STANTEC CONSULTING LTD.

CANAL GREENWAY ENVIRONMENTAL TESTING ARCHAEOLOGICAL MONITORING DARTMOUTH, NOVA SCOTIA

FINAL REPORT

Submitted to:
Stantec Consulting Ltd.
and the
Special Places Program of the Nova Scotia Department of Communities, Culture and Heritage

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Heritage Research Permit Number: A2014NS077

CRM Group Project Number: 2014-0010-01

AUGUST 2014

The following report may contain sensitive archaeological site data. Consequently, the report must not be published or made public without the written consent of Nova Scotia's Coordinator of Special Places Program, Department of Communities, Culture and Heritage.

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 STUDY AREA 3

3.0 METHODOLOGY 5
- 3.1 Background Research 5
- 3.2 Archaeological Monitoring 5
- 3.3 Emergency Response 5

4.0 RESULTS 6
- 4.1 Background Research 6
- 4.2 Archaeological Monitoring 13

5.0 CONCLUSIONS AND RECOMMENDATIONS 19

6.0 REFERENCES CITED 20

LIST OF FIGURES

Figure 1: Approximate Study Area 2
Figure 2: Study Area 4
Figure 3: Area of Starr Park 1815 9
Figure 4: 1851 Plan of Canal Property 10
Figure 5: A.F. Church Map, 1865 11
Figure 6: Hopkins Map, 1878 12

LIST OF PLATES

Plate 1: Monitoring at Starr Park 3
Plate 2: Profile of Test Pit 1 13
Plate 3: Profile of Test Pit 3. 14
Plate 4: Profile of Test Pit 6 15
Plate 5: Profile of Test Pit 7 16
Plate 6: Examples of metal noted in Test Pit 7 16
Plate 7: Profile of Test Pit 9. 17
Plate 8: Profile of Test Pit 12 18

CANAL GREENWAY ENVIRONMENTAL TESTING
ARCHAEOLOGIAL MONITORING
DARTMOUTH, NOVA SCOTIA

1.0 INTRODUCTION

In preparation for the re-exposure of features relating to the Shubenacadie Canal and Starr Manufacturing at Starr Park in Dartmouth, Stantec Consulting Ltd. (Stantec) was retained by Halifax Regional Municipality (HRM) to conduct environmental testing of the soils found within the property (***Figure 1***).

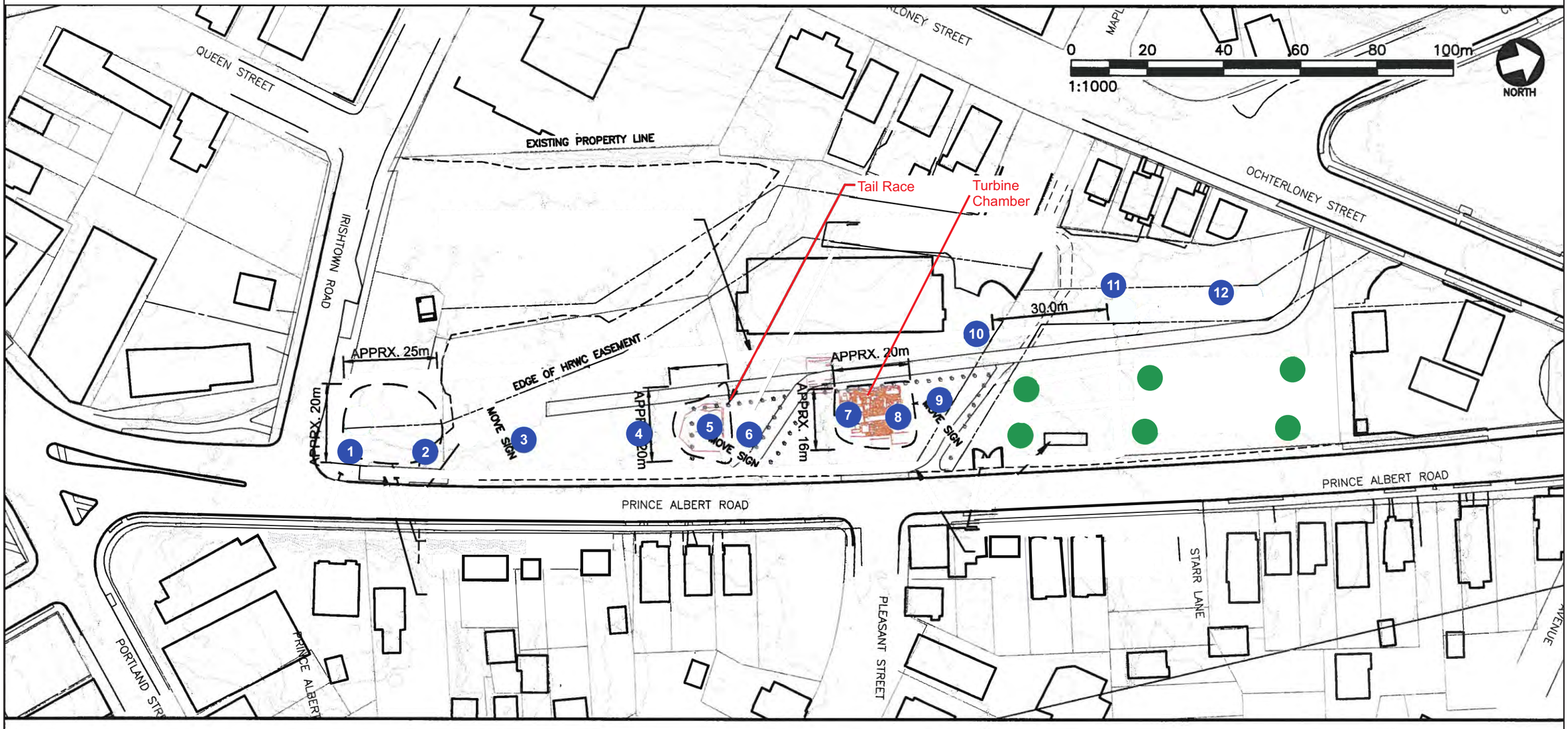
Cultural Resource Management (CRM) Group was retained by HRM to advise as to the placement of test pits, as well as conduct archaeological monitoring throughout the process of test pitting. The archaeological monitoring was conducted according to the terms of Heritage Research Permit A2014NS077 (Category "C") issued through the Special Places Program of the Nova Scotia Department of Communities, Culture and Heritage to CRM Group Archaeologist Kathryn J. Stewart. Technical oversight was provided by W. Bruce Stewart, CRM Group's President and Senior Technical Advisor. This report describes the archaeological work, presents its results and offers resource management recommendations.

CRM Group Cultural Resource Management Group Ltd.	*Approximate Study Area*	*Figure 1*
	CANAL GREENWAY ENVIRONMENTAL TESTING & MONITORING 2014 DARTMOUTH, HALIFAX REGIONAL MUNICIPALITY	August 2014 Scale 1:50 000

2.0 STUDY AREA

The Starr Park property is located in Dartmouth, adjacent to the junction of Irishtown Road (formerly Pine Street Extension) and Prince Albert Road (***Figure 2; Plate 1***). The historic alignment of Mill Stream flowed unrestricted from Lake Banook to Dartmouth Cove, passing through the Starr Park property. Features of the Shubenacadie Canal are situated on the property, including the turbine chamber, the inclined plane and the marine railway, as well as structures related to Starr Manufacturing. The entire study area is a registered archaeological site (BeCv-30).

Plate 1: Monitoring at Starr Park; facing north. August 13, 2014.



Base drawing provided by CBCL

Legend

- Test Pits
- Auger Probes

	Detailed Study Area	*Figure 2*
CRM Group	CANAL GREENWAY ENVIRONMENTAL TESTING & MONITORING 2014 DARTMOUTH, HALIFAX REGIONAL MUNICIPALITY	August 2014

3.0 METHODOLOGY

3.1 Background Research

The background review focused on archaeological reports prepared by CRM Group relating to the Shubenacadie Canal, the Starr Manufacturing property, and other residential and commercial development in the area. The purpose of the review was to reacquaint the Principal Investigator with existing data and assist in the identification of features.

3.2 Archaeological Monitoring

A CRM Group archaeologist monitored all stages of environmental testing during which archaeological resources could be encountered. In addition to the identification and management of archaeological resources encountered during environmental testing, monitoring contributes valuable insight into opportunities and constraints for future investigations. While monitoring, archaeologists will be watchful for any evidence of artifacts, archaeological features or stratigraphic anomalies.

During the course of monitoring, the archaeological monitor worked closely with Stantec's technician and the excavator operator. Throughout the monitoring project, safety was a top priority. CRM Group personnel abided by all federal, provincial and municipal health and safety regulations. While it may have been necessary for the archaeological monitor to periodically enter the excavation zone to inspect features or retrieve artifacts, this was only done after clear communication with the operator and only if the excavation was deemed safe to enter.

In the event that archaeological features and/or artifacts were encountered, excavation was interrupted to allow CRM Group’s archaeological monitor the opportunity to inspect these features or retrieve artifacts. In the unlikely event that human remains had been encountered, work would have been stopped immediately while decisions were made regarding the management of the discovery.

4.0 RESULTS

4.1 Background Research

Starr Park overlies a portion of the nineteenth century historic Shubenacadie Canal, which was constructed to facilitate travel and the movement of goods by barge between Halifax and the Minas Basin. The history of the Shubenacadie Canal has been detailed elsewhere (Passfield 1979) so will not be reproduced here. It is however, valuable to bring forward certain details which are relative to the background of the current property.

Prior to construction of the canal system, the Dartmouth Lakes were connected to Dartmouth Cove by a small stream (***Figure 3***). Note the absence of Sullivans Pond, as it was a creation of the canal system. In addition to depicting the alignment of the stream, the 1815 map by Valentine Gill includes an early depiction of Ochterloney Street (Preston Road) and Crichton Avenue. The relative positioning of Ochterloney Street, Crichton Avenue and the stream, help to identify the general location of the Starr Park property.

Construction of the canal commenced on July 25, 1826 with the ceremonial turning of the first sod at Port Wallace. The ascent from Dartmouth Cove to the Dartmouth Lakes (Lake Banook) at an elevation of 95' 10" Above Mean Tide (AMT) was originally to have been accomplished by a system of five locks but was later modified to six locks: Locks 1 and 2 were located at the head of Dartmouth Cove; Locks 3, 4 and 5 were positioned between the cove and Sullivan's Pond (***Figure 4***); and Lock 6 was located between Sullivan's Pond and Dartmouth Lake (Lake Banook). Based on the proposed configuration of Section 1 of the canal as depicted on the 1851 historic map, Locks 3 and 4, and a portion of the tail race would have fallen within the Starr Park property.

Construction within Section 1 was initiated in 1830. However, financial difficulties prevented the completion of the original Shubenacadie Canal. Most of the facilities within Section 1 of the canal (Dartmouth Cove to Lake Banook) were completed prior to cancellation of the project in November, 1831. Based on his research, Passfield states that when work ceased "four locks (Locks 3 & 4, Lock 5 & Lock 6) were complete and Locks #1 and #2 were well underway" (Passfield 1979: 6).

Following the cancellation of work in the fall of 1831, Charles R. Fairbanks, Secretary of the Shubenacadie Canal Company, promoted a number of initiatives to rejuvenate the project (Passfield 1979: 6). In 1833, the Royal Engineers estimated it would cost £120,000 to complete the canal system as proposed. Between 1835 and 1836 American civil engineer George Baldwin produced two detailed reports which called for the reconstruction of much of the system at an estimated cost of just under £500,000. Although nothing came of these proposals, Baldwin did produce a series of detailed as-built drawings of the locks, identifying his recommended changes.

By the mid-nineteenth century, plans were once again being formulated to complete the Shubenacadie Canal. In 1847, Charles William Fairbanks, son of Charles R. Fairbanks, was appointed engineer for the Shubenacadie Canal. After considerable study of the existing works and an extended tour of American canal systems, Charles W. formulated a more modest plan for the Shubenacadie Canal. He proposed to scale down the size of the canal and utilize more cost-effective construction materials and techniques. He also proposed to replace nine locks in the area of the Dartmouth ascent and the descent at Porto Bello. Modelled on the Morris Canal of New Jersey, Fairbanks advocated the combined use of an inclined plane and marine railway to carry canal vessels over the two steepest sections of the system. In 1853, the Inland Navigation Company was incorporated to carry out

Fairbanks' revised scheme for the Shubenacadie Canal. One year later, the company purchased the property and canal works from the Provincial government (Passfield 1979: 8).

Construction of the second Shubenacadie Canal was initiated in 1854 and completed in 1861. One of the final components to be built was Dartmouth's marine railway. Construction on the incline, built "to take the place of five locks and overcome an elevation of about 55 feet in a distance of 1210 yards on a grade of 1 in 22" (Passfield 1979: 11), was initiated in June 1860 and completed late the next summer. Despite the more modest approach to construction, financial difficulties continued to plague the project. Just eight months after the *Avery*'s inaugural return voyage between Halifax and Maitland, all the property of the Inland Navigation Company including the canal works were sold at a sheriffs' auction to the Lake and River Navigation Company for £12,700 (Passfield 1979: 17).

A description of the Dartmouth inclined plane is included in Anthony Barlow's 2001 article is summarized below. The Dartmouth inclined plane was a graded ramp extending from Dartmouth Cove to Sullivans Pond. A pair of iron rails set into the graded ramp provided a track upon which an iron-wheeled, timber framed cradle would be drawn up and down the incline by a iron cable. Power to operate the marine railway was provided by a waterwheel or water turbine located in the powerhouse which was situated between Dartmouth Cove and Sullivans Pond. The powerhouse was subsequently incorporated into the Starr Manufacturing facilities which were established on the site in 1861 (Barlow 2001: 197, 201-202).

The assets of the company were sold again in 1870 to Lewis Piers Fairbanks, brother of Charles W, for $50,000 (Passfield 1979: 12-13). Only months later, following a dispute with the Provincial government, the canal was rendered inoperable and the vision of a trans-provincial waterway was finally abandoned. After an extended period of construction and a major expenditure of funds, the Shubenacadie Canal operated for less than ten years (1861 - 1870) and never realized more than a modest profit.

Following the re-configuration of the canal in the mid nineteenth century, the former entrance to Lock 5 served as the head race providing water to power the turbine for the marine railway and subsequently Starr Manufacturing. The flow of water was initially directed to the turbine by means of the overhead flume but later by the underground flume identified on the twentieth century Fire Insurance Plans. The structure of the underground flume was identified during the 2002 archaeological assessment of the Starr Manufacturing property by CRM Group (Stewart and Sanders 2002).

In 1861, Halifax businessman John Starr opened a small nail factory adjacent to the powerhouse. Through an agreement with the Inland Navigation Company, Starr utilized the surplus power generated by the turbine to operate his machinery (Cuthbertson 2001: 51). Initially, Starr used one or possibly two buildings on the site, for manufacturing nails. Skates were added to Starr's production line by 1864 (Cuthbertson 2001: 52). The detailed map of Halifax and Dartmouth published in 1865 by Ambrose Church as an inset to his *Topographical Township Map of Halifax County*, depicts three structures in the area of the Starr property (***Figure 5***). One of the structures adjacent to the inclined plane is the powerhouse. The title 'Starr's Hardware Factory' appears to be associated with the eastern-most building adjacent to Prince Albert Road. The function/ownership of the third building is unknown.

The factory expanded rapidly on the property, incorporating the powerhouse, expanding Building A and covering over the canal. In 1868, the factory was described as comprising four buildings that "form a compact block and communication is had by doors opening from one into the other" (*Evening Express* 1868).

Following the 1870 closure of the Shubenacadie Canal, the Starr Manufacturing Company expanded its facilities. In the early 1870s, Starr Manufacturing reached peak production and expanded again by erecting a large three-storey building at the northern end of the complex (Cuthbertson 2001: 54). By 1878, as illustrated on Hopkins map of Dartmouth, the Starr complex is quite long and narrow, constricted between the inclined plane and Prince Albert Road (***Figure 6***). Buildings A and B are depicted, Building B being particularly long and narrow. There are at least three other buildings extending north of Building A, one being the large three storey structure described above. There also appears to be a small unconnected structure north of the large three-storey building and one located just west of it. Although they are unidentified, it is assumed they are associated with the Starr Manufacturing Company complex.

The configuration of buildings remains relatively unchanged into the twentieth century, according to several later maps (e.g. Hopkins 1886; Maxwell 1918), other than what appears to be a small additional structure just west of Building B.

The turbine chamber, powerhouse, inclined plane and other associated features are components of a complex sequence of events and developments which took places within the Starr Manufacturing property over a period of approximately 75 years. Between the start of canal construction in 1826 and the end of the nineteenth century, the Starr Manufacturing property was impacted by two major civil engineering projects and witnessed a period of rapid industrial expansion. The physical evidence of these engineering works lie buried beneath the rough ground surface of the Starr Manufacturing property (Stewart and Sanders 2007).

CRM Group Cultural Resource Management Group Ltd.	*Area of Starr Park c. 1815*	*Figure 3*
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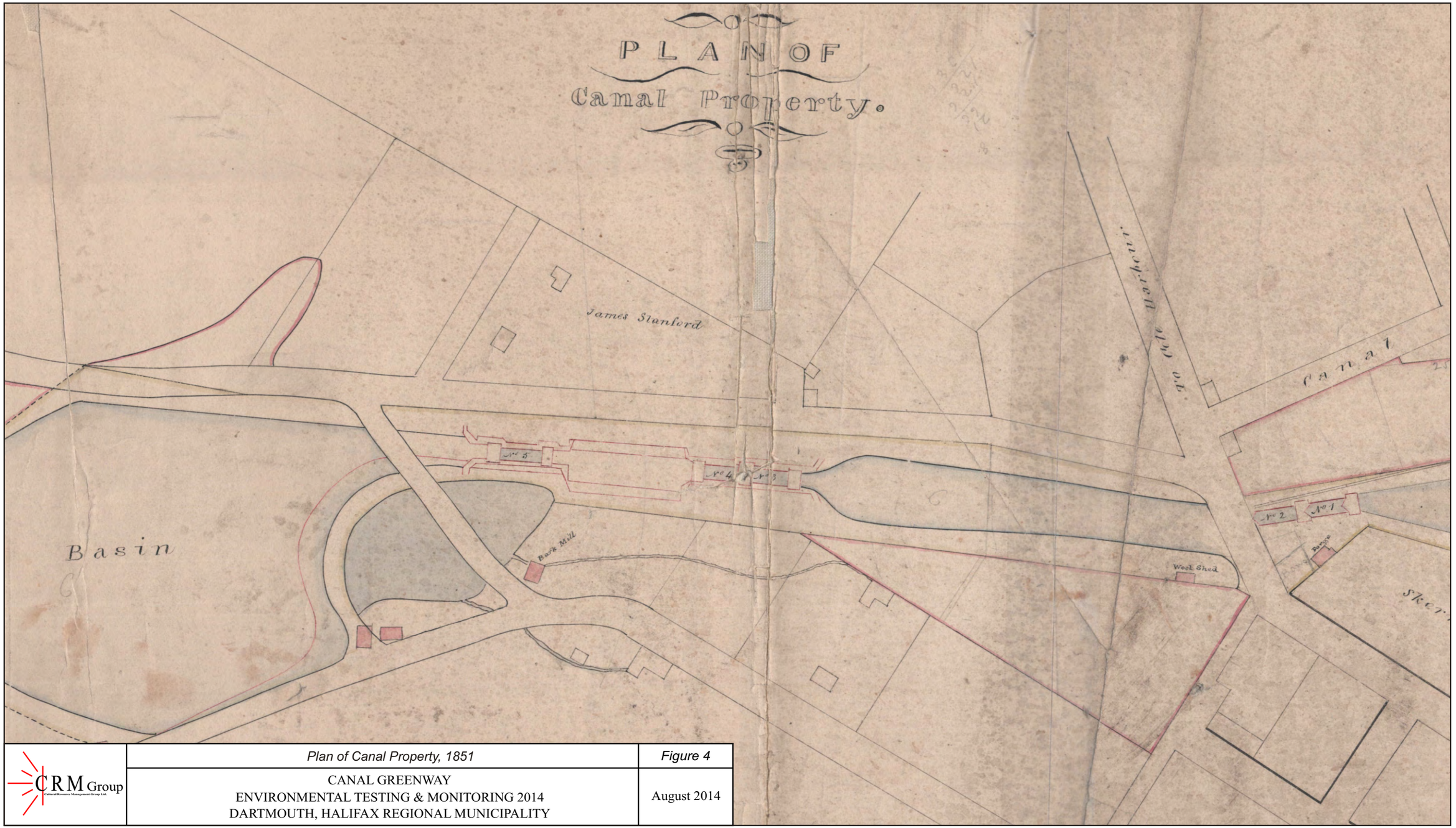
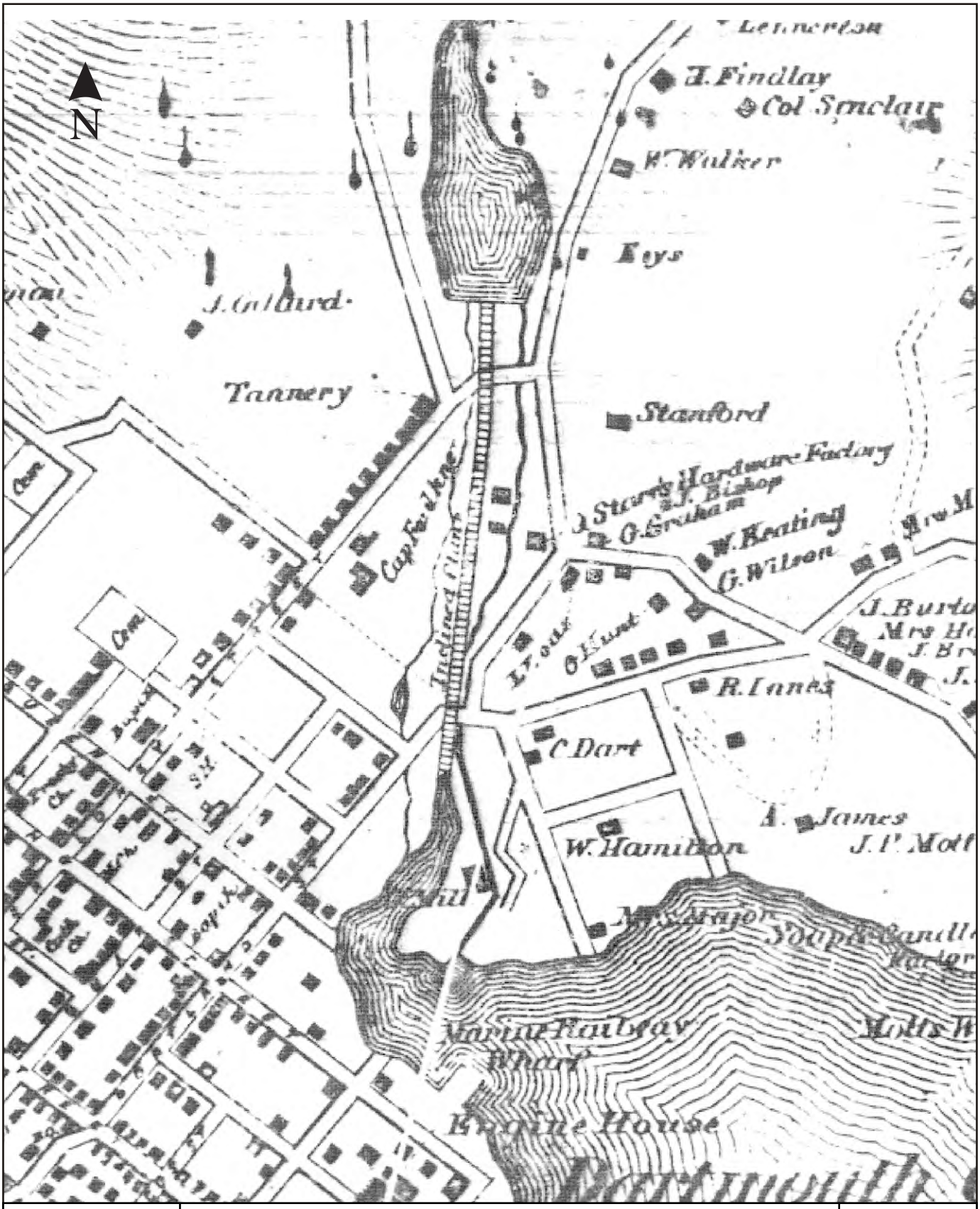
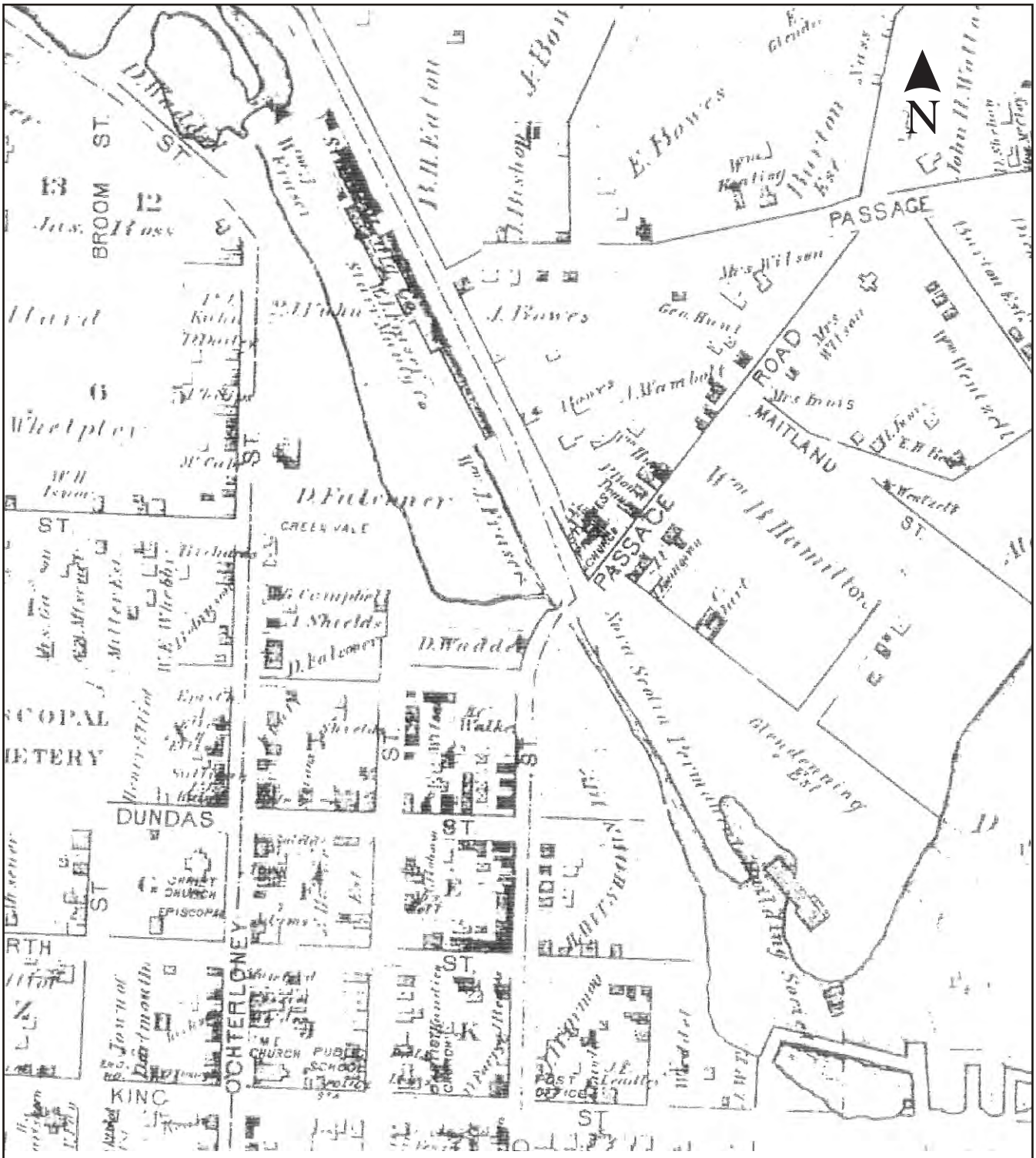


CRM Group	*Plan of Canal Property, 1851*	*Figure 4*
	CANAL GREENWAY ENVIRONMENTAL TESTING & MONITORING 2014 DARTMOUTH, HALIFAX REGIONAL MUNICIPALITY	August 2014



CRM Group Cultural Resource Management Group Ltd.	*A.F. Church Map, 1865*	*Figure 5*
	CANAL GREENWAY ENVIRONMENTAL TESTING & MONITORING 2014 DARTMOUTH, HALIFAX REGIONAL MUNICIPALITY	August 2014



CRM Group	*Hopkins Map, 1878*	*Figure 6*
	CANAL GREENWAY ENVIRONMENTAL TESTING & MONITORING 2014 DARTMOUTH, HALIFAX REGIONAL MUNICIPALITY	August 2014

4.2 Archaeological Monitoring

Monitoring of the environmental testing began on August 13, 2014. The test pits were mechanically excavated across the entire Starr Park property, beginning at the southern end along Irishtown Road (***Figure 2***).

Test Pit 1

This pit was located near the southeast boundary of the property, positioned on a diagonal to Prince Albert Road. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 1.7 metres below surface (***Plate 2***). The stratigraphy exposed by the test pit consisted of several layers of gravel, interspersed with sand and a loose ironstone mix. It is anticipated that the layers were laid down at different times through the site's history. The gravel deposit encountered at the base of the test pit was composed of a dark brown silt and was looser than the overlying layers.

Plate 2: Profile of Test Pit 1; facing east. August 13, 2014.

Test Pit 2

This pit was located near the southeast boundary of the property, positioned perpendicular to Prince Albert Road. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 1.8 metres below surface. Excavation of the test pit was halted when a concrete pad was encountered. It may be connected with the concrete wall, approximately 2 metres away, that runs along Prince Albert Road. After the thin section of gravel from the parking lot, the stratigraphic profile reflected a mixed fill of larges cobbles, brown silty sand, with broken sections of asphalt and concrete and a few pieces of modern garbage.

Test Pit 3

This pit was located in the southeast section of the property, positioned perpendicular to Prince Albert Road. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 2 metres below surface (***Plate 3***). Excavation of the test pit was halted when a concrete pad was encountered. As with the previous test pit, it may be connected with the concrete wall running along Prince Albert Road. Immediately under the landscaped grass, was a fill layer comprised of an orangey-brown silty sand with cobbles. At about 1.52 metres, a black ashy layer was reached that contained deteriorated wood, some rusted miscellaneous iron and fragments of mortar and brick. This layer overlay the concrete pad.

Plate 3: Profile of Test Pit 3; facing west. August 13, 2014.

Test Pit 4

This pit was located in the centre of the property, positioned on a diagonal to Prince Albert Road and approximately 6 metres east of the inclined plane. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 1.7 metres below surface. The excavation was halted when it hit a section of dry laid stone that is likely a wall of the tail race. Under the landscaped grass was a mixed brown silty sand fill, again interspersed with cobbles. That was underlain by a orange-brown clay cap that covers much of the Starr Park Property. At approximately 1.4 metres, a yellow ash was noted, similar in texture to black ash layer found in the previous test pit. Contained within this layer was the tail race wall, as well as fragments of brick, mortar and wood.

Test Pit 5

This pit was located in the centre of the property, positioned parallel to Prince Albert Road and approximately 6 metres east of the inclined plane. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 1.7 metres below surface. The excavation was

halted as no further soil samples were required. Under the landscaped grass was an orange-brown clay mixed with gravel, scraps of geotextile, brick fragments and some modern garbage.

Test Pit 6

This pit was located in the centre of the property, positioned parallel to Prince Albert Road. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 30 centimetres below surface (***Plate 4***). A concrete pad was immediately encountered below a thin layer of loose orange-brown gravelly silt so the excavation was halted.

Test Pit 7

This pit was located in the centre of the property, positioned parallel to Prince Albert Road and immediately south of the turbine chamber. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 90 centimetres below surface (***Plate 5***). The test pit was halted when it reached a layer of imported gravel that had been laid down to protect, and signal the close proximity to, the features related to the Shubenacadie Canal and Starr Manufacturing that had been exposed in 2007. This gravel was overlain by a mixed fill layer and then an orange loose clay/sand cap. The fill, a dark brown gravelly sand, contained scrap metal, and fragments of glass, wood and brick (***Plate 6***).

Plate 4: Profile of Test Pit 6; facing south. August 13, 2014.

Plate 5: Profile of Test Pit 7; facing south. August 13, 2014.

Plate 6: Examples of metal noted in Test Pit 7. August 13, 2014.

Test Pit 8
This pit was located in the centre of the property, positioned parallel to Prince Albert Road and immediately north of the turbine chamber. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 45 centimetres below surface. The excavation halted when it reached the same layer of imported gravel described in the previous test pit. Above the gravel had been an orange loose clay/sand cap.

Test Pit 9
This pit was located in the centre of the property, positioned parallel to Prince Albert Road and to the north of the turbine chamber. Measuring approximately 3 metres long and 70 centimetres wide, it reached an approximate depth of 1.2 metres below surface (***Plate 7***). Excavation was halted when an old vertical floor drain pipe was encountered *in situ*. Immediately under the landscaped grass was a thick layer of a light brown silty sand. This was followed by several layers of alternating black to yellow ashy silt. The ash contained charcoal, coal and slag in addition to the floor drain pipe, first noted at 90 centimetres below surface. A tile was also noted with a section cut out for the pipe.

Plate 7: Profile of Test Pit 9; facing south. August 13, 2014.

Test Pit 10
This pit was located in the northern section of the property, positioned perpendicular to Prince Albert Road and immediately to the west of the inclined plane. Measuring approximately 2 metres by 70 centimetres, it reached an approximate depth of 1.5 metres below surface. Excavation was halted over concerns that the inclined plane trail could be undermined by further digging. Under the topsoil was a dark brown to black silty sand that contained mortar and brick fragments. This was underlain by a yellow silty ash with some mortar and brick inclusions. The eastern side of the pit also contained gravel from the adjacent inclined plane trail.

Test Pit 11
This pit was located in the northern section of the property, positioned on a diagonal to Prince Albert Road and to the west of the inclined plane. Measuring approximately 3 metres by 70 centimetres, it reached an approximate depth of 2.1 metres below surface. Excavation was halted when no further soil samples were required. Under the landscaped grass was a dark brown-orange silty sand fill, containing fragments of brick and iron. Further into the test pit, large clumps of slag were encountered. Under the slag, there were more brick fragments, loose but numerous, as well as additional pieces of iron.

Test Pit 12
This pit was located in the northern section of the property, positioned on a diagonal to Prince Albert Road and to the west of the inclined plane. Measuring approximately 3 metres by 70 centimetres, it reached an approximate depth of 2.1 metres below surface (***Plate 8***). Excavation was halted when no more soil testing was required. Under the landscaped grass was a dark brown gravelly sand mixed fill containing fragments of brick, some miscellaneous metal and scrap pieces of leather. At approximately 1.5 metres into the test pit, the soil changed to a yellow-brown silt which contained no artifacts. It may have represented subsoil.

Plate 8: Profile of Test Pit 12; facing south. August 13, 2014.

Auger Probes
A total of 6 auger probes were dug by hand at the subject site. Due to the minor impacts associated with the probes and their position overlying a concrete pad, archaeological supervision was not required.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The archaeological monitoring of the environmental testing at Starr Park was completed in a day. Apart from encountering a section of the tail race wall, no other significant features or artifacts were noted.

As a result of the archaeological monitoring of the soil testing at the Starr Park property, CRM Group offers the following recommendations:

1. Considering the abundance and significance of known archaeological resources within the study area, it is recommended that archaeological monitoring be conducted for any further work conducted in conjunction with the Starr Park property.

2. In the event that archaeological deposits or human remains are encountered during activities associated with the Starr Park property, all work in the associated area(s) should be halted. The significance of the resources should be evaluated by the on-site archaeological monitor and reported immediately to the Coordinator of Special Places - Sean Weseloh-McKeane (902-424-6475).

6.0 REFERENCES CITED

Baldwin, Robert
1835 *Plan of a Survey Along the Shubenacadie Canal* – 1835. NSARM.

Barlow, Anthony
2001 *"Heritage Recording of the Starr Manufacturing Company Factory"* in *Industry and Society in Nova Scotia: An Illustrated History* edited by James E. Candow; Fernwood Publishing, Halifax.

Church, Ambrose F.
1865 *Topographical Township Map of Halifax County*, A.F. Church & Co. Bedford. NSARM.

Cuthbertson, Brian
2005 "The Starr Manufacturing Company: Skate Exporter to the World." *Royal Nova Scotia Historical Society Journal*. Volume 8, pp. 49-75.

Fairbanks, Charles William
ca. 1851 *Plan of Canal Property*. PCLRC; Halifax/Dartmouth Portfolio, Plan No. 40, Canal Property, Town of Dartmouth.

Gill, Valentine
1815 *Division No. 1 of the Proposed Navigation through Dartmouth*. Nova Scotia Archives and Records Management.

Hopkins, H.W.
1878 *Map of the Town of Dartmouth*. Provincial Surveying & Publishing Co. V7/239 NSARM.

Kelman, Darryl, W. Bruce Stewart & Sara Beanlands
2007 *Dartmouth Marine Railway Turbine Chamber/Starr Manufacturing & Associated Features, Dartmouth, Nova Scotia.* Manuscript. Report for Heritage Research Permit A2007NS47. On file with the Nova Scotia Museum, Halifax.

Passfield, Robert W.
1979 *The Shubenacadie Canal*. A staff report prepared for the Historic Sites and Monuments Board of Canada.

Stewart, W. Bruce & Mike Sanders
2002 *Archaeological Assessment Starr Manufacturing Property, Dartmouth, Nova Scotia.* Manuscript. Report for Heritage Research Permit A2002NS04. On file with the Nova Scotia Museum, Halifax.

2003 *Archaeological Monitoring, 174 Ochterloney Street, Dartmouth, Nova Scotia*. Manuscript. Report for Heritage Research Permit A2002NS27. On file with the Nova Scotia Museum, Halifax.