August 28, 2017

CULTURAL HERITAGE ASSESSMENT

Barton & Kenilworth Reservoirs
111 Kenilworth Access
Formerly Barton Township
City of Hamilton

Submitted to:
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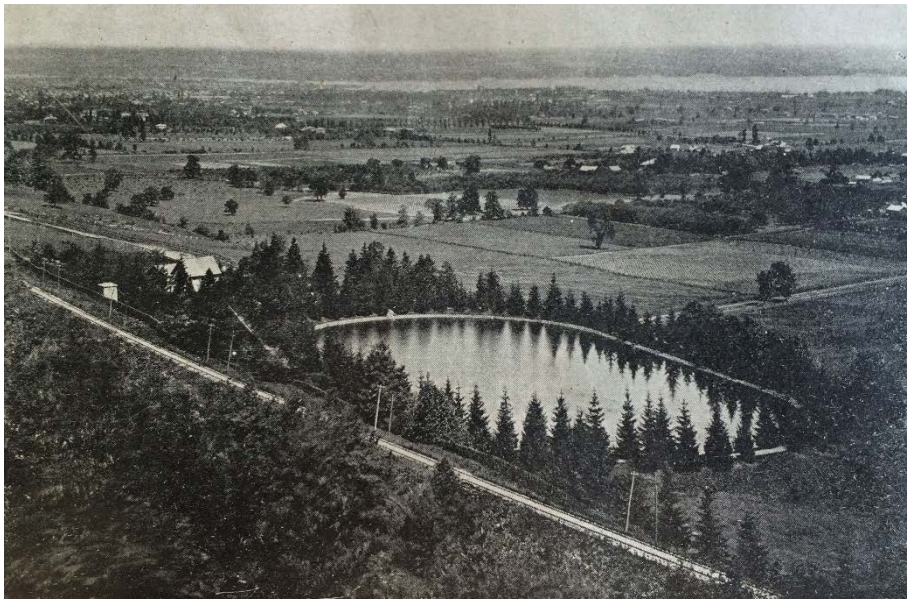

FINAL REPORT

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Golder Associates

Executive Summary

In 2016, the City of Hamilton (the City) retained Golder Associates Ltd. (Golder) to undertake a cultural heritage assessment of 111 Kenilworth Access, the site of the Barton and Kenilworth Reservoirs. The City initiated the assessment after a request was made in 2009 that the property be considered for designation under Part IV of the *Ontario Heritage Act*. The City-owned property is included on the *Register of Property of Cultural Heritage Value or Interest* and historically connected to the Hamilton Waterworks National Historic Site of Canada (NHSC) (built 1856-59), currently operating as the Hamilton Museum of Steam and Technology.

A preliminary evaluation of the property by City staff recommended further cultural heritage assessment, and this was assigned to Golder as a low priority work program under the City's Roster of Professional Consulting 2015-2016 (Roster 27: Built Heritage and Cultural Heritage Landscapes).

Following guidelines provided in the City's *A Framework for Evaluating the Cultural Heritage Value or Interest of Property for Designation under Part IV of the Ontario Heritage Act* (2013) and *City of Hamilton Cultural Heritage Assessment Report Outline* (n.d.), this document provides: an overview of the property's geographic and historical context; an inventory of its landscape and built features; an analysis of the structural sequence, construction, and architectural style of built features on the property; an evaluation of the property's cultural heritage value based on criteria developed by the City and those prescribed under *Ontario Regulation 9/06*; and conclusions and recommendations for future action.

Golder's cultural heritage assessment concluded that:

- ***111 Kenilworth Access is a property of cultural heritage value or interest***; and,
- ***The property should be designated under Part IV of the* Ontario Heritage Act*.***

Golder also recommends that the City take the following actions to ensure the property is conserved in the short and long-term:

- Clear all vegetation currently impacting the stone and clay block lining of the Barton Reservoir;
- Increase security at the property to prevent vandalism to the surviving features of the Barton Reservoir;
- Initiate a combined heritage conservation plan and management plan to guide the protection and preferred conservation treatment (preservation, rehabilitation, or restoration) of the east portion of the property (Barton Reservoir and associated features, and the former Residence and public park), and to explore options for future use of the property;
- Submit a request that a description of the Barton Reservoir's character-defining elements be added to the entry in the *Canadian Register of Historic Places* for the Hamilton Waterworks NHSC;
- Submit a request to the Historic Sites and Monuments Board of Canada that the Barton Reservoir and Pipeline Trail be added to the designated place of the Hamilton Waterworks NHSC as the earliest surviving example of a municipal water supply system in Canada;

- Consider drafting development controls for new construction in the east end of the City that protect the important sightlines and visual connections between the Barton Reservoir, the Pipeline Trail, and the Hamilton Waterworks NHSC; and,
- Initiate a heritage evaluation of the Pipeline Trail as a substantial and well-preserved landscape component of the historic municipal water supply system connecting the Barton Reservoir with the Hamilton Waterworks NHSC.

Study Limitations

Golder Associates Ltd. has prepared this report in a manner consistent with standards and guidelines developed by the City of Hamilton, the Ontario Ministry of Tourism, Culture and Sport, and Canada's Historic Places, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied is made.

This report has been prepared for the specific site, design objective, developments and purpose described to Golder Associates Ltd. by the City of Hamilton (the Client). The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without Golder Associates Ltd.'s express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the Client, Golder Associates Ltd. may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to Golder Associates Ltd. The report, all plans, data, drawings and other documents as well as electronic media prepared by Golder Associates Ltd. are considered its professional work product and shall remain the copyright property of Golder Associates Ltd., who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of Golder Associates Ltd. The Client acknowledges the electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore the Client cannot rely upon the electronic media versions of Golder Associates Ltd.'s report or other work products.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the Client in the design of the specific project.

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1.0 INTRODUCTION

In 2016, the City of Hamilton (the City) retained Golder Associates Ltd. (Golder) to undertake a cultural heritage assessment of 111 Kenilworth Access, an 8-hectare property known as Barton Reservoir and Kenilworth Reservoir. The City initiated the assessment after the Hamilton Municipal Heritage Committee requested that Barton Reservoir be considered for designation under Part IV of the *Ontario Heritage Act*. The property is included on the City's *Register of Property of Cultural Heritage Value or Interest* and is associated with the Hamilton Waterworks at 900 Woodward Avenue —commemorated as a National Historic Site of Canada (NHSC) by the Historic Sites and Monuments Board of Canada in 1977 and designated under Part IV of the *Ontario Heritage Act* in 1984 (By-law 84-30). It is also connected to the Pipeline Trail, a public-use corridor that covers most of the original water utility connecting the Hamilton Waterworks and Barton Reservoir.

A preliminary evaluation of the property by City staff recommended further cultural heritage assessment, and this was assigned to Golder under the City's Roster of Professional Consulting 2015-2016 (Roster 27: Built Heritage and Cultural Heritage Landscapes).

Following guidelines provided in the City's *A Framework for Evaluating the Cultural Heritage Value or Interest of Property for Designation under Part IV of the Ontario Heritage Act* (2013) and *City of Hamilton Cultural Heritage Assessment Report Outline* (n.d), this document provides:

- An overview of the property's geographic and historical context;
- an inventory of the property's landscape and built features;
- An analysis of the structural sequence, construction, and architectural style of built features on the property;
- An evaluation of the property's cultural heritage value based on criteria developed by the City and those prescribed under *Ontario Regulation 9/06*;
- Recommendations for future conservation actions and a draft Statement of Cultural Heritage Value or Interest (CHVI).

1.1 Scope and Method

To assess the Study Area, Golder undertook:

- Archival and secondary source research of documents relevant to the property;
- Field investigations to document and identify any cultural heritage resources within the property, and to understand the wider built and landscape context; and,
- Resource evaluation using municipal, provincial, and federal government guidance.

A large number of primary and secondary sources, including historic maps and plans, aerial imagery, photographs, and newspaper and research articles were compiled from the Hamilton Public Library, Museum of Steam and Technology, University of Western Ontario, and other sources. The City's Development Planning, Heritage & Design Section, Heritage Resource Management section, and Tourism & Culture Division, also provided a number of documents to aid in this study.

Field investigations were conducted on July 27, 2016 using methods and techniques comparable to a Level 4 buildings survey as defined in Historic England's *Understanding Historic Buildings: A Guide to Good Recording Practice* (Historic England 2016) and a Level 3 landscapes survey as defined in Historic England's *Understanding the Archaeology of Landscapes: A Guide to Good Recording Practice* (Historic England 2007). This included photographing all features on the property with Nikon D5300 digital single reflex and Samsung Galaxy S6 cameras, and documenting architectural features with measured sketches using metal hand tapes and Bosch laser distance measurer.

From the collected information, the property was evaluated using the City's *A Framework for Evaluating the Cultural Heritage Value or Interest of Property for Designation under Part IV of the Ontario Heritage Act* (2013) and *Ontario Regulation 9/06 Criteria for Determining Cultural Heritage Value or Interest*. Other widely used and recognized manuals relating to evaluating cultural heritage resources were also consulted including:

- *Ontario Heritage Tool Kit* series (5 vols., Ministry of Tourism, Culture and Sport [MTCS] 2006);
- *Municipal Water and Sewage Works: A Guide to the Conservation of Municipal Sewage and Waterworks* (MTCS 1990);
- *Well-Preserved: The Ontario Heritage Foundation's Manual of Principles and Practice for Architectural Conservation* (Fram 2003);
- *The Evaluation of Historic Buildings* (Parks Canada 1979);
- *Standards and Guidelines for the Conservation of Historic Places in Canada* (Parks Canada 2010);
- *Informed Conservation: Understanding Historic Buildings and their Landscapes for Conservation* (Clark 2001); and,
- *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (US National Parks Service 1999).

1.2 Measurement Units

This report uses the metric system for descriptions of distance and area, but employs the Imperial system for all structural dimensions. The use of Imperial (or US Customary units) for describing heritage structures is generally preferred since most —including the Barton Reservoir and Kenilworth Reservoir— were built prior to national implementation of the metric system in Canada in 1971, and often better reflect the design decisions and material specifications of historic engineers, architects, and builders. To reduce text clutter, conversions from metric to Imperial and vice versa are not provided.

2.0 PROPERTY LOCATION

The Barton and Kenilworth Reservoirs at civic address 111 Kenilworth Access are located in southwestern Ontario, approximately 5.4 km south of Burlington Bay/Hamilton Harbour and within Lot 4, Concession 4 of the former Barton Township, now part of the single-tier municipality of the City of Hamilton (Figure 1). It is approximately 4.6 km southeast of the City's downtown core, and on a linear property bordered by Kenilworth Access on the north and the Escarpment Rail Trail (formerly the Hamilton and Lake Erie Railway) on the south. Further to the south is Kenilworth Access as it turns east and becomes Mountain Brow Boulevard. The property is most easily accessed on foot from the Escarpment Rail Trail, which can be entered via a metal stairway from Kimberly Drive, southeast of the roundabout at Kenilworth Access and Kenilworth Avenue South.

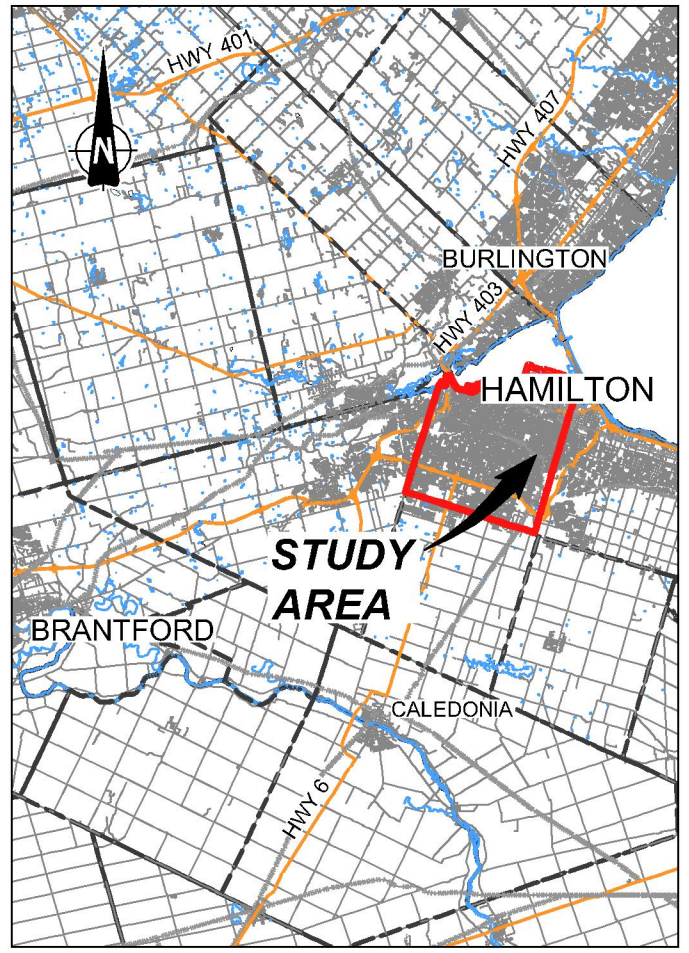
The property has an irregular, dagger-blade shape with an 84 m long east boundary oriented north-south and north and south boundaries that meet at a point approximately 850 m to the west. Overall the property encloses approximately 8 hectares, and rises in elevation from 122 metres above sea level (mASL) on the north, to 138 mASL on the south.

3.0 PHYSIOGRAPHIC CONTEXT

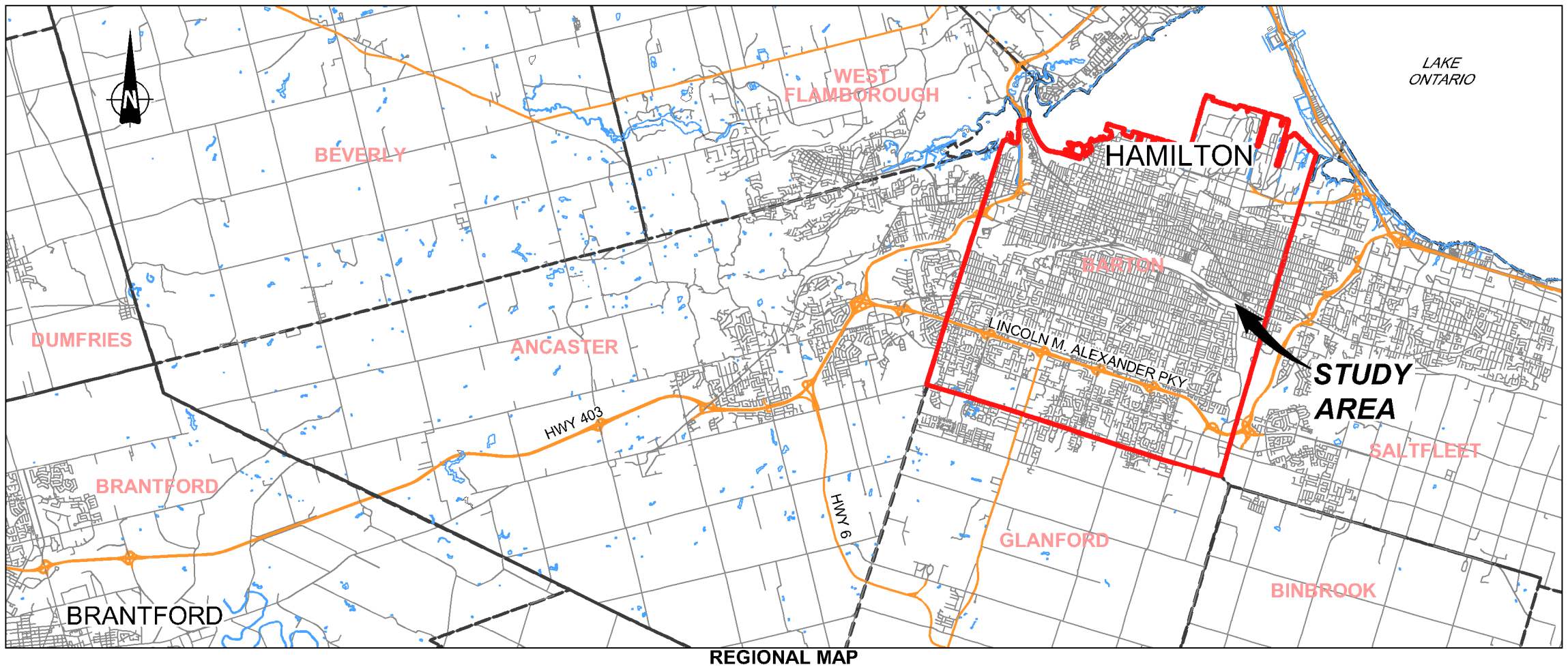
The property is within the Niagara Escarpment physiographic zone, a massive limestone and dolostone outcrop running from the Niagara River to the Bruce Peninsula and Manitoulin Island. The outcropping near the property is not exposed as it is further to the east and north, but still a prominent geologic feature. North of the Escarpment and near the property is the Ontario Lakehead subsection of the Iroquois Plain physiographic region, which is composed of well-drained, stone-free, and sandy loam soil plains, while south of the property at the higher elevation is the Haldimand Clay Plain (Chapman & Putnam 1984:114-122).

The topography of the property is steep, descending rapidly north of the Escarpment Rail Trail, then levelling as it approaches Kenilworth Access, particularly in the northwest. Both the Barton Reservoir and later Kenilworth Reservoir modify the natural topography; the former creating a high-sided basin, while the latter is a large bench or terrace.

AERIAL IMAGERY and OBM MAPPING



KEY PLAN



REGIONAL MAP

LEGEND

- BARTON TOWNSHIP BOUNDARY
- TOWNSHIP BOUNDARY
- APPROXIMATE STUDY AREA
- BARTON — TOWNSHIP

REFERENCE

DRAWING BASED ON MNR LIO, OBTAINED 2015, PRODUCED BY GOLDER ASSOCIATES LTD UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2015; CITY OF HAMILTON, COURTESY RICHARD PAOLA, CITY OF HAMILTON, PED-GIS, COMMUNITY PLANNING; BING AERIAL IMAGE AS OF SEPTEMBER 9, 2016 (IMAGE DATE UNKNOWN); AND CANMAP STREETFILES V2008.4.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

PROJECT

CULTURAL HERITAGE ASSESSMENT FOR DESIGNATION UNDER PART IV OF THE ONTARIO HERITAGE ACT
111 KENILWORTH ACCESS (BARTON RESERVOIR)
HAMILTON, ONTARIO

TITLE

LOCATION MAP

Golder Associates

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FIGURE 1

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4.0 SETTLEMENT CONTEXT

4.1 Barton Township, Wentworth County

Following the Toronto Purchase of 1787, today's southern Ontario was within the old Province of Quebec and divided into four political districts: Lunenburg, Mechlenburg, Nassau, and Hesse. These became part of the Province of Upper Canada in 1791, and renamed the Eastern, Midland, Home, and Western Districts, respectively. The property is within the former Nassau District, then later the Home District, which originally included all lands between an arbitrary line on the west running north from Long Point on Lake Erie to Georgian Bay, and a line on the east running north from Presqu'ile Point on Lake Ontario to the Ottawa River. Each district was further subdivided into counties and townships. In 1816, Wentworth County was created within the Gore District from the southwest portions of York County in the Home District, and the west portion of the Niagara Districts. Of Wentworth's eight townships (later eleven) the Study Area is within Barton Township.

Barton Township was initially surveyed by Deputy Provincial Land Surveyor Augustus Jones, who completed the work in 1796 (Gentilcore & Donkin 1973:42). Jones employed the single-front method, where only the concessions were surveyed and lots of 120 to 200 acres were delineated to be five times as long as they were wide (Schott 1981:77-93) (Figure 2). In Barton Township, the concession lines were oriented east to west and numbered north to south, while the side roads crossed the township running north to south (McIlwraith 1999:54).

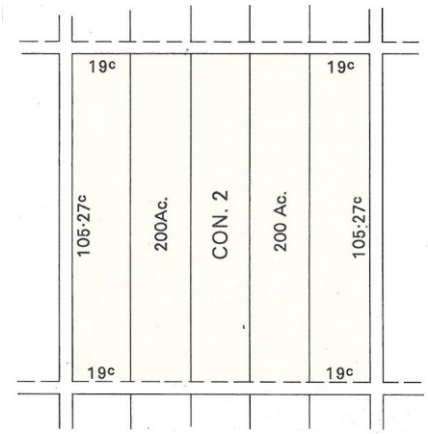

Figure 2: The single front survey system, used from 1783 to1818. As depicted here, each lot is 200 acres (Ac.), created from surveying 19 chains by 105.27 chains (1 chain = 66 feet/ 20.12 metres) (Gentilcore 1969:61)

As was the case with most counties along the north shore of Lake Ontario, initial European settlement was by former soldiers and refugees displaced by the American War of Independence, but settlement of Barton Township appears to have begun well before Augustus Jones' survey. Early American immigrant Richard Beasely had established a post to trade with Mississauga and other western Ojibwa groups at the 'Head-of-the-Lake', or Burlington Heights, as early as 1785 (Triggs 2004:159), and Robert Land was believed to have squatted on land near Barton and Leeming Streets (Freeman 2001:13). Once the survey was complete, European settlement of the township accelerated, although the system of land allocation disproportionately favoured those with social status. James Kirkpatrick and Samuel Ryckman, both of whom had aided Jones with the land survey, were generously compensated for their labour: Ryckman received 11,042 acres and Kirkpatrick 4,147 acres, which together comprised 6.3% of Barton Township (Widdis 1982:447).

Nevertheless, the population grew exponentially. In 1815 Barton Township had 102 ratepayers and 72 one-storey houses, yet just under a decade later in 1823, the township had three saw mills and one grist mill, and close to 4,978 acres of improved land, with 2,841 acres above the 'mountain' and 2,137 acres below. The 1832 assessment for Barton Township shows that growth in the area had more than doubled since the end of the War of 1812, with almost 6,500 acres made arable, and 152 framed or log houses under two storeys, 42 houses with two storeys, and two brick or stone houses had been erected. There were also sixteen merchant shops and six storehouses, while farm animals included 314 horses over the age of three, 149 oxen, 547 milk cows and 140 young cattle (Page and Smith 1875).

Smith's *Canadian Gazetteer*, published in 1846, recorded the cultivated land of Barton Township as extending over 8,993 acres and quoted the 1841 census, which had found that there were 1,434 inhabitants living in the township (Smith 1846:8). By this time Hamilton —named for early merchant George Hamilton, who had laid out the town in 1813— was the district town for Gore District and regarded as the 'key to the west' for its strategic position at the western head of Lake Ontario (Smith 1846:65, 75). Incorporated as a town in 1833, by 1845 it could boast an urban population of 6,475 that supported a thriving roster of 'Professions and Trades', a stone jail and courthouse, a brick market house, and eleven churches for the Catholic and Protestant denominations, which included Baptist and Methodist African-Canadian congregations. Daily stagecoach and steamboat service to the other major towns of southwestern Ontario was also available (Smith 1846:75-76).

Hamilton's development during the second half of the 19th century underwent spectacular growth followed by a slow but not detrimental decline. In 1850 the population had risen to 11,000 and exploded following investment in the Great Western Railway to 27,500 just seven years later (Newell & Greenhill 1989:69; Crossman & Maitland 1977:202). The depression of 1857-58 and failure of the railway checked this expansion but in the 1870s Hamilton had emerged as a major manufacturing centre, earning the name 'Birmingham of Canada', then later 'Steeltown' (Gentilcore & Head 1984:242; Palmer 1979:15). This had a knock on effect for the building industry, which increased 92% between 1850 and 1871 (Palmer 1979:16).

Hamilton continued to grow through the first half of the 20th century, playing a leading role in supporting the war effort during both the First and Second World Wars. However, its textile industry would falter in the 1960s, and by the 1980s significant manufacturing and steel plant employers such as International Harvester and Stelco were forced to institute major layoffs.

In 1974, Wentworth County was replaced by the Regional Municipality of Hamilton-Wentworth, and in 2001, the Regional Municipality and its six constituent municipalities were amalgamated into the City of Hamilton. Population growth since then has been modest. In 2006, the population numbered 504,560 while in 2011 it had grown to 519,950 (City of Hamilton 2015).

4.2 The Origins of Hamilton's Water Supply

The origins of Hamilton's waterworks system can be traced to 1833, when an increasing frequency of accidental fires led the Board of Police to provide five public wells (James and James 1978:2). Despite this effort, pressure from dissatisfied citizens to replace the wells with a waterworks system prompted the Board to make a call for tenders in 1835 (Campbell 1966:117; James and James 1978:2). A lack of municipal funds, however, prevented construction of the winning submission, and hundreds of public and private wells remained the primary source of water for households, and civic, commercial, and industrial operations.

It was not until a devastating outbreak of cholera in September 1854 that City Council adopted a formal resolution to establish a waterworks system (Newell & Greenhill 1989:69; James and James 1978:21). *By-Law No. 110 – For Supplying the City of Hamilton with Water*, gave Council the authority to release funds to purchase lands for waterworks, retain engineers to design the system, and to have the plans constructed. The bylaw was passed on August 10, 1854.

The following month, on September 16, 1854, the Chairman of the Committee on Fire and Water Robert McElroy announced a public competition to design Hamilton's waterworks system, which would involve pumping water from Burlington Bay (James and James 1978:25-31). All entries received by Council were referred to Engineer of the Montreal Water Works Thomas Coltrin Keefer for review. Keefer selected plans submitted by American engineer Samuel McElroy as the winning design on December 23, 1854, but it would not proceed to construction (Newell & Greenhill 1989:69). Several parties had voiced concerns about the propriety of taking water from Burlington Bay and as a result, on January 28, 1855, the Committee on Fire and Water commissioned Keefer to assess the possible options (James and James 1978:33-39). After dismissing several watercourses in the area as inadequate, Keefer ultimately determined Lake Ontario as the most appropriate source for domestic and industrial use based on its purity and supply, and that a pumping system would be required (Drakich 1990:513). This opinion was seconded by two American engineers also retained by the City to consult on the water supply issue, prompting the newly appointed Board of Water Commissioners —chaired by Adam Brown and with D. B. Galbreaith, M. W. Browne, and Peter Balfour as members— to engage Keefer as Chief Engineer for the Hamilton Waterworks on January 28, 1857 (Newell & Greenhill 1989:69; James and James 1978:33-39). Keefer was instructed to proceed immediately with all necessary surveys and estimates to build the system. Despite the financial constraints of the depressed economy and the physical challenges, the waterworks were officially inaugurated in 1860 by no less a celebrity than His Royal Highness Albert Edward, Prince of Wales, later King Edward VII (Drakich 1990:513).

The system, installed at a cost of $786,479.34[1] pumped 2.5-million gallons of water per day and was capable of supplying a population of 50,000. When completed, the Hamilton Waterworks operated on the process illustrated in Figure 3 and Figure 4 (Malaws 1997; City of Hamilton 1903).

[1] This number is listed in the *Canadian Illustrated News* (1863, reprinted in Sinclair et al. 1974), and by Crossman & Maitland (1977:201). However, Newell & Greenhill (1989:70) report the estimates as $590,000 and the cost of the individual elements in a 1903 Engineering Report (City of Hamilton 1903) add to $622,185.67. Nevertheless, Keefer is generally credited with building the system within estimates.

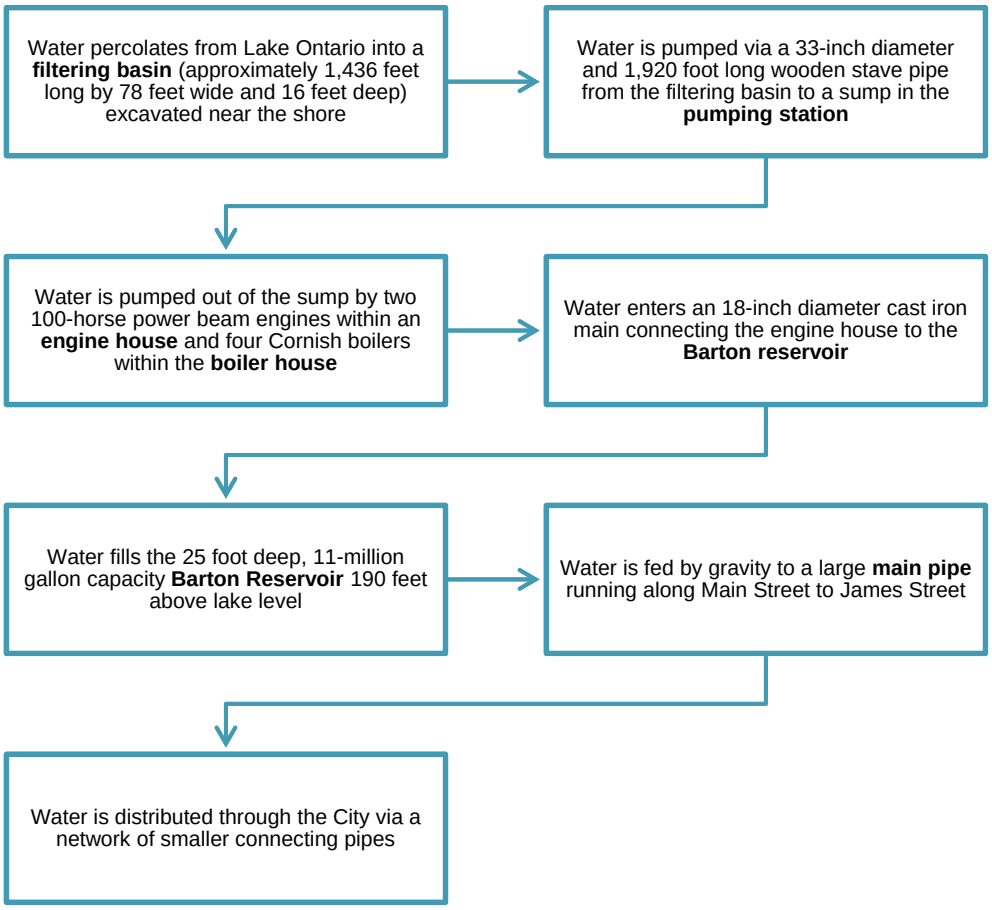

Figure 3: Process drawing of the first Hamilton Waterworks System, 1860-c.1903

CITY OF HAMILTON WATERWORKS
Plan & Section

Base data © 2016 Digitalglobe, image courtesy of USGS Earthstar Geographics SIO, © 2016 Microsoft Corporation
Drawn by H.Cary

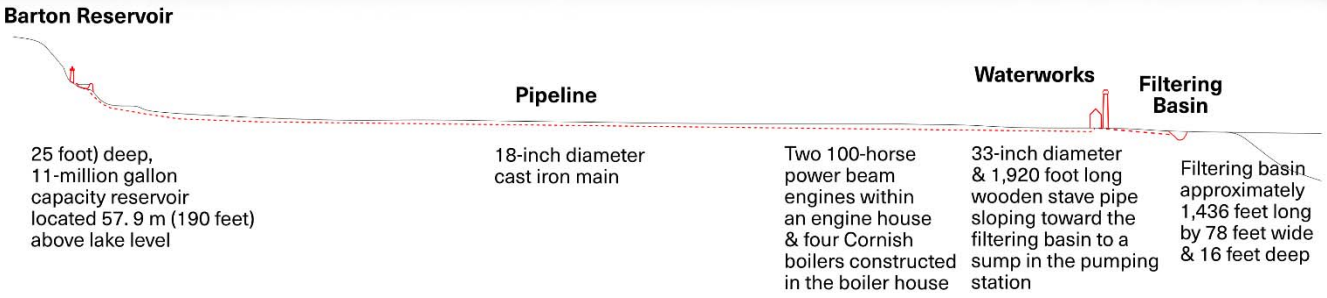

Figure 4: Plan and section of the Hamilton Waterworks.

In 1860, James McFarlane was hired for the role of Chief Engineer by the Board of Water Commissioners, a position he held for next 51 years. Supervising operation of the Barton Reservoir was William Calder; he remained at this post for 35 years until his death. He was succeeded by his son.

City Council took responsibility for the Waterworks from the Board of Water Commissioners in 1861 and over time, made several modifications to improve capacity. By 1903, the waterworks consisted of two filter basins, four pumping engines, the Barton Reservoir with a 0.5 m (20 inch) standpipe inside a stone tower, a water tower, and high-level pumping engines with a high level reservoir. Three mains measuring 0.45 m, 0.5 m, 0.76 m (18, 20, and 30 inches), respectively, connected the pumping station to the reservoir (City of Hamilton 1903). Components of the original waterworks system continued to operate into the 1950s. Although by then some of the buildings of the waterworks had been demolished, the property at 900 Woodward Avenue was substantially preserved and was designated as a National Historic Site of Canada in 1977 for its ‘gracious complex of mid-19th-century brick industrial buildings’ centered on the ‘the Italianate architectural style of the 1859 Enginehouse/ Pumphouse with its rectangular massing on a raised basement under a pitched slate roof, entry on the short end, four bays of tall narrow windows and bull's eye windows on the side elevations, classically inspired detailing such as corner pilasters and dentilled cornice, and rusticated limestone construction’ (Figure 5)(Canada’s Historic Places 2017). In 1983, the Hamilton Waterworks were opened to the public as the Hamilton Museum of Steam and Technology (HMST).

Figure 5: Left to right: the Chimney, Boiler House, and Engine House of the Hamilton Waterworks NHSC, February 2017.

4.2.1 Thomas Coltrin Keefer, Engineer (b. 1821, d. 1915)

Thomas Keefer was born in Thorold, Ontario in 1821, the fourth son of George Keefer and Jane McBride (James and James 1978:75-88). George, as the president of the Welland Canal Company, likely played some role in Thomas' interest to become an engineer. From 1833 to 1838, Thomas attended Upper Canada College in Toronto and upon graduating worked as apprentice engineer on the Erie Canal in New York. He later served as assistant engineer on the Welland Canal. By 1845, at just 24, Keefer was made Chief Engineer of the Ottawa River Works, responsible for ensuring timber was efficiently transported downstream. After the works were completed in 1848, Keefer authored two pamphlets —'The Philosophy of Railroads' (1849) and 'The Influence of the Canals of Canada' (1850)— both of which emphasized the social and economic benefits of trade with the United States via these transportation systems. The former pamphlet went through five reprintings while the latter won the Lord Elgin prize for 'best essay commemorating the completion of the St. Lawrence Canals in 1853' (Bush 1974:3.2-3.3). Although Keefer was well-known for his contributions to the development of railways, he made his professional reputation in the field of hydraulic engineering. In 1849, Keefer had led hydraulics surveys of the St. Lawrence rapids, and in 1853 he was appointed Chief Engineer of the Montreal Harbour Commission, which involved deepening the St. Lawrence River. He was then appointed Chief Engineer of the Montreal Water Works and tasked with designing the city's public water system (Keefer's success with this system, then Hamilton's waterworks, further solidified his reputation and he was a highly sought engineer across the country, later assisting development of waterworks for St. Catharines, Hamilton, Toronto, Ottawa, Quebec City, Halifax, and Dartmouth (Ross 2003), and featured on the cover of the September 26, 1863 edition of the *Canadian Illustrated News* (Figure 6). By 1895, Keefer was 'perhaps second to none' among Canadian engineers and in 1905 he was given an honorary doctorate from McGill University (Bush 1974:3.9). He was co-founder and first president of the Canadian Society of Civil Engineers (CSCE), and also served as president of the Canadian Institute and Royal Society of Canada. Keefer died in Rockcliff on January 7, 1915, but still widely recognized; in 1938 he was commemorated as a National Historic Person of Canada, and in 1942, the CSCE introduced the Thomas C. Keefer Medal for 'best civil engineering paper in hydrotechnical, transportation or environmental engineering' (CSCE 2017).

Figure 6: Thomas Keefer featured on the front page of the September 26, 1863 edition of the Canadian Illustrated News.

4.2.2 Adam Brown, Waterworks Commissioner (b. 1826, d. 1926)

Adam Brown was born in Edinburgh in 1826 (James and James 1978:102-107). He immigrated to Upper Canada with his parents in 1833 and eventually settled in Hamilton in 1850, where he worked as a clerk with a dry goods company. From this modest beginning, Brown advanced to become head of wholesale grocery firm Brown, Gillespie and Company, and was instrumental in developing the Canadian cheese export business. Brown then became the first president of two Ontario railway companies —the Wellington, Grey, and Bruce Railway, and Northern Pacific Junction Railway— and also served as director and vice-president of the Great North Western Telegraph Company, director of the Canada Life Insurance Company, and as president of the Hamilton Coffee Tavern Company. In 1857, he was appointed to the Board of Water Commissioners and promoted to chairman within months. Through Brown's leadership the Board guided the Waterworks project through an ambitious schedule with appropriate expenditure. Brown retired as Waterworks Commissioner in 1861 to pursue a successful career in public affairs. When he died in January 1926 at the age of 100, Brown was popular and widely recognized across Canada, Britain, and the United States. An article published in 1924 showing Brown next to a tree he had planted at the Barton Reservoir in 1857 referred to him as 'Hamilton's Grand Old Man,' further remarking

hyperbolically that ‘Both the tree and its planter still stand, two sturdy, rugged giants typifying the best in nature and man’ (Figure 7) (*Herald Scrapbooks* 1924).

Figure 7: Circa 1912 photograph of Adam Brown standing next to a tree he planted at the Barton Reservoir in 1859 (courtesy HMST).

4.3 Property History

The property at 111 Kenilworth Access is on the northern-most portion of Lot 4, Concession 4 in the former Township of Barton, now City of Hamilton. Title abstract index records reviewed for the property indicate that the Crown Patent for all 100 acres was granted to James Durham in 1811, then purchased the following year by John Forsyth. He subsequently sold a 38.8 ha (96-acre) portion to Andrew Flock for £175 in 1818. The remaining 1.6 ha (4 acres) were acquired by David Richerdale in 1827, who held it until 1850 when it was purchased by Daniel Gage for £150.

The 1851 agricultural census for Barton Township confirms that Mr. Gage and Mr. Flock were each farming their respective portions of Lot 4, Concession 4, in addition to other lands in the same concession. It is unlikely that either individual resided within the limits of 111 Kenilworth Access, given the topography, and for the same reason it is unlikely that the property was ever under cultivation. In 1855, Mr. Gage sold this portion of Lot 4 to Joseph Lester for £120.

On May 21, 1857, Thomas Keefer reported to the Board of Water Commissioners that a favourable location for a distributing reservoir had been found on the northwest corner of Lot 4, Concession 4 (James and James 1978:48-49). At 57.9 m (190 feet) above Lake Ontario, a reservoir at this location would reduce stress on the system because water could be pumped and distributed with the assistance of gravity. The Board of Water Commissioners agreed, and on June 25, 1857 directed the City to purchase 1.6 ha (4 acres) from Messrs. Lester and Forsyth. Nearly a month later, the contract to build the reservoir was awarded to the firm of A. P. MacDonald, with William Hendrie as subcontractor (*Canadian Illustrated News* 1863; James 1998). The reservoir, designed by Keefer himself, was to be an oval-shaped basin, 7.6 m (25 feet) deep, and lined puddled clay on the base and sides. This clay was to be covered by a layer of broken stones, then a layer of rubble masonry (Figure 8) (James & James 1978:41). The 11-millon gallon capacity reservoir was fed by a 0.46 m (18-inch) cast iron main from the engine house at the beach and distributed water through a large main running along Main Street East to James Street South. The reservoir valve was officially turned on by Adam Brown, Chairman of the Board of Water Commissioners, in 1859 (Hamilton Museum of Steam and Technology 1859).

After the Barton Reservoir was completed, a large residence and outbuildings were built for the Waterworks superintendent (hereafter Superintendent's Residence) immediately to the east of the basin and before the turn of the century the grounds were also the site of public gardens known as 'Reservoir Park' (Figure 9, Figure 11, Figure 10, and Figure 12). Later, a 0.51 m (20-inch) diameter standpipe, a turbine wheel, and two additional intake pipes were added to the reservoir to improve the pressure and output of the distribution system (Hamilton Spectator December 1, 1892; City of Hamilton 1903). After the James Street Reservoir was constructed in 1896, the Barton Reservoir functioned as an emergency reserve (Campbell 1966:214). This function continued until 1958, when its reserve role was superseded by the Kenilworth Reservoir and use of the Barton Reservoir was discontinued (Figure 13 and Figure 14).

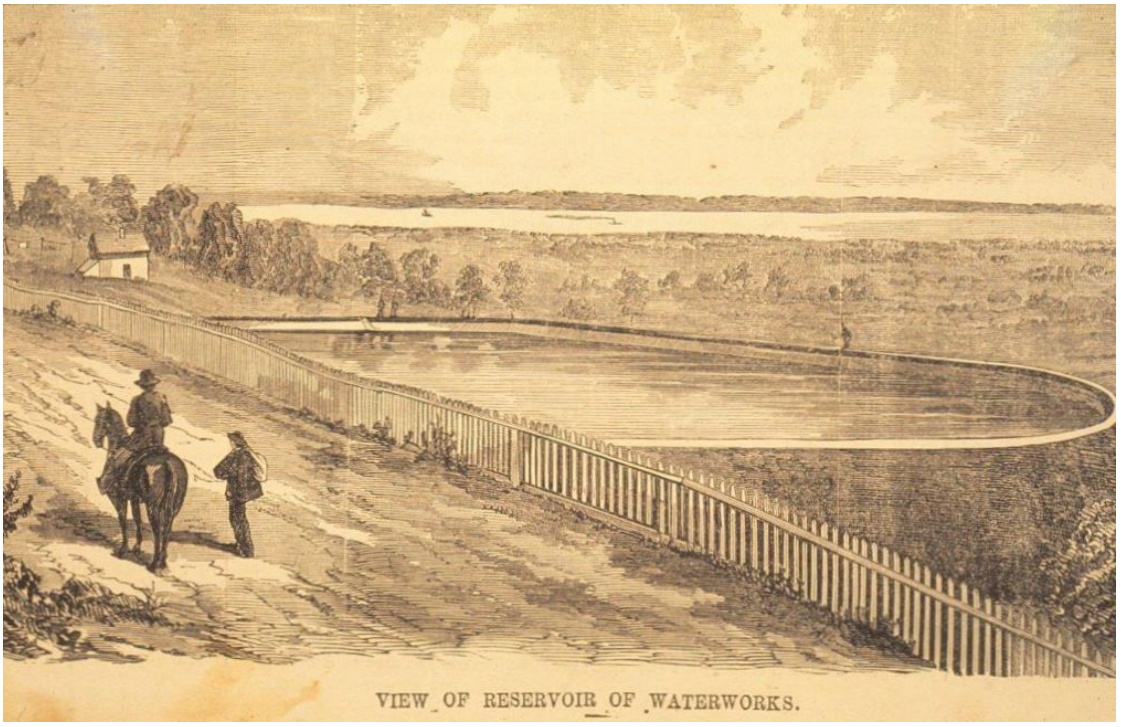

Figure 8: The Barton Reservoir as depicted in the 1863 Canadian Illustrated News.

Figure 9: Circa 1970s photograph of the Superintendent's Residence.

Figure 10: The Barton Reservoir in 1903 showing the Superintendent's Residence immediately east of the basin (Spectator Printing Company 1903).

Figure 11: Postcard of Reservoir Park also showing Superintendent's Residence, 1910 (VRL 2017).

Figure 12: Detail of the Board of Park Management Map, 1930 (courtesy City of Hamilton).

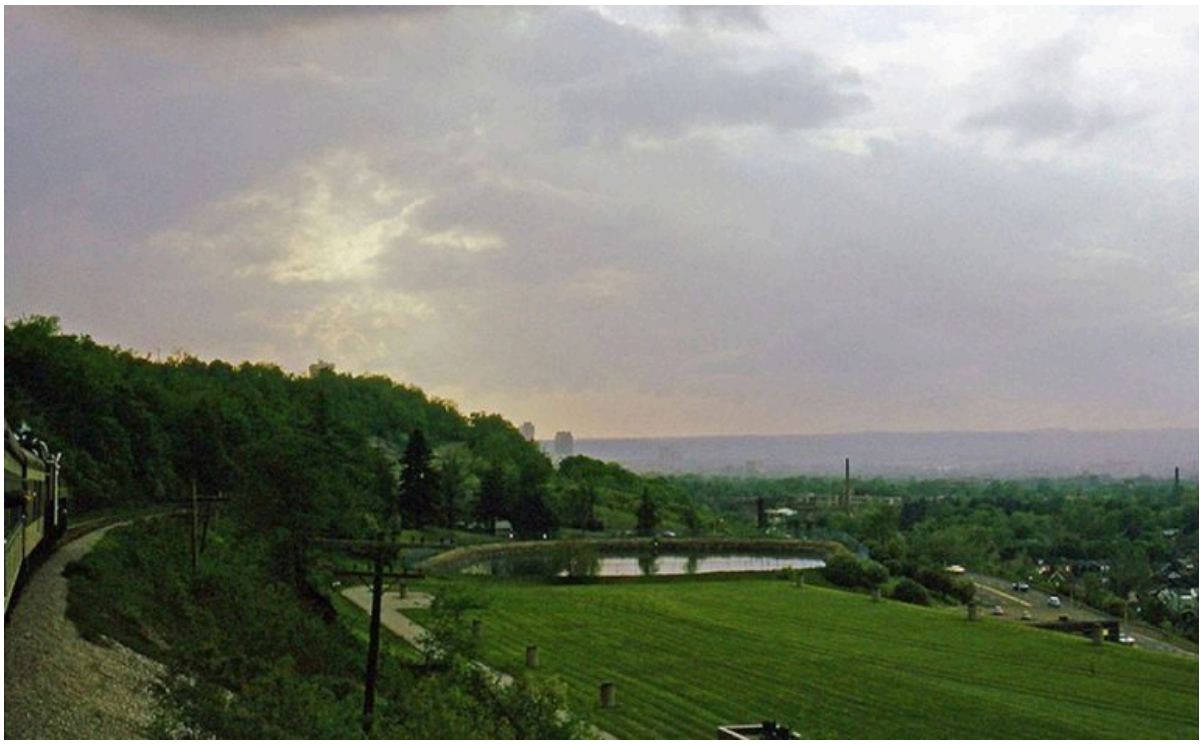

Figure 13: Post 1958 view of the Kenilworth and Barton Reservoirs (from Brouwer 2015).

Figure 14: Barton Reservoir in the 1980s (photo by Beverly Martin, Vintage Hamilton 2016).

5.0 PROPERTY DESCRIPTION

This section provides an inventory of landscape and built features on the 111 Kenilworth Access property. A plan of the lot and its major built elements are illustrated in Figure 15.

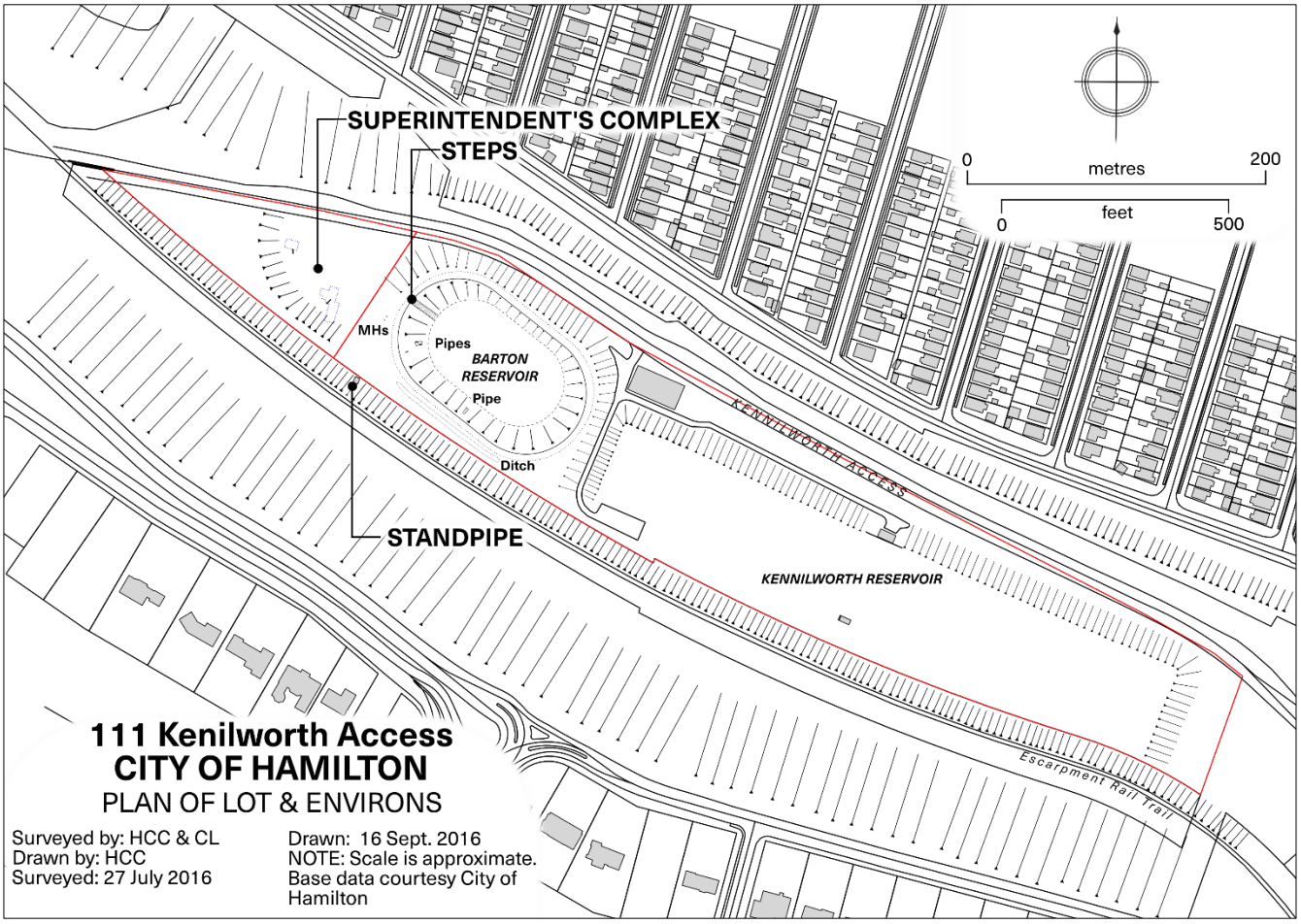

Figure 15: Plan map of 111 Kenilworth Access.

5.1 Setting

Although within a predominately urban environment, the property's immediate surroundings still retain many natural elements of the Escarpment, including its steep and undulating topography that descends at a 12.5% slope or by 15 m within the middle of the property alone (140 mASL to 125 mASL) (Figure 16). This slope is less severe on the eastern third of the property and is mediated elsewhere by terracing for the Barton and Kenilworth reservoirs, but on the north side of both reservoirs the slope again drops precipitously, in some cases by as much as 22%. On the flat section of Kenilworth Reservoir is mown grass, while over the eastern half of the property and on the slopes south of Kenilworth Reservoir there is heavy vegetation cover including a wide range of deciduous trees such as beech and maple, as well as a thick understory of deciduous bushes and grasses (Figure 17). In the eastern third of the property are also a number of conifers, a small meadow of tall grasses, and large sections of wild berry and poison ivy (Figure 18). As the photo from the 1980s shows, this is all relatively new growth (Figure

14). With the exception of the northwest corner of Barton Reservoir, where there is standing water and tall cattail reeds, the property is well drained.

The steep slopes of the property have predicated the built features of the property to be arranged in a linear fashion along a generally east-west orientation. On the west is the meadow, archaeological features of the Superintendent's Residence and a small driveway and rectangular gravelled area, while to the east are large valve manholes, the Standpipe and Barton Reservoir. East of this is the Kenilworth Reservoir with associated buildings and drainage ditches situated on its north, east and south edges.

Access to the property is possible on the north from Kenilworth Access at two points: one via a disused asphalt and gravel driveway that leads to the east and to the gravel lot (Figure 19), and the other by paved driveway immediately east of the Kenilworth Reservoir pumphouse. This road forks as it ascends the slope, with one branch leading south to a small utility structure and an electrical building on the southwest corner of Kenilworth Reservoir and the other leading to east the central access housing. However, both of these vehicle routes are blocked by chain-link gates and therefore non-restricted access is only possible by climbing the pedestrian stairs from near the corner of Kimberly Drive and Kimberly Way, approximately 240 m southeast of the property, then travelling on foot approximately 830 m along the former Hamilton and Lake Erie Railway, now the Escarpment Rail Trail (Figure 20). From here there is an unmarked and steep trail into the property immediately west of the Standpipe. A number of chain-link fences cross the property, one that encloses much of the area east of Barton Reservoir, and another that bisects the property between the two reservoirs. A fourth chain-link fence runs north-south along the east property line.

Views both into and out from the property are inhibited by the heavy vegetation cover in all but the mown area over Kenilworth Reservoir. The Standpipe can be seen from the Escarpment Rail Trail but even this is largely obscured by trees, and in some places the brush cover is so thick that the bottom of Barton Reservoir cannot be seen when standing at its upper edge. Although a significant earthwork, the sides of Barton Reservoir cannot be clearly identified when looking east from Kenilworth Access (Figure 21), and when looking west from Kenilworth Reservoir. In summer it is also virtually invisible from the Escarpment Trail. From any point on the mown area over Kenilworth Reservoir are expansive views of the City and Lake Ontario, but views into these same observation points are limited by vegetation on the east and west, and the viewplanes up the steep slopes on the north side of the property.

Figure 16: View facing south from the south limit of the Barton Reservoir looking up the slopes up the Niagara Escarpment.

Figure 17: View facing west of the Kenilworth Reservoir (foreground) and Barton Reservoir beyond.

Figure 18: Meadow in the west portion of the property, west of Barton Reservoir.

Figure 19: View facing east of the disused driveway on the west side of the property.

Figure 20: View facing west of the Escarpment Rail Trail. The masonry of the Standpipe is partially visible on the right of the trail (red arrow).

Figure 21: View of the west extent of the property, facing east from the Escarpment Rail Trail.

5.2 Built Features

5.2.1 Barton Reservoir

Barton Reservoir is stadium-shaped and measures approximately 454 feet east-west and 241 feet north-south, and reaches a depth between 23 feet and 40 feet (the former is based on field measurements taken by handheld GPS, and the latter based on contour data provided by the City). As these measurements and historic photographs show, the depth is not uniform and increases from gradually sloping sides on the south to steeper sides on the east and west, and a more vertical face on the north (Figure 22 and Figure 23). As originally designed, the reservoir had a volume of 11-million gallons (41,639,529.6 litres).

Construction around the top 11 feet of the reservoir is in ashlar mud or clay blocks that have a coarse grit or aggregate surface and measure 15 ¼ by 7 ½ inches (Figure 24 and Figure 25). The remainder of the construction is in large, coursed and squared limestone rubble measuring between 9 by 2 ¾ inches and 2 feet by 1 ¾ feet (average, 2 feet by 4 inches) (Figure 26, Figure 27, and Figure 28). Although placed on the ground as a surface for the basin, the rubble blocks have been laid with their bedding planes perpendicular to the surface beneath, as if they were the veneer of a standing wall. In areas where some of the coursed rubble has been removed, the sub-base of stone chippings is exposed, and since the stone type is the same as the coursed rubble layer above, may have been produced from rough-shaping the coursed stones (Figure 29). No excavations were carried out to reveal the surface beneath the stone chippings, but if the reservoir was built to Keefer's specifications, the base should be a layer of puddled clay (Keefer 1856:17; James & James 1978:41).

Descending from the west side of the reservoir is a set of eleven low-relief steps bordered by wide and low-relief stringers. For the top steps the construction is in 24-inch concrete pavers with 7 ½ inch wide stringers, while at roughly the half-way point these transition to squared rubble steps that vary in width from 25 inches to 28 inches and have stone stringers with a relatively uniform 8-inch width. However, these stringers vary in length between 13 inches and 29 ½ inches (average 20 inches). The width of the stone step treads also vary, from 18 inches to 21 inches, while the concrete treads are a uniform 13 inches (Figure 30 and Figure 31).

Two large iron pipes enter the reservoir at approximately mid-height of the basin's south side and are both 20-inches in diameter with 26-inch diameter female openings. The east pipe extends from the reservoir wall approximately 55 ½ inches (Figure 32), while more of the western pipe is more exposed and supported by a rectangular base of red bricks bonded with a hard white lime mortar that once formed part of the pipe housing (Figure 33 and Figure 34). A smaller, 12-inch diameter pipe with an 8 ½ inch pipe soldered into the female end is exposed southeast of the east pipe (Figure 35).

On the south and west sides of the basin are a number of related features. Approximately 9 feet south of the basin is a 12-foot wide by approximately 3-feet deep ditch that runs east-west and parallel with the reservoir wall (Figure 36). The full extent of this ditch could not be determined but it is presumed to run the full length of the reservoir. Immediately southwest of the reservoir are two 24 ¾-inch diameter iron manhole covers spaced 33 ¾ inches apart. In the centre of each is a 5 ¼-inch diameter hole that opens into the manhole, the depth of which was greater than could be measured with the available instruments. Both manhole covers are cast iron and have letters 'HWW' (for Hamilton Water Works) around a central, 21 ¾-inch diameter relief section that originally housed a valve assembly (Figure 37, Figure 38, and Figure 39).

Figure 22: View facing west showing the gradual slope on the south side of the reservoir.

Figure 23: Circa 1912 view of the reservoir, facing west (courtesy HMST).

Figure 24: View facing south of the clay block section around the top of the south portion of the reservoir.

Figure 25: Detail of the ashlar clay block construction.

Figure 26: View facing south of the coursed rubble construction.

Figure 27: Detail of the coursed rubble construction.

Figure 28: Coursed rubble construction near the centre of the reservoir.

Figure 29: Exposed section of the stone chipping sub-base.

Figure 30: View facing west of the stone and concrete steps from near the base of the reservoir.

Figure 31: Circa 1912 photograph of Adam Brown standing at the base of the stone steps (courtesy HMST).

Figure 32: View facing southeast of the east pipe.

Figure 33: Brick base of the west main pipe.

Figure 34: Circa 1970s photograph of the east main pipe and housing (courtesy HMST).

Figure 35: The small east pipe.

Figure 36: View facing west of the ditch south of the reservoir.

Figure 37: One of the manhole covers west of the reservoir.

Figure 38: View facing southeast of the manhole covers west of the reservoir.

Figure 39: Circa 1912 photograph of Adam Brown turning one of the valves over a manhole cover west of the reservoir (courtesy HMST).

5.2.2 Standpipe

The free-standing, two-stage Stand Pipe is 10 feet 2 inches square in plan, and over 28 feet 11 inches in height (top of foundation plinth to middle railing of platform) (Figure 40, Figure 41, and Figure 42). The bottom stage includes a plinth foundation constructed with a top course of large ashlar blocks (averaging 2 feet 9 inches by 15 ¾ inches by 15 inches) with a cylcopean (rock or quarry faced) rustication and tooled and chamfered margins, and lower courses of both large and medium-sized quarry-faced stone laid in coursed, random-range ashlar (Figure 43). Due to the slope these lower courses are only visible on the east, north and south faces. On the east two courses are visible, while three courses are visible on the north face, and on the south face there are as many as four courses. Here, however, the construction includes sections of small coursed rubble with wide mortar joints (Figure 44).

For the gradually tapering wall above the masonry is squared rubble laid in random-range interrupted coursing with large quoins. This is capped by the second stage, which is a stone platform formed with a corbel and top course of large and narrow stone slabs with cyclopean rustication and tooled margins. Access to the platform is via a ladder on the north face that is made of welded iron pipe and descends to approximately half-way up the north face of the first stage. It is connected to a double railing that encloses the platform and is made of iron piping and elbow and tee fittings. Rising from the centre of the platform is a tall and large-diameter straight-pipe riveted casing made with rolled metal sheets and held with large and closely-spaced iron rivets (Figure 45). Two guide wires, one on the north and the other on the south, run from the platform handrail to near the mouth of the casing and are presumably to prevent the casing from bending or toppling in heavy wind.

Figure 40: The west and south sides of the Standpipe.

Figure 41: North and west sides of the Standpipe.

Figure 42: East side of the Standpipe.

Figure 43: The north and west sides of the plinth and wall of the first stage.

Figure 44: The west side of the plinth and wall of the first stage.

Figure 45: The platform and riveted casing of the second stage, facing north.

5.2.3 Hydrant

A small hydrant is also reported to be on the property, but could not be located during the field survey. However, a hydrant was recorded during the 2016 ‘Jane’s Walk Hamilton’, and a plan for ‘Hamilton Water Works Hydrant No.1’ bearing Keefer’s signature and dated to 1859 was found in the HMST collections (Figure 46 and Figure 47). The plan does not indicate whether it was for Barton Reservoir but does appears to be similar to the recorded hydrant.

Figure 46: Hydrant photographed during the 2016 ‘Jane’s Walk Hamilton’ (@PipelineTrail 2016).

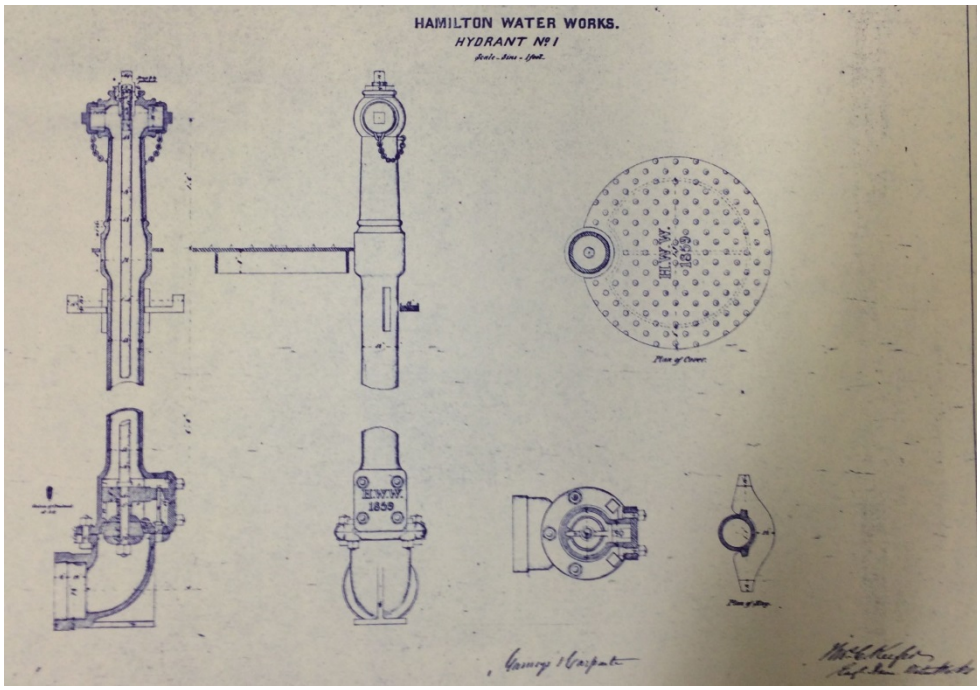

Figure 47: Hydrant plan signed by Keefer in 1859 (courtesy HMST).

5.2.4 Superintendent's Residence & Reservoir Park

Relatively few records exist of the Superintendent's Residence and Reservoir Park, but enough to gain a general understanding of the complex and its history. In the 1863 *Canadian Illustrated News* depiction of the reservoir a small, single-storey house is west of the basin and has just a central door, rear lean-to, and a small central stack emerging from a gable roof. Also shown is a tall palisade fence running along the road-side that seems to pass close to the reservoir (Figure 8).

A painting by John Herbert Caddy dated to 1866 also has a small house west of the reservoir but he drew two windows either side of the central door and the lean-to with a gable roof. Caddy also illustrated a small fenced compound east of the house, and the road now travelling upslope to the south and away from the reservoir. A path that appears to follow the route of the 1863 road can be seen going past the reservoir and cutting through the forest to the east (Figure 48).

When this building was replaced by the subsequent Superintendent's Residence is unknown but the style of the house bears many similarities with an Italianate design proposed in the 1865 edition of *The Canada Farmer*, and could pre-date 1870 (Blumenson 1990:58-59). Two-storeys in height, the Superintendent's Residence was constructed in red brick accented with dressed stone window lintels and segmental relieving arches with buff brick voussoirs, and had a frontispiece with perforated bargeboard and king post at the cross-gable. Console brackets lined the moulded frieze under the eaves of the building's hip roof and flat roof for the closed porch, the latter of which also had turned wood columns and a double leaf entrance with large transom and glazed and panelled doors. The house had a number of tall chimneys, and a single-storey wing with open verandah supported by turned wood posts and flanked by elaborate brackets and fretwork (Figure 9 and Figure 49). A large wing off the southeast corner is seen only in air photos but may have been added by 1927; its shape and association with the gardens of Reservoir Park suggests it may have been a greenhouse.

Northwest of the Superintendent's Residence is what appears in the 1927 air photo to be a garage, and two more buildings had been added to the complex by 1965; one is listed as a 'front garage' and had a single-bay entrance (Figure 50 and Figure 68), while a much smaller 'tool shed' had been erected between the front garage and the residence.

It is also unknown when the area was developed as 'Reservoir Park' but it may have been in place as early as 1908, when a postcard of a scene in the park was published (Figure 11). An undated postcard may date to the same period (Figure 51). These show neatly manicured lawns, a variety of coniferous and deciduous trees, and ornamental ponds, gardens, bushes, and hedges, as well as relatively clear views up the Escarpment. Circa 1912 photos and a 1913 postcard shows footpaths and conifers lining the reservoir, and the conifers around the reservoir remained a distinctive feature of the property until shortly after 1950 (Figure 52 to Figure 57). Their removal may have coincided with construction of the new Kenilworth Reservoir, but the use of the property as a park continued until shortly after 1974, when all the buildings of the Superintendent's Residence complex were demolished.

Archaeological remnants of the complex were found on the surface during the field investigations, and included brick, mortar, and concrete debris and a section of wall constructed in cut stone (Figure 58 and Figure 59). Artifacts such as part of a ceramic vase and window glass were also seen on the ground. That some of the demolition debris is in relatively large piles suggests it was moved there by heavy equipment, although the find locations appear to correlate with where the Superintendent's Residence and the earliest garage could be relocated using GIS overlays. Heavy vegetation growth and poison ivy prevented a systematic surface inspection of the area.

Figure 48: View of the Barton Reservoir by John Herbert Caddy, circa 1866 (courtesy HMST).

Figure 49: Circa 1912 photograph of the Superintendent's Residence, gardens, and paths (courtesy HMST).

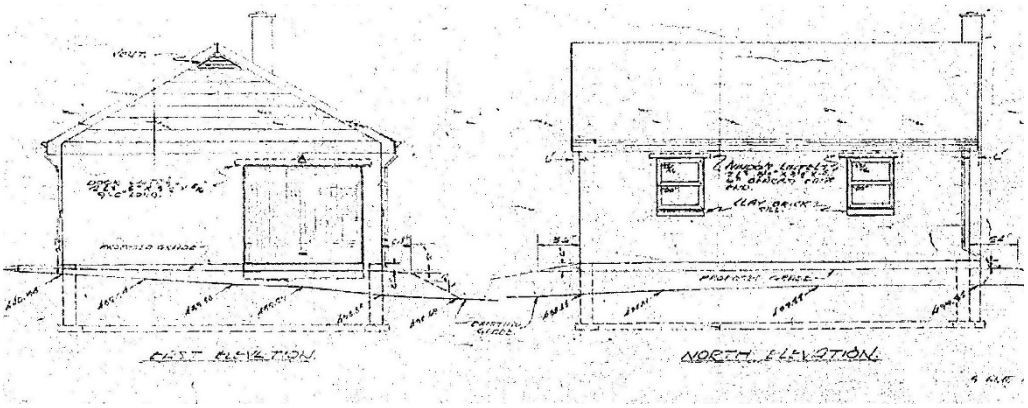

Figure 50: Elevations of the 'front garage', circa 1930-40s (courtesy HMST).

Figure 51: Undated (early 20th century) postcard of Reservoir Park (hamiltonpostcards.com).

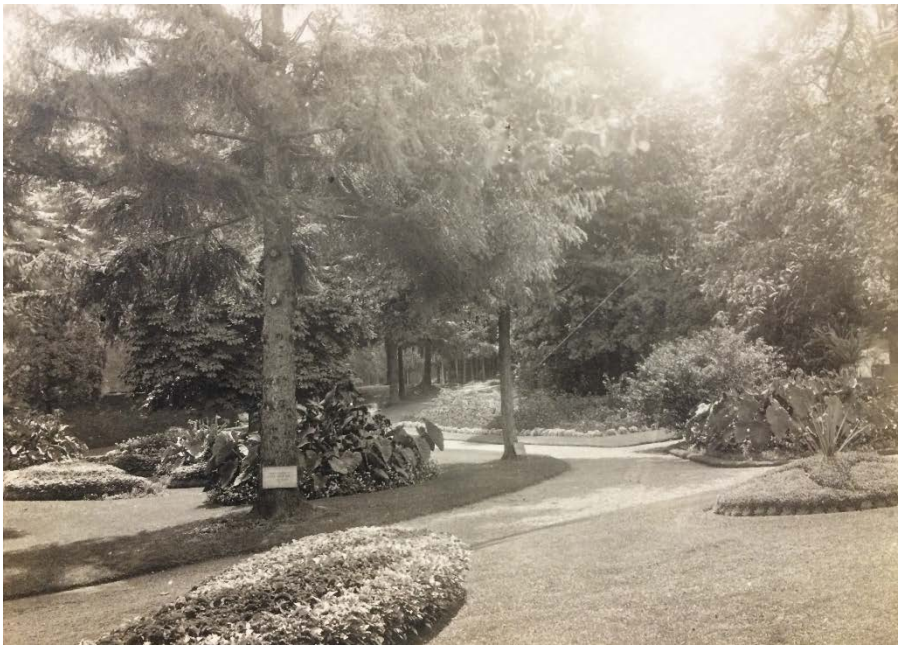

Figure 52: Circa 1912 photograph of the gardens at Reservoir Park (courtesy HMST).

Figure 53: Circa 1912 photograph of the gardens at Reservoir Park (courtesy HMST).

Figure 54: Circa 1912 photograph of the gardens at Reservoir Park (courtesy HMST).

Figure 55: 1913 postcard of Reservoir Park (hamiltonpostcards.com).

Figure 56: Circa 1912 photograph of the conifers surrounding Barton Reservoir (courtesy HMST).

Figure 57: 1930 postcard showing the conifers surrounding Barton Reservoir (hamiltonpostcards.com).

Figure 58: Worked stone and demolition debris found in the former Superintendent's Residence/ Reservoir Park.

Figure 59: Ceramic and glass artifacts on the surface in the former Superintendent's Residence/ Reservoir Park.

5.2.5 Kenilworth Reservoir

Kenilworth Reservoir is substantially larger than the original facility, and measures approximately 1,168 feet east-west, by 328 feet north-south. The largest element is the covered reservoir or cistern, which is vented by two rows of tall concrete pipes with stainless steel caps running along its north and south sides (Figure 60 and Figure 61). Although topped by mown grass, the walls of the underlying construction can be clearly seen in aerial photos taken during dry periods. At the south-centre border of the reservoir is a storey-and-a-half brick building with gable roof and cross-gables, and a single door and venting, while at the far southwest corner is a poured concrete structure built into hillside that also has a single door and venting (Figure 62 and Figure 63). Approximately 25 m north of the concrete structure is a portable electrical building elevated on a concrete slab (Figure 64). Near the south access road is a large and windowless brick and concrete pumphouse building that has a flat roof, venting, a recessed side entry, and a stylized depiction —rendered in metal strips— of a person carrying water buckets from a shoulder pole or yoke (Figure 65 and Figure 66). On the north-central side of the reservoir and at the east end of the access road is a square, storey-and-a-half building to house access to the reservoir (Figure 67). Roman relieving arches augment the brick construction, and the building is flanked by two concrete retaining walls. Elsewhere on the site are surface or elevated manholes (one with a date of 1952 and another with 1960), and running along the south boundary of the reservoir is a formed concrete ditch. At its eastern extent is a concrete surface drain that extends upslope to the southeast.

Figure 60: View of Kenilworth Reservoir facing west from near the southeast corner of the reservoir.

Figure 61: The concrete vent pipes on the north and south boundaries of the reservoir.

Figure 62: View facing southeast of the brick building in the south-centre portion of the reservoir.

Figure 63: Concrete structure at the southwest corner of the reservoir.

Figure 64: The electrical building near the southwest corner of the reservoir.

Figure 65: The pumphouse at the northwest corner of the reservoir.

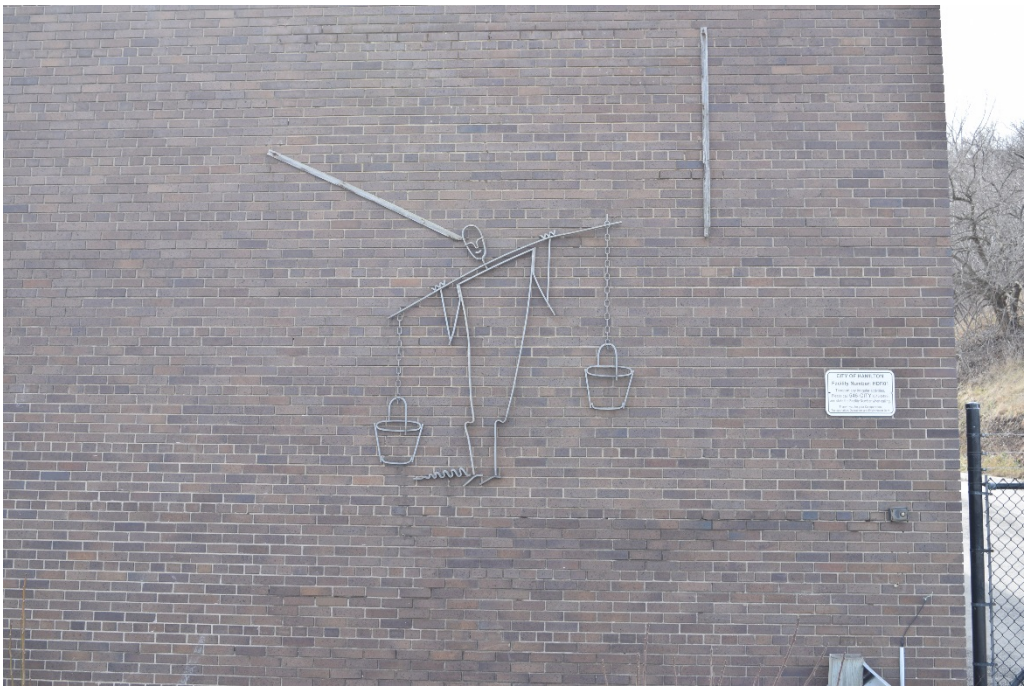

Figure 66: Art installation on the north wall of the pumphouse.

Figure 67: Brick access building with Roman relieving arches.

5.3 Interpretation

5.3.1 Structural Sequence

Like many historic properties in Hamilton, the number of structural sequences evident at 111 Kenilworth Access are relatively few. However, from a combination of field investigations and historical data, at least four phases can be defined for the property. Developments in the last two phases are also illustrated in Figure 68.

5.3.1.1 Phase 1: circa 1856-1866

The first phase represents construction of Barton Reservoir between 1856 and 1860, and its elements as depicted by Caddy in 1866. Elements of this phase include the:

- Stone and clay block masonry, and earthworks, of Barton Reservoir;
- Stone section of the access steps on the west side of Barton Reservoir;
- East and west large diameter cast iron pipes that empty into Barton Reservoir;
- Ditch along the south border of Barton Reservoir; and,
- Small house and associated fences of the Superintendent's complex.

5.3.1.2 Phase 2: 1866-1958

This phase includes all additions to the west portion of the property and prior to construction of Kenilworth Reservoir. These features include:

- Stone and metal construction of the Standpipe;
- Cast iron manhole covers;
- Superintendent's Residence, garage, and greenhouse;
- Conifer plantings around Barton Reservoir; and,
- 'Reservoir Park' with garden with ponds and ornamental plantings.

5.3.1.3 Phase 3: 1958 to circa 1980

This phase represents construction and operation of Kenilworth Reservoir, and the continued maintenance of Barton Reservoir and Superintendent's complex. Features of Phase 3 include the:

- Construction of reservoir and buildings for Kenilworth Reservoir;
- The 'front garage' and tool shed for the Superintendent's complex;
- Removal of the conifers surrounding Barton Reservoir; and,
- Maintenance and operation of Reservoir Park.

5.3.1.4 Phase 4: circa 1980 to present

Elements of this period encompass the general reduction in land use over the past thirty to forty years and includes:

- Demolition of the Superintendent's Residence and associated buildings;

- Unchecked vegetation growth of the west half of the property; and,
- Vandalism of the Standpipe and Barton Reservoir.

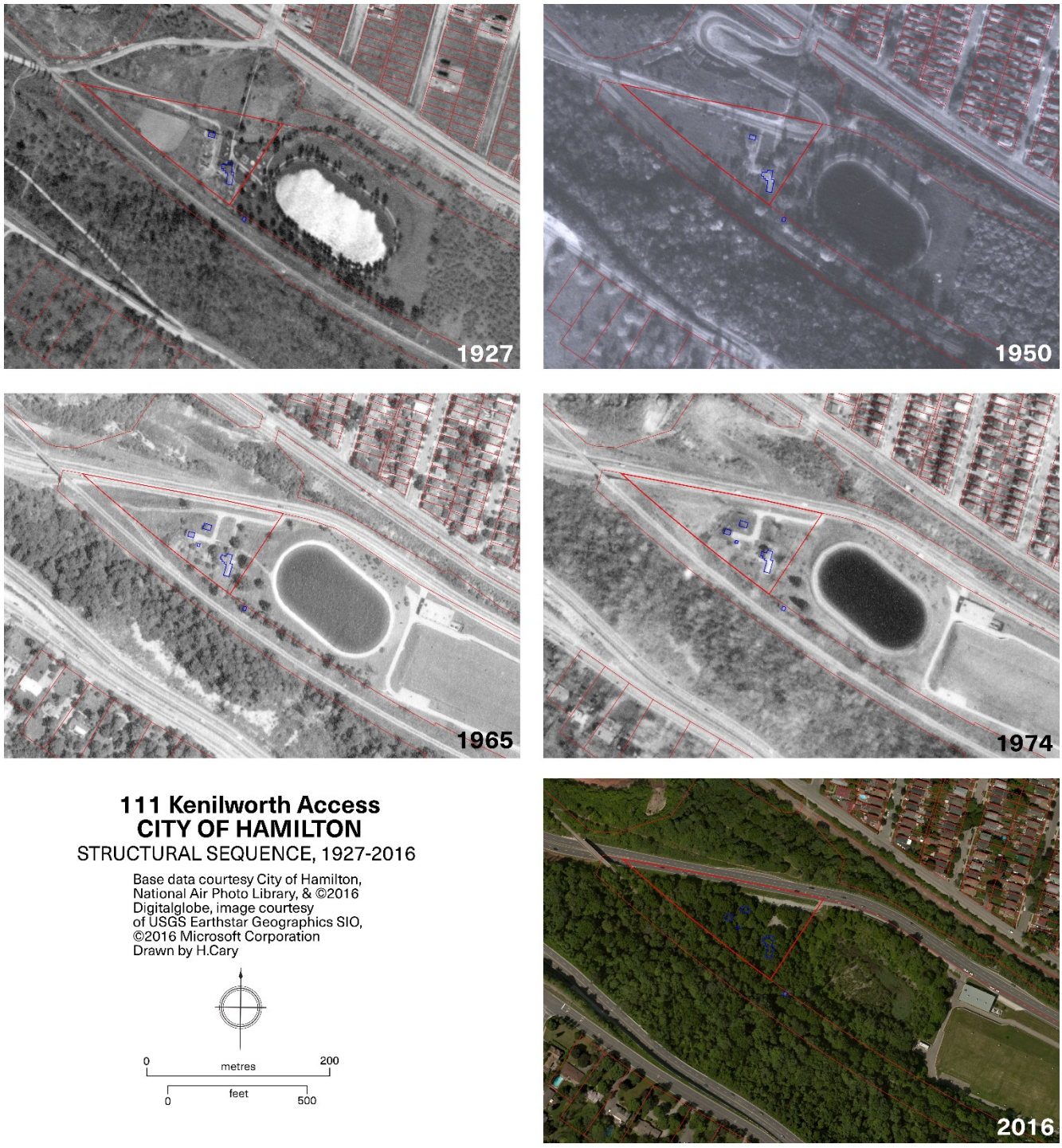

Figure 68: Air photo sequence for the west portion of the property, 1927-2016. The Standpipe and buildings of the Superintendent's complex are outlined in blue.

5.3.2 Analysis

Today the Barton reservoir, with what are experienced as scattered and overgrown features, is a difficult complex to understand in isolation, and a lack of historical accounts combined with few published studies on similar systems —such as those designed by Keefer in Montreal, Toronto, and Ottawa— further compounds the issue. Analysis of the property therefore relies heavily on an archaeological interpretation of the physical remains, and placing these within their historical engineering, geographical, and social, context.

From these physical remains it is clear that building the reservoir was labour intensive, with preparation of the site including not only mining into the Escarpment for the basin, but also forming huge earthworks to support its east, west and south sides. Stone for the reservoir lining may have been procured as a by-product of the basin mining although it could also have been imported along with the puddled clay and ashlar clay blocks. Dressed stone for the later Standpipe construction was definitely imported and all of these materials —since the construction pre-dated the nearby railways— required difficult and challenging overland transport by road. Labour too would have to come from a distance to what was then a relatively remote rural area.

Keefer's placement of the reservoir suggests that the varying natural topography of the Escarpment factored into his decisions, and necessitated changing the course of the pipeline to the south by over 60 degrees at Main Street East, rather than continuing in a straight line toward the Escarpment near the end of Gage Avenue South. The straight line route to Gage Avenue South was only about 200 m longer from the Main Street East junction than the line south along Ottawa Street South to the Barton Reservoir, but the engineering considerations must have been such to warrant the change in course. Even with this slightly shorter route to the reservoir, the distance between the reservoir and the waterworks by the lakeshore was a considerable 5.4 km, requiring construction and operation of one of the largest steam pumps ever erected in Canada.

Barton Reservoir's construction and location were thus key determinants in the architecture and power required at the other end, and it played a fundamental role in the extensive and sophisticated system that supported Hamilton's growth over the late 19th century and into the 20th century. Although well outside the City when the waterworks system was inaugurated by the Prince of Wales in 1860, in under a century the reservoir was surrounded on all sides by residential development and had been relegated to a back-up system, then made obsolete altogether by construction of the Kenilworth Reservoir in 1958. This obsolescence was not the result of a failed engineering experiment but rather a product of the system's success; by providing water to the embryonic city for fire suppression and disease-free consumption, Hamilton could expand exponentially into its rural countryside.

In its obsolescence, and collection of inter-related but separate built features such as the reservoir, standpipe, ditches, manholes, and archaeological remains, Barton Reservoir can be understood as a *relict cultural heritage landscape*, yet one that extends historically and functionally to include the Pipeline Trail and Hamilton Waterworks NHSC. This landscape context could also be extended into the City to include the surviving and tangible markers of the City's pride in its water system. At a number of prominent locations throughout Hamilton, including the centre of the commercial core at Gore Park, the City's municipal water supply was displayed and celebrated through large public fountains. These served not only for enjoyment, but also to illustrate the narrative of human engineering as a force that could overcome the challenges of nature and disease to harness water for public benefit (Osbaldeston 2016:60; Hammel 2012).

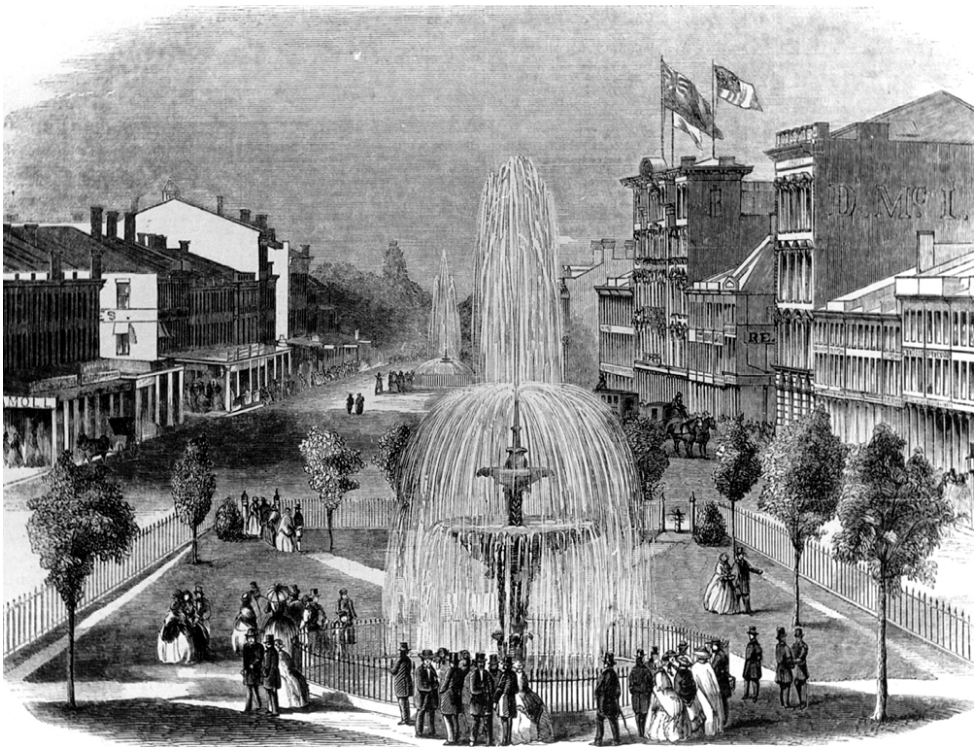

Figure 69: 1860s view of the fountain at Gore Park (University of Toronto Fine Art History Slide Collection, http://www.fineart.utoronto.ca/canarch/ontario/hamilton/hamilton.jpgs/20-134.jpg)

6.0 CULTURAL HERITAGE EVALUATION

Based on the determination of the property as a relict cultural heritage landscape, the following evaluation follows the City's guidance category for built heritage and cultural landscapes, and references the *Ontario Regulation 9/06 Criteria for Determining Cultural Heritage Value or Interest*.

6.1 Historical Associations

6.1.1 Thematic

Although the Barton Reservoir predates Hamilton's period of most significant growth and success beginning in the 1870s, investment in an extensive waterworks system and commissioning a prominent engineer to construct it were an early indication of Hamilton's moniker as 'the Ambitious City', and the scale and efficacy of the system was an important precondition for ensuring that the City could expand and prosper. Provision of water would also become a source of civic pride for Hamiltonians in the 19th century, one reinforced through numerous public fountains and lush gardens. This sentiment was sustained after the height of Barton Reservoir's service through development of the grounds as a park and ornamental garden and with a large and ornate Superintendent's building, but can also be seen in the elements of Kenilworth Reservoir, which included preservation and maintenance of the original reservoir and Superintendent's complex until 1980, and through decorative elements in the construction such as Roman relieving arches and an art installation.

6.1.2 Event

The property is not *directly* associated with a specific event that has made a significant contribution to the community, province or nation. However, it is associated with the official opening of the Hamilton Waterworks by the Prince of Wales in 1860, and there is a possibility that inspection of the Barton Reservoir was part of the Prince's itinerary during his time in Hamilton.

6.1.3 Person and/or Group:

The property is associated with prominent local citizen Adam Brown and hydraulic engineer Thomas Coltrin Keefer. Adam Brown played a pivotal role in initiating and completing the waterworks system as chairman of the Board of Water Commissioners, and evidently took great pride in all elements of the construction. The series of photographs now in the HMST collection taken in 1912 shows Brown standing next to a conifer he planted on the property 'on the completion of the Barton Reservoir', at the foot of the stone steps, and turning a valve at the reservoir (Figure 7, Figure 31, and Figure 39).

The location, design, and construction of the Barton Reservoir can be directly attributed to the expertise of Thomas Coltrin Keefer, whose publications and work at Montreal had made him a household name by the time he was commissioned for the Hamilton Waterworks. His reputation only grew after the success of the Hamilton system and over his subsequent career. Today Keefer is still recognized as one of 'North America's foremost hydraulic engineers' (Anderson 1988:206), and commemorated as a National Historic Person of Canada.

The Barton and Kenilworth reservoirs are also associated with the City's water department, who are not only charged with the high level of responsibility required to provision an efficient and safe water supply for all of the City's residents, but also have maintained the property's facilities, gardens, and buildings for the past 160 years.

6.2 Architecture & Design

6.2.1 Architectural merit

As a functional engineering work, the Barton Reservoir's architectural merit is derived from its 'monumental' construction in clay, stone, and earthworks. For the time period, and in its rural setting, preparing the basin with puddled clay and stone chip sub-base, laying the coursed rubble and clay block lining, and installing the piping, ditching, and earthen embankment to defined specifications all represented a mammoth engineering effort. Similarly, the height, slanted walls, and heavy dressed stone construction of the Standpipe not only has architectural merit as a rare surviving example of its type, but also one rendered on a challenging site location. It is a testament to the structures' designers and builders that the Reservoir and Standpipe remain substantially intact after 160 years. Although there are few studies on contemporary reservoirs in Canada, it is likely that the reservoir and associated elements is a rare and unusual example of its type, age, construction for the entire country. The Kenilworth Reservoir is more typical of 20th century municipal works construction although the decorative elements are relatively unusual features.

6.2.2 Functional merit

Although no longer in use, Barton Reservoir's functional merit continues as a critical element for understanding Keefer's design for the Hamilton Waterworks system. The volume, shape, and profile of the reservoir, as well as associated elements such as hydrants, valve covers, and Standpipe were all integral to the operation of the Waterworks, as was the ditching and earthworks for reducing erosion, overtopping, and preventing the tremendous volume of water from washing out the construction. This vital functional role for the City's water supply continued with construction of Kenilworth Reservoir.

6.2.3 Designer

In siting, design, and construction the Barton Reservoir is a direct reflection of Keefer's high level of technical expertise as a designer of large municipal works, but also his foresight for civic water needs and an ability to scale his ideas to the local budget. Of the system's components, Keefer's design for the Hamilton Waterworks NHSC have received the most attention and study but other elements, such as the pipeline and Barton Reservoir, are equally reflective of Keefer's understanding of the terrain, local needs and economy, and a practical vision for the City's future.

For Kenilworth Reservoir, information on the individuals responsible for its design and construction could not be found. Similarly, the public park and associated Superintendent's Residence is unattributed but was a designed landscape with extensive hedges, ornamental pools and garden bed, paths, and tree plantings maintained by at least two full-time gardeners (a head and assistant).

6.3 Integrity

With the exception of the former Superintendent's complex demolished sometime after 1974, the heritage integrity of the property is high. Surprisingly, no elements of Barton Reservoir were destroyed in 1958 to make way for Kenilworth Reservoir, and most of these original features have survived intact despite minimal or no maintenance over the past 40 years. Barton Reservoir and associated elements appear to have undergone only minor modification during their period of use, such as replacement of the top portion of the access steps in concrete. Preservation of archaeological remains of the Superintendent's complex and Reservoir Park is also presumed to

be high based on the presence of surface finds, the limited use of the area, and a lack of evidence for significant earthmoving.

However, this integrity is currently under threat from unauthorized access and unchecked vegetation growth. Visitors have removed several sections of Barton Reservoir's coursed rubble lining and in one location have piled stones to create a large fire pit (Figure 70). It is likely that the heat from this fire in turn damaged the *in situ* stones of the lining beneath. The base of the Standpipe has also been damaged by fire and other forms of vandalism (Figure 43). Vegetation growth in the basin is dislodging the coursed rubble lining and impacting the puddled clay and chipped stone sub-base (Figure 71), as well as cracking the ashlar blocks up the upper lining. The surface of the clay blocks is also being damaged by minor foot traffic in some areas on the south border of the reservoir.

Figure 70: A large fire pit found in the south-central portion of Barton Reservoir made of stone scavenged from the basin lining.

Figure 71: Root action dislodging stones of the coursed rubble lining of Barton Reservoir.

6.4 Environmental Context

6.4.1 Landmark

Of the property's elements, Kenilworth Reservoir is the most visually recognizable landmark due to its large size and cleared earthworks that can be seen from the foot of the Escarpment and along Kenilworth Access. For pedestrians on the Escarpment Trail, the Standpipe is a recognized historical landmark even if its function is not understood by many, and its connection to the reservoir is obscured by heavy vegetation. Other features of the property, such as Barton Reservoir and associates ditches and manhole covers are obscured by vegetation and difficult to access, and therefore have low landmark value today. However, this status is a recent development; in 1863 Barton Reservoir was noted as 'a favourite spot to wander about: the view from it is magnificent' (*Canadian Illustrated News* 1863), and until at least the 1980s the reservoir was a prominent feature celebrated in numerous postcards and published photographs.

6.4.2 Character

With its steep slopes and heavy vegetation over much of its western extent, the property continues the natural character of the Escarpment. However, over much of the past century the area immediate to the reservoir would have been cleared for the rail lines, roads, and reservoirs. Within the property the intact artificial landforms and continuity of municipal water system elements between the Kenilworth and Barton Reservoirs continue the 'industrial' or municipal works character of the place. The character of the former residence and public park is no longer apparent due to earthmoving and heavy vegetation growth.

6.4.3 Setting, Sense of Place, Serial Vision, and Material Content

Like the property's character, the integrity of setting remains high despite the unchecked vegetation growth. The relationship with the topography and natural character of the Escarpment remains clear and unhindered, and although high trees and brush partially obscure views to the east and west, there are still clear sight lines to the City (which relied on the water source), the trees lining the Pipeline Trail, the Hamilton Waterworks NHSC chimney, and Lake Ontario from on top of the Kenilworth Reservoir and embankment of the Barton Reservoir (Figure 72). From this location there is also a strong sense of place, given the vistas and elevation above the City.

A strong sense of place is also experienced from three other locations: when standing on the former rail line next to the Standpipe, when standing on the top section of Kenilworth Reservoir, and when standing at the base of Barton Reservoir. However, the visual connections between these elements is inhibited by vegetation growth. The thick vegetation on the property along both Kenilworth Access and Escarpment Trail also prevent any cohesive serial vision when travelling on these routes by vehicle or on foot, respectively. The same issue prevents the property from having a favourable material content; although now and increasingly 'natural' environment, the vegetation in the west portion of the property is primarily new growth and highly varied, and masks the aesthetics of the natural slopes and artificial earthworks, and as well as the curved lines of the reservoir, the proportion and symmetry of the Standpipe, and any remnant of the former park gardens. For the eastern portion of the property, the ventilation stacks, angular and functional architecture, and use of concrete for retaining walls and ditches all serve to reduce the material content of Kenilworth Access.

Figure 72: Panorama of the view facing north from Kenilworth Reservoir.

Social Value

6.4.4 Public perception

The historical and social value of City's first water system is formally recognized through designation of the Hamilton Waterworks as a national historic site, as a Civil and Power Engineering Landmark, as protected heritage property under Part IV of the *Ontario Heritage Act*, and through Thomas Coltrin Keefer's commemoration as a National Historic Person of Canada. In 1990, it was noted to the Historic Sites and Monuments Board of Canada that the 'Hamilton Waterworks occupies a notable place in the history of urban water supply in Canada,' and is the 'oldest surviving example of a Victorian water-supply building in the country'. Elsewhere in the same report it is described as 'the best surviving example of a pre-1900 pumping waterworks in Canada'. Seventeen years later these statements remain true, but could be extended to include Barton Reservoir and the Pipeline Trail and state that the Hamilton Waterworks is the oldest and best surviving example of a Victorian water-supply *system* in Canada.

As mentioned above, the value of the Hamilton's waterworks for the social and physical health of residents was pivotal to the City's success. Today, the social value of the City's water system —and by extension the reservoirs— is perhaps best summarized by the slogan for Hamilton Water: 'Water is Life'. Unfortunately however, the once valued Barton Reservoir that featured in postcards and referenced in local newspapers is now the least well-known of the system's elements and in declining condition. It is only peripherally mentioned in Historic Sites and Monuments Board Agenda Papers and other recent histories, and has received limited attention in the past decade with the exception of the 2009 designation request, through blog posts, and as part of a 'Jane's Walk'.

6.5 Evaluation in Reference to *Ontario Regulation 9/06*

For the reasons stated above, 111 Kenilworth Access also meets all criteria of *Ontario Regulation 9/06:*

1) The property has ***design value or physical value*** because it:

Criteria	Evaluation
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Meets criterion. See Section 6.2.1.
ii) Displays a high degree of craftsmanship or artistic merit.	Meets criterion. See Section 6.2.1.
iii) Demonstrates a high degree of technical or scientific achievement.	Meets criterion. See Section 6.2.1.

2) The property has ***historic value or associative value*** because it:

Criteria	Evaluation
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	Meets criterion. See Section 6.1.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	Meets criterion. Further historical and archaeological study of Barton Reservoir has the potential to yield further information on the personnel and operations of the City's Water Department as well as its importance to Hamiltonians as a municipal water supply and recreational garden (see also Section 6.1.3).
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	Meets criterion. See Section 6.1.3.

3) The property has ***contextual value*** because it:

Criteria	Evaluation
i) Is important in defining, maintaining or supporting the character of an area.	Meets criterion. See Section 6.4.2

Criteria	Evaluation
ii) Is physically, functionally, visually or historically linked to its surroundings.	Meets criterion. See Section 6.4.3.
iii) Is a landmark.	Meets criterion. See Section 6.4.1.

7.0 CULTURAL HERITAGE VALUE: CONCLUSIONS & RECOMMENDATIONS

7.1 Recommendations

This cultural heritage evaluation of 111 Kenilworth Avenue concludes that the property is of cultural heritage value or interest since it meets all but one of the City's heritage evaluation criteria for built heritage and all but three for cultural heritage landscapes. Additionally, the property meets all criteria of *Ontario Regulation 9/06*.

Golder therefore recommends that:

- The property be considered for designation under Part IV of the *Ontario Heritage Act* and be added to the City's *List of Designated Properties and Heritage Conservation Easements under the Ontario Heritage Act.*

Although beyond the scope of an evaluation report, Golder also recommends the following short and long term conservation actions to improve the property's cultural and physical integrity.

7.1.1 Short-Term Actions

Golder recommends that in the near future the City should:

- Clear all vegetation currently impacting the stone and clay block lining of the Barton Reservoir;
- Increase security at the property and prevent vandalism to the surviving features of the Barton Reservoir; and,
- Initiate a combined heritage conservation plan and management plan to guide the protection and preferred conservation treatment (preservation, rehabilitation, or restoration) of the east portion of the property (Barton Reservoir and associated features, and the former Residence and public park), and to explore options for future use of the property. Options could include:
  - Re-opening the east portion of the property as a public park with walking trails connected to the Escarpment Trail;
  - Installing interpretive signage explaining the extant Barton Reservoir features;
  - Archaeological excavations to re-locate and partially expose or demarcate the foundations of the former Residence complex; and,
  - Provide opportunities for public events such as guided tours or experiences in public archaeology.

7.1.2 Long-Term Actions

Golder recommends that in the next five years the City should:

- Submit a request that a description of the Barton Reservoir's character-defining elements be added to the entry in the *Canadian Register of Historic Places* for the Hamilton Waterworks NHSC;
- Submit a request to the Historic Sites and Monuments Board of Canada that the Barton Reservoir and Pipeline Trail be added to the designated place of the Hamilton Waterworks NHSC as the earliest surviving example of a municipal water supply system in Canada;
- Consider drafting development controls for new construction in the east end of the City that protect the important sightlines and visual connections between the Barton Reservoir, the Pipeline Trail, and the Hamilton Waterworks NHSC; and,
- Initiate a heritage evaluation of the Pipeline Trail as a substantial and well-preserved landscape component of the Hamilton Waterworks system connecting the Barton Reservoir with the Hamilton Waterworks NHSC.

Since 111 Kenilworth Access was determined to be a property of cultural heritage value or interest, Golder has prepared a draft Statement of CHVI.

7.2 Statement of Cultural Heritage Value or Interest

7.2.1 Description of Property – 111 Kenilworth Access

The Barton and Kenilworth Reservoirs, at 111 Kenilworth Access in the east end of the City of Hamilton, are situated on a long and narrow 8-hectare terrace below the crest of the Niagara Escarpment, between the former Hamilton and Lake Erie Railway (now the Escarpment Trail) and the Toronto, Hamilton and Buffalo Railway. The property includes mid-to-late 19th century elements associated with the Barton Reservoir, a component of Hamilton's first municipal waterworks, which were superseded in the mid-20th century by the Kenilworth Reservoir and associated structures.

7.2.2 Statement of Cultural Heritage Value or Interest

The property that includes the Barton and Kenilworth Reservoirs is of cultural heritage value for its architectural, associative, and contextual elements, and collectively as a cultural heritage landscape. Constructed as a key element of the Hamilton Waterworks between 1856 and 1857, the Barton Reservoir is an 11-million gallon (3,785,412 litre) capacity, stadium-shaped basin lined with coursed limestone rubble and ashlar clay blocks, and supported on three sides by substantial earthworks. Associated with the basin are three cast-iron pipes that empty into the basin, stone and concrete access stairs, cast-iron manhole covers for the valve shafts, and a two-stage standpipe built in ashlar limestone. East of the reservoir was the former Superintendent's Residence and public gardens, which were removed after 1970. To the west is the large and subterranean Kenilworth Reservoir, constructed in 1958, and its associated brick and poured concrete facilities. Kenilworth Reservoir is still in use, but the west portion of the property where Barton Reservoir stands is covered in thick vegetation growth.

Barton Reservoir is of cultural heritage value as a component of the Hamilton Waterworks National Historic Site of Canada, the earliest surviving municipal waterworks system in Canada and one designed by Thomas Coltrin Keefer, an influential and highly respected hydraulic engineer recognized as a National Historic Person of Canada. Keefer selected the site for the reservoir and specified its construction in a combination of clay and stone. Under the leadership of Chairman of the Board of Water Commissioners Adam Brown the reservoir was completed as

part of the larger waterworks infrastructure for an official opening by the Prince of Wales in 1860. Shortly afterward Barton Reservoir was upgraded with a stone standpipe and turbine, and a two-storey Italianate Superintendent's Residence surrounded by public gardens was built nearby. Of these later features only the standpipe remains but it is of historical and physical value as a rare and well-preserved example of its type. The later Kenilworth Reservoir is of associative value for its connection to Hamilton's large and complex urban water supply system, and the use of the property for municipal waterworks for 160 years.

Although now overgrown with vegetation, the Barton Reservoir has a high level of heritage integrity for its physical remains and the visual and historical connections it maintains with other elements of Hamilton Waterworks system, specifically the Pipeline Trail and the Hamilton Waterworks near the Lake Ontario shore. As an element of Hamilton's first municipal waterworks, the Barton Reservoir played a critical role in the City's 19th century expansion and development into one of Ontario's major population and industrial centres. The efficiency of the waterworks system became a source of civic pride for Hamiltonians, as represented by the numerous public fountains including the central Gore Park, and in the beautification of Barton Reservoir as a public park.

7.2.3 Description of Heritage Attributes

The key attributes that support the design or physical value of Barton Reservoir include its:

- Large, stadium-shaped reservoir with:
  - Lining of puddled clay, stone chippings, and coursed rubble and clay blocks;
  - Large cast iron pipes, one supported on a brick pad;
  - Stone and concreted access stairway; and,
  - Large earthen embankment;
- Two-stage standpipe with:
  - Slanted walls constructed in large ashlar rusticated stone with cylcopean (rock or quarry faced) rustication and tooled and chamfered margins chiselled margins; and,
  - Intact riveted iron casing with guide wires; and,
  - Access ladder and railing made using iron pipe and elbows;
- Features associated with reservoir including the cast iron valve manhole covers, hydrant, and wide drainage ditch; and,
- Archaeological remains of the Superintendent's Residence complex and Reservoir Park.

The key attributes that support the historical and contextual value of Barton Reservoir include its:

- Expansive and clear views of the City of Hamilton, the Pipeline Trail, the Hamilton Waterworks National Historic Site, and Lake Ontario.

The key attributes that support the design or physical, historical or associative, and contextual value of Kenilworth Reservoir include its:

- Brick pumphouse with metal strip art installation;
- Brick reservoir access structure with Roman relieving arches;
- Visual linkage to Barton Reservoir and continued use of the property for the City's municipal water supply; and,
- Expansive and clear views of the City of Hamilton.

8.0 BIBLIOGRAPHY

@PipelineTrail
2016 Twitter post: Enjoyed these vestiges of the Barton Reservoir @JanesWalkHamOnt @SurpriseHammer Great tour! [Online] https://goo.gl/56xaTz

Anderson, Letty
1988 Water Supply. In *Building Canada: A History of Public Works.* Pp. 195-220. Norman R. Ball, ed. University of Toronto Press, Toronto.

Bell, Gordon
n.d. University of Toronto FAH 376S Canadian Architecture Visual Reference Library: Fountain, King Street [Hamilton]. [Online] https://goo.gl/QYrU82

Blumenson, John
1990 *Ontario Architecture: A Guide to Styles and Building Terms, 1784 to Present*. Fitzhenry & Whiteside, Toronto.

Brouwer, Joachim
2015 Hamilton's First Reservoir. The Point – A Publication of the Crown Point Community Planning Team. [Online] https://goo.gl/Du8Kp1

Canada's Historic Places
2017 The Register: Hamilton Waterworks National Historic Site of Canada, 900 Woodward Avenue, Hamilton, Ontario, Canada. [Online] https://goo.gl/Mc95lP

Canadian Illustrated News
1863 Hamilton and Its Water Works. September 26, page 222.

Canadian Society of Civil Engineering (CSCE)
2017 Technical Paper Awards. [Online] https://csce.ca/technical-paper-awards

Campbell, Marjorie Freeman
1966 *A Mountain and a City*. McClelland and Stewart Limited, Toronto/Montreal.

Chapman, Lyman John and Donald F. Putnam
1984 *The Physiography of Southern Ontario*. 3rd ed. Ontario Geological Survey Special Volume 2. Ontario Ministry of Natural Resources, Toronto.

City of Hamilton
2013 *A Framework for Evaluating the Cultural Heritage Value or Interest of Property for Designation under Part IV of the Ontario Heritage Act.* City of Hamilton, Hamilton.
2010 2010 Rate Book: Historical Highlights – Celebrating 150 Years of Municipal Drinking Water, Parts I & 2. Hamilton Water, Hamilton.
2007 *Hamilton's Heritage Volume 1: List of Designated Properties and Heritage Conservation Easements under the* Ontario Heritage Act*.* [Online] https://goo.gl/GRPjzN
1903 *Annual Report of City Engineers*. City of Hamilton, Hamilton.
n.d. *City of Hamilton Cultural Heritage Assessment Report Outline.* City of Hamilton, Hamilton.

Clark, Kate
2001 *Informed Conservation: Understanding Historic Buildings and their Landscapes for Conservation.* English Heritage, London.

Crossman, Kelly & Leslie Maitland
1977 Hamilton Waterworks, 900 Woodward Ave., Hamilton, Ontario. Historic Sites and Monuments Board of Canada Agenda Paper 1977-53. Parks Canada, Ottawa.

Drakich, Sophie
1990 Hamilton Waterworks, 900 Woodward Ave., Hamilton, Ontario. Historic Sites and Monuments Board of Canada Agenda Paper 1990-57. Parks Canada, Ottawa.

Fram, Mark
2003 *Well-Preserved: The Ontario Heritage Foundation's Manual of Principles and Practice for Architectural Conservation.* Boston Mills Press, Erin, Ontario.

Freeman, Bill
2001 *Hamilton: A People's History*. Lorimer, Toronto.

Gentilcore, R. L.
1969 Lines on the land-crown surveys and settlement in Upper Canada. Ontario History 61.1: 57-73.

Gentilcore, R. Louis, and Kate Donkin
1973 *Land surveys of southern Ontario: an introduction and index to the field notebooks of the Ontario land surveyors 1784-1859*. Cartographica Monograph No. 8. BV Gutsell, Department of Geography, York University, Toronto.

Government of Ontario
1990b *Ontario Heritage Act.* Electronic document: https://www.ontario.ca/laws/statute/90o18?search=heritage+act

Hamilton Spectator
1892 Prompt Pressure Secured: Official Test of the New Reservoir Apparatus. *Hamilton Spectator,* December 1: Page 7, Hamilton.

Hammel, Zach
2012 Modernity in a Monument: Memory and the Gore Park Fountains. In *Ch$_2$olera: Hamilton's Forgotten Epidemics*. D. Ann Herring and Heather T. Battles eds. Pp. 146-153. McMaster University, Hamilton.

James, William
1998 'Hamilton's Old Pump House ...a sufficient quantity of safe and wholesome water...' Electronic resource: https://goo.gl/P7H87n.

James, William and Evelyn M. James
1978 *A Sufficient Quantity of Pure and Wholesome Water: The Story of Hamilton's Old Pumphouse*. Phelps Publishing Company, London.

Keefer, Thomas C.
1856 Report on the Supply of Water to the City of Hamilton. John Lovell, Montreal. Available online Queen's University QSpace https://goo.gl/8aoyFH.

King, John (Editor)
2006 *Understanding Historic Buildings: A Guide to Good Recording Practice*. English Heritage, Swindon, UK.

Malaws, Brian
1997 Process Recording at Industrial Sites. *Industrial Archaeology Review* XIX:75-98

McIlwraith, Thomas F.
1999 *Looking for Old Ontario: Two Centuries of Landscape Change*. University of Toronto Press, Toronto.

Ministry of Tourism, Culture and Sport (MTCS)
2006 *Ontario Heritage Tool Kit: Heritage Property Evaluation – A Guide to Listing, Researching, and Evaluating Cultural Heritage Property in Ontario Communities*. Ministry of Tourism, Culture and Sport, Toronto.
Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process. Ministry of Tourism, Culture and Sport, Toronto.
Ontario Heritage Tool Kit: Designating Heritage Properties: A Guide to Municipal Designation of Individual Properties Under the Ontario Heritage Act. Ministry of Tourism, Culture and Sport, Toronto.
Ontario Heritage Tool Kit: Heritage Conservation Districts: A Guide to Designation Under the Ontario Heritage Act. Ministry of Tourism, Culture and Sport, Toronto.
1990 Municipal Water and Sewage Works: A Guide to the Conservation of Municipal Sewage and Waterworks. Ministry of Culture & Communications, Toronto.

National Park Service
1999 *Guidelines for Evaluating and Documenting Rural Historic Landscapes.* US Department of the Interior, National Parks Service, Cultural Resources, Washington, DC.

Newell, Dianne and Ralph Greenhill
1989 *Survivals: Aspects of Industrial Archaeology in Ontario*. Boston Mills Press, Erin, Ontario.

Osbaldeston, Mark
2016 *Unbuilt Hamilton: The City that Might Have Been*. Hamilton, Dundurn.

Page, Robert R., Cathy A. Gilbert, and Susan A. Dolan
1998 *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques.* U.S. Department of the Interior, National Park Service, Washington.

Page and Smith
1875 *Illustrated Historical Atlas of the County of Wentworth Ontario*. Page and Smith: Toronto.

Palmer, Bryan D.
1979 *A Culture in Conflict: Skilled Workers and Industrial Capitalism in Hamilton, Ontario, 1860-1914*. McGill-Queen's Press-MQUP: Kingston.

Parks Canada Agency
2006 *Canadian Register of Historic Places: Writing Statements of Significance*. Parks Canada, Ottawa.
2010 *Standards and Guidelines for the Conservation of Historic Places in Canada, Second Edition*. Her Majesty the Queen in Right of Canada.
1980 *Canadian Inventory of Historic Building Exterior Recording Training Manual.* Parks Canada, Ottawa.

Peace, Walter G.
1989 Landscapes of Victorian Hamilton: The Use of Visual Materials in Recreating and Interpreting the Past. *Urban History Review* XVIII(1):75-85.

Ross, Susan
2003 Steam or Water Power? Thomas C. Keefer and the Engineers Discuss the Montreal Waterworks in 1852. *Industrial Archaeology* 29(1):49-64.

Schott, Carl
1981 The Survey Methods. Andrew Burghardt, translator. *Canadian Geographer* 25(1). March 1:77–93.

Smith, Wm. H.
1846 *Smith's Canadian Gazetteer*. H. & W. Rowsell, Toronto.

Statistics Canada
2011 Census Profile, City of Hamilton. Electronic resource: www.statscan.gc.ca. Accessed April 2016.

Triggs, John R.
2004 The Mississauga at the Head-of-the-Lake: Examining Responses to Cultural Upheaval at the Close of the Fur Trade. *Northeast Historical Archaeology* 33(1):153-176.

Widdis, Randy William.
1982 Speculation and the Surveyor: An Analysis of the Role Played by Surveyors in the Settlement of Upper Canada. *Histoire sociale/Social History* 15.30

Vintage Hamilton
2016 Facebook: Empty Barton Reservoir, Thanks Beverly Martin. [Online] https://goo.gl/HahQkJ

Report Signature Page

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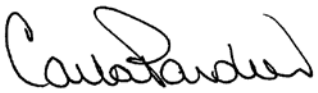

Henry Cary, Ph.D., CAHP
Cultural Heritage Specialist / Archaeologist

Carla Parslow, Ph.D.
Associate, Senior Archaeologist

HC/CP/ly

APPENDIX A

Qualifications Resume, Henry Cary, Ph.D.

Education

Ph.D., War Studies Programme (Military History & Architecture), Royal Military College of Canada, Kingston, Ontario, 2013

M.A., Historical Archaeology, Department of Anthropology, Memorial University, St. John's, Newfoundland, 2004

Combined Honours B.A. (with distinction), Department of Sociology & Anthropology/ and Department of Archaeology & Classics, Wilfrid Laurier University, Waterloo, Ontario, 2000

Certifications

Canadian Association of Heritage Professionals (CAHP)

Ministry of Transport Ontario RAQs-approved for Archaeology/Heritage

Province of Ontario Licence to Conduct Archaeological Fieldwork, Professional Class, No. P327.

ICOMOS Canada Professional Member

ICOFORT Associate Member

Parks Canada Research Permits, 2002-2012, 2015-2016

Certificate in Project Management, Department of Continuing Studies, Dalhousie University, 2014

Languages

English – Fluent

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HENRY CARY, Ph.D., CAHP

Cultural Heritage Specialist / Archaeologist

Dr. Henry Cary has over 15 years of public and private-sector experience directing cultural heritage and archaeological projects in Canadian urban, rural, Arctic and Sub-Arctic environments. He specialises in the historic architecture and cultural landscapes of North America, including industrial and military heritage. In addition to providing heritage evaluations, impact assessments, documentation reports, and conservation and management plans for a wide range of clients and resources, Dr. Cary is skilled in the analysis, digital survey and mapping, and other documentation of complex, multi-component properties, structures, and landscapes. Prior to joining Golder, Dr. Cary was an archaeologist and cultural resource management specialist for Parks Canada, notably for the Fort Henry National Historic Site Conservation Program and Western Arctic Field Unit. He has also served as Heritage Manager for the Town of Lunenburg UNESCO World Heritage Site and consultant for private-sector and research projects in Newfoundland and Labrador, Nova Scotia, Ontario, Alberta, British Columbia, the Republic of South Africa, Italy, and France. Henry is a member of the Canadian Association of Heritage Professionals (CAHP) and ICOMOS Canada, Adjunct Professor in the Department of Anthropology at Saint Mary's University, and Lecturer in the Department of Anthropology at Mount Allison University.

Employment History

Golder Associates Ltd.
Cultural Heritage Specialist / Archaeologist (2015–present)

Saint Mary's University – Halifax, Nova Scotia
Adjunct Professor, Department of Anthropology (2014–present)

Mount Allison University – Sackville, New Brunswick
Lecturer, Department of Anthropology (2016-present)

CH2M HILL – Calgary, Alberta
Archaeology Field Manager (2014–2015)

Town of Lunenburg – Lunenburg, Nova Scotia
Heritage Manager, Corporate Services (2012–2014)

Parks Canada Agency – Inuvik, Northwest Territories
Field Unit Archaeologist/Historian, Western Arctic Field Unit (2009–2012)

Parks Canada Agency – Cornwall, Ontario
Project Archaeologist, Ontario Service Centre (2002–2009)

Ground Truth Archaeology/ Past Recovery Archaeological Services/ Cataraqui Archaeological Research Foundation – Kingston, Ontario
Archaeological survey and mapping services (part-time) (2005–2009)

Memorial University – St. John's, Newfoundland
Project Director, Hoffnungsthal Archaeology Project (2000–2004)

Parks Canada Agency – Cornwall, Ontario
Assistant Archaeologist, Ontario Service Centre (1998, 1999)

PROJECT EXPERIENCE

Heritage Impact Assessment – Former Brantford Public Utilities Commission Water Treatment Complex
City of Brantford, ON

Principal investigator, task manager, and author of a heritage impact assessment for the large and sophisticated Brantford water treatment complex, constructed in phases between 1889 and the late 20th century. Reporting included photogrammetric recording, determining the structural sequence, application of Ontario heritage evaluation criteria to a multi-component industrial site, and coordinating archival research and reporting with junior staff.

Highways 7A & 26 Cultural Heritage Screening
Regional Municipality of Durham, ON

Principal investigator, task manager, and author of a technical memorandum to identify potential heritage properties and cultural heritage landscapes in the study areas surrounding highway culverts. Reporting application of Ministry of Tourism, Culture and Sport cultural heritage screening checklist, consultation with local municipal planners, and developing a new screening report template. As a result of this deliverable, the memorandum format is now being implemented as the appropriate scope and deliverable for all future MTO culvert replacement projects.

Structural Walls Policy Development for the Corporation of the City of Cambridge
City of Cambridge, ON

Principal investigator, task manager, and author of a technical memorandum assessing the heritage potential of structural walls in the City of Cambridge inventory and recommending conservation measures to support the City of Cambridge Asset Management Plan. Complete this assignment required background historical and heritage policy research, imagery-based evaluation, GIS analysis and mapping, and producing a detailed report with practical and cost-effective suggestions to manage the City's historic structural walls.

Heritage Impact Assessment – 64 Main Street West, Downtown Heritage Character Zone
City of Hamilton, ON

Principal investigator, task manager, and author of a heritage impact assessment for a high rise development in the City of Hamilton Downtown Heritage Character Zone. Reporting included field investigations, determining the impact of the development on adjacent listed and designated properties, providing extensive design guidance to ensure the proposed development was compatible with the heritage character zone design guidelines, and coordinating archival research and reporting with junior staff.

Heritage Impact Assessment – 10489 Islington Avenue, Nashville-Kleinburg Heritage Conservation District
City of Vaughan, ON

Principal investigator, task manager, and author of a heritage impact assessment for proposed alterations to an early 20th century residence and store and construction of a new residential and commercial building in the Nashville-Kleinburg Heritage Conservation District. Reporting included field investigations, research on historic views and vistas, determining the impact of the proposed development on the integrity of the existing structures and objectives of the HCD, providing extensive design guidance to ensure the alterations and new development conformed to the HCD plan and guidelines, and coordinating archival research and reporting with junior staff.

Heritage Impact Assessment – Victoria Square Boulevard
City of Markham, ON

Principal investigator and task manager for a heritage impact assessment of a 2.74-km long road improvement project within residential development and a historic hamlet. Reporting included application of Ontario heritage evaluation criteria, determining the impact of the proposed development on 30 known and designated heritage properties and the cultural heritage landscape of the hamlet, and coordinating archival research, mapping, and field investigations with junior staff.

Heritage Impact Assessment – 7714 Yonge Street, Thornhill Heritage Conservation District City of Vaughan, ON	Principal investigator, task manager, and author of a heritage impact assessment for proposed alterations to a mid-19th century Gothic Revival house in the Thornhill Heritage Conservation District. Reporting included field investigations, determining the structural sequence, application of Ontario heritage evaluation criteria, determining the impact of the proposed alterations on the integrity of the structure and objectives of the HCD, and coordinating archival research and reporting with junior staff.
Heritage Impact Assessment – The Anglican Church of St. Thomas Parsonage City of Hamilton, ON	Principal investigator, task manager, and author of a heritage impact assessment for a circa 1870 Anglican Parsonage at 18 West Avenue South. Reporting included photogrammetry, floor plan and interior documentation, staff training on field recording methods, coordinating archival research and reporting with junior staff, and assessment of potential impact on the adjacent municipally designated Church of St. Thomas.
Heritage Impact Assessment – TransCanada Pipelines Vaughan Mainline Extension City of Vaughan, ON	Principal investigator and task manager for a heritage impact assessment of the 12-km long pipeline project west of Kleinburg. Reporting included field investigations of 13 heritage properties, application of Ontario heritage evaluation criteria, coordinating archival research and reporting with junior staff, and securing approvals from the Ministry of Tourism, Culture and Sport.
Heritage Documentation Report – 347 Charlton Avenue West City of Hamilton, ON	Principal investigator, task manager, and author of a heritage documentation report for an early 20th century dwelling in downtown Hamilton. Reporting included producing measured drawings of the property and exterior and interior of the house, staff training on digital and analogue field recording methods, coordinating archival research and reporting with junior staff, and drafting recommendations for artifact curation and re-use.
Heritage Impact Assessment – Residential Development Adjacent to the Power Glen Heritage Conservation District City of St. Catharines, ON	Principal investigator, task manager, and author of a heritage impact assessment for residential development of a large lot adjacent to the Power Glen Heritage Conservation District, a historic community associated with early industry in St. Catharines. The heritage impact assessment required evaluation of 20th century structures on the property and an assessment of potential impact on the properties within the heritage conservation district.
Heritage Conservation Plan – 41 Dundas Street East Town of Oakville, ON	Author and task manager of a heritage conservation plan to guide rehabilitation of a mid-19th century brick farmhouse now surrounded by residential development. The conservation plan made a series of actionable recommendations supported by historic and conservation best practice research, measured drawings, and an implementation schedule.
Heritage Impact Assessment & Documentation Report – The Sawdon Building Town of Whitby, ON	Principal investigator, task manager, and author of a heritage impact assessment and subsequent documentation report prior to commercial development of 244 Brock Street South in downtown Whitby. The heritage impact assessment required evaluation of a former early 20th century coal shed and an assessment of potential impact on two proposed heritage conservation districts. The documentation report included producing measured drawings of the property and exterior and interior of the structure, and drafting text and images for a commemorative panel.

ADDITIONAL PROFESSIONAL MEMBERSHIPS

Association for Industrial Archaeology
Chartered Institute for Archaeologists (Affiliate)
Construction History Society
Council for British Archaeology
Council for Northeast Historical Archaeology
Fortress Study Group
Landscape Survey Group
Society for Post-Medieval Archaeology
Society for the Study of Architecture in Canada
Vernacular Architecture Forum
Vernacular Architecture Group

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