. 122411046



- Legend**
- Municipal Boundary - Upper Tier
 - Municipal Boundary - Lower or Single Tier
 - Watercourse
 - Waterbody

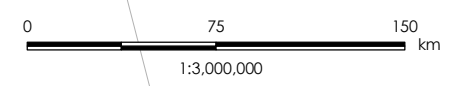
- A** Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendingaga:from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

- Notes**
- Coordinate System: NAD 1983 Statistics Canada Lambert
 - Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.
 - Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

Client/Project
PWGSC
Centre Block, 111 Wellington St.,
Ottawa, ON

Figure No.
3




Title
**Treaties and Purchases
(Adapted from Morris 1943)**



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Revised: 2015-04-24 By: ncrulshank

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Revised: 2015-04-24 By: ncrulshank



- Legend
-  Exterior Borehole
 -  Interior Borehole
 -  Current Building Footprint

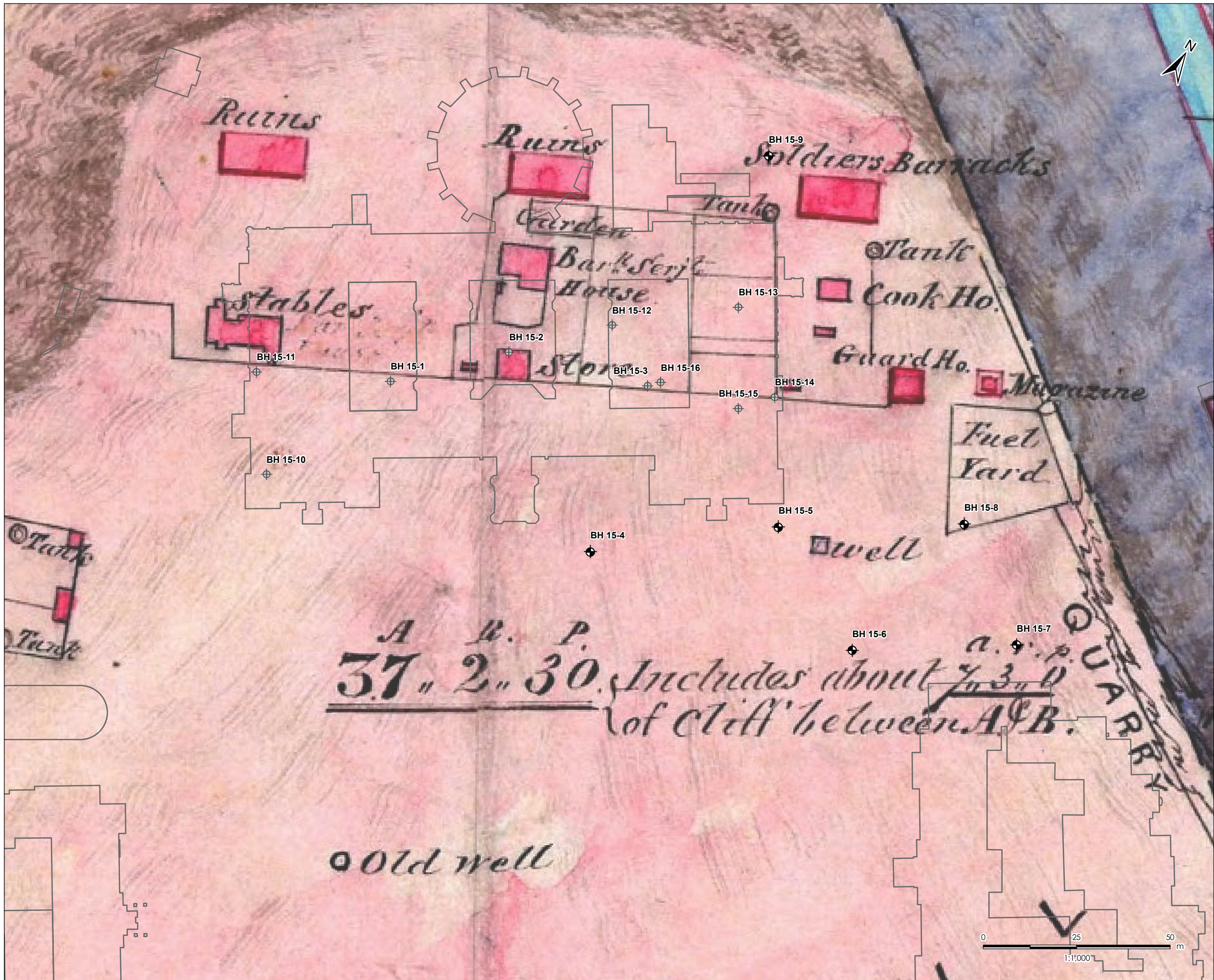
- Notes
1. Coordinate System: NAD 1983 CSRS MTM 9
 2. Historical map from Library and Archives Canada, 1845.




Client/Project
PWGSC
Centre Block, 111 Wellington St.,
Ottawa, ON

Figure No.
4

Title
**Borehole Locations over
1845 Plan of Barracks Hill**

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Revised: 2015-04-24 By: ncrulikshank



- Legend
-  Exterior Borehole
 -  Interior Borehole
 -  Current Building Footprint

- Notes
1. Coordinate System: NAD 1983 CSRS MTM 9
 2. Historical map from Library and Archives Canada, 1845.

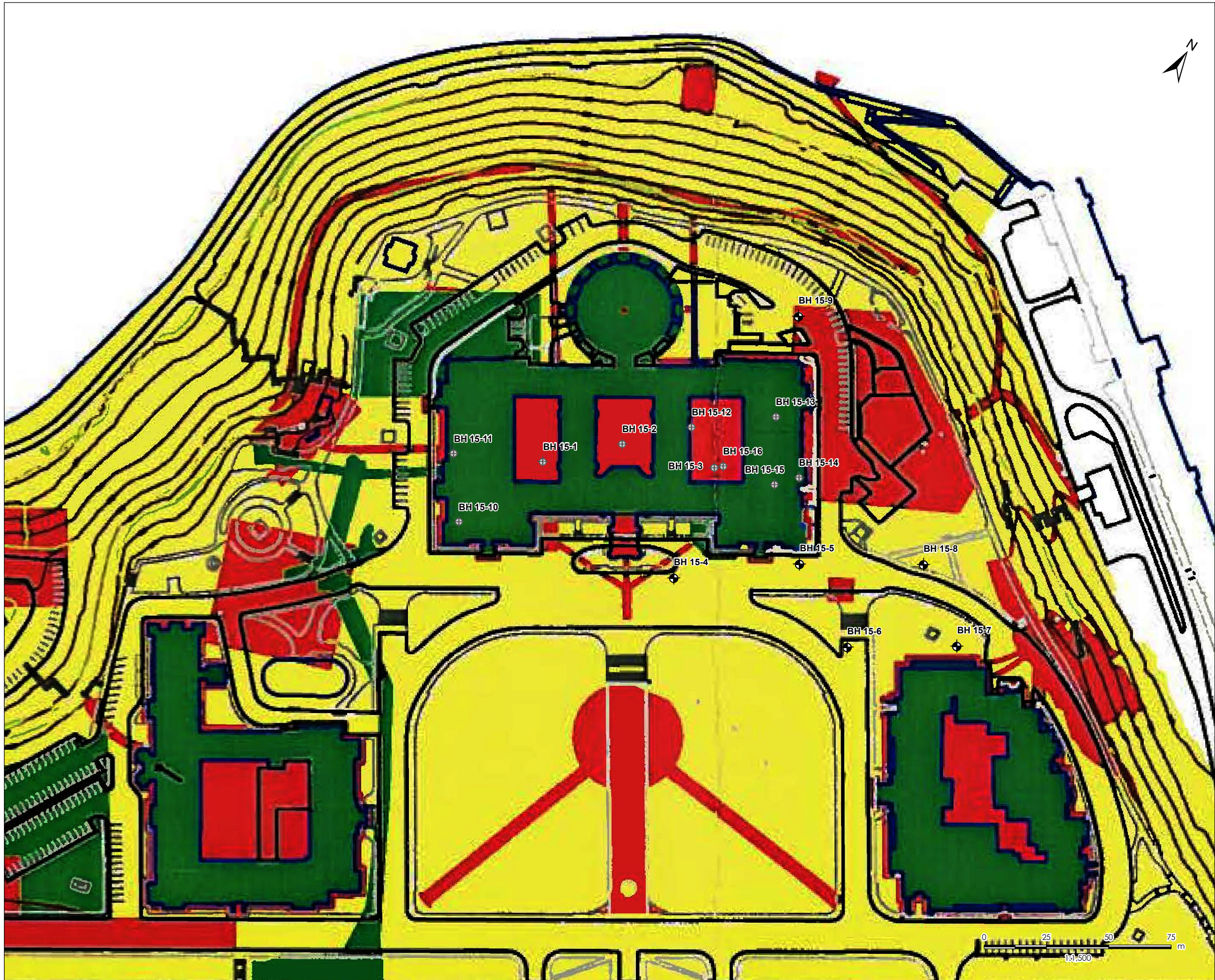
Client/Project
PWGSC
Centre Block, 111 Wellington St.,
Ottawa, ON

Figure No.
5

Title
**Borehole Locations over
1853 Plan of Barracks Hill**

April 2015
Project No. 122411046

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Revised: 2015-04-24 By: ncrulskhank



- Legend**
- Exterior Borehole
 - Interior Borehole
- Archaeological Potential (City of Ottawa 2005)**
- No Archaeological Work Required
 - Archaeological Monitoring
 - Archaeological Investigations

Notes

- Coordinate System: NAD 1983 CSRS MTM 9
- Ventilation Tunnels adapted from PWGSC drawing ST-1 from TSH Associates Ltd. 1997. Tunnel Filling Status Report Stabilization of Old Tunnels Centre Block, Parliament Hill, Ottawa. PWGSC No. 707799

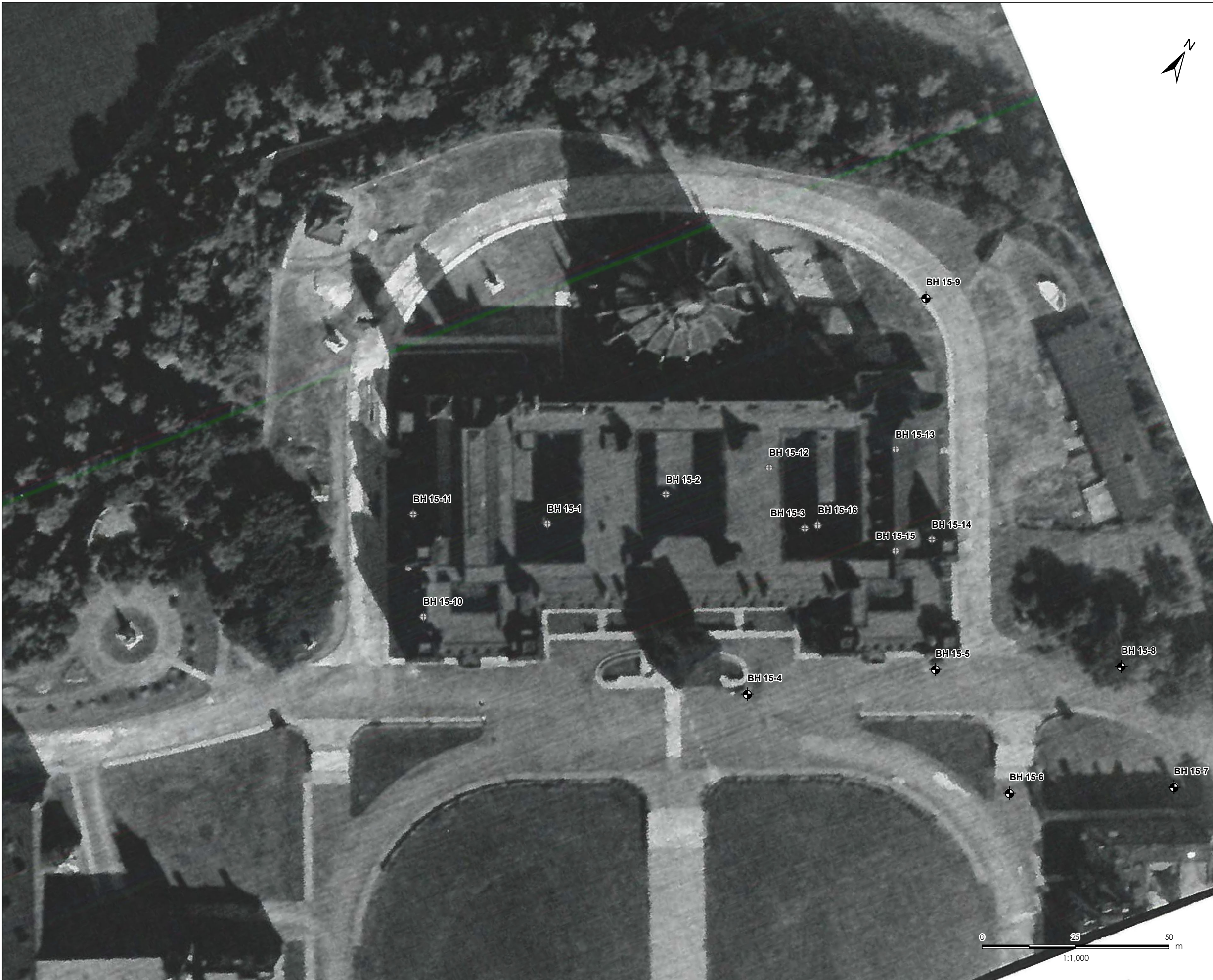
Client/Project
PWGSC
Centre Block, 111 Wellington St.,
Ottawa, ON

Figure No.
6



Title
**Borehole Locations over
2005 Archaeological Potential
Mapping of Parliament Hill**

April 2015
Project No. 122411046

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Revised: 2015-04-24 By: ncrulskhank



Legend

-  Exterior
-  Interior

Notes

1. Coordinate System: NAD 1983 CSRS MTM 9
2. Aerial photography used with permission from National Air Photo Library. H.A. 12-10, 1923.

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Figure No.

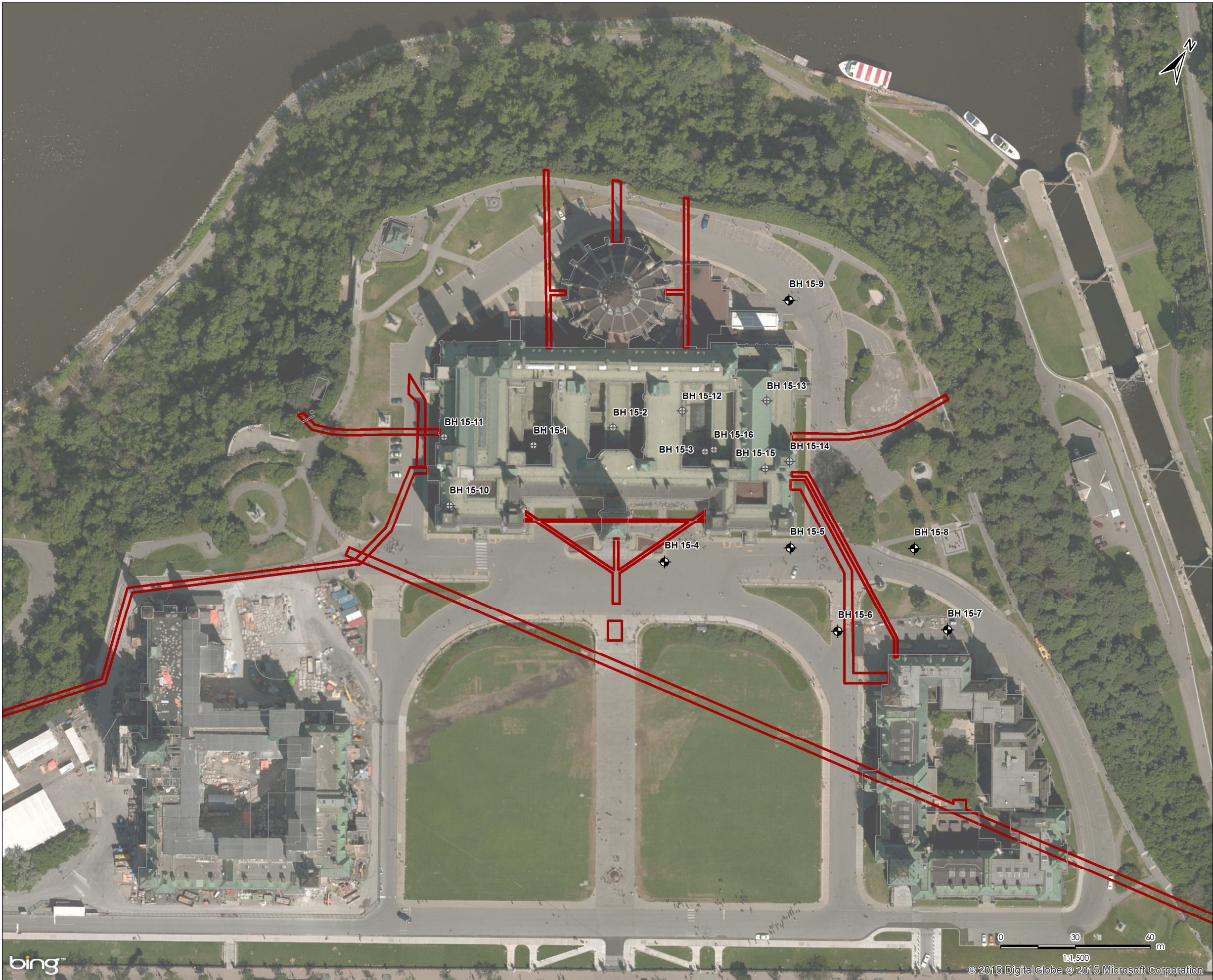
7




7

1923 Aerial Image of
Project Location

April 2015
Project No. 122411046

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Revised: 2015-04-24 By: ncrulskhank



- Legend**
-  Exterior Borehole
 -  Interior Borehole
 -  Historic Tunnel Location

Notes

1. Coordinate System: NAD 1983 CSRS MTM 9
2. Ventilation Tunnels adapted from PWGSC drawing ST-1 from TSH Associates Ltd. 1997. Tunnel Filling Status Report Stabilization of Old Tunnels Centre Block, Parliament Hill, Ottawa. PWGSC No. 707799

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Figure No.
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Title
**Locations of Historic
Ventilation Tunnels**

ARCHAEOLOGICAL INVESTIGATION OF PRELIMINARY GEOTECHNICAL BOREHOLES FOR THE CENTRE BLOCK REHABILITATION PROJECT.

Closure
April 7, 2015

5.0 CLOSURE

This report has been prepared for the sole benefit of the PWGSC and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and PWGSC. Any use which a third party makes of this report is the responsibility of such third party.

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any aspect of this report.

STANTEC CONSULTING LTD.



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