

Crooks' Hollow Conservation Area Draft Management Plan



January 2014

TABLE OF CONTENTS

EXECUTIVE SUMMARY

SECTION 1: BACKGROUND

- 1.1 Study Area Boundary
- 1.2 Cultural History
- 1.3 Management Plan Purpose
- 1.4 Management Planning Process
- 1.5 Summary of Community Input

SECTION 2: GOALS AND OBJECTIVES

- 2.1 Hamilton Conservation Authority
- 2.2 Management Plan Objectives

SECTION 3: PLANNING AND DEVELOPMENT CONTROLS

- 3.1 Greenbelt Plan
- 3.2 Niagara Escarpment Plan
 - 3.2.1 Escarpment Natural Areas
 - 3.2.2 Escarpment Rural Areas
 - 3.2.3 Minor Urban Centre
 - 3.2.4 Niagara Escarpment Parks and Open Space System (NEPOSS)

SECTION 4: NATURAL INVENTORY AND ASSESSMENT

- 4.1 Environmentally Sensitive Areas
- 4.2 Topography
- 4.3 Hydrology
- 4.4 Flora
- 4.5 Fauna
- 4.6 Constraints and Opportunities

SECTION 5: NATURAL FEATURES PROTECTION

- 5.1 Riparian Buffer
- 5.2 Reservoir Remediation
- 5.3 Invasive Species
- 5.4 Encroachment

SECTION 6: CULTURAL HERITAGE PROTECTION

- 6.1 Heritage Sites Inventory
- 6.2 Conservation Study
- 6.3 General Maintenance
- 6.4 Spencer Adventure
- 6.5 Self-Guided Tour/Brochure
- 6.6 Interpretative Kiosk

SECTION 7: DEVELOPMENT RECOMMENDATIONS

- 7.1 Way-Finding Signage
- 7.2 Parking Facilities
- 7.3 Boundary/Access Management
- 7.4 Trails
- 7.5 Trail Improvements and Maintenance

SECTION 8: IMPLEMENTATION AND MONITORING

- 8.1 Implementation
- 8.2 Monitoring
- 8.3 Costs

APPENDIX A: MAPS

- Map 1: Existing Features
- Map 2: Zoning
- Map 3: Constraint Areas
- Map 4: Proposed Development

APPENDIX B: COMMUNITY INPUT

- Comment Sheets
- Email Correspondence

APPENDIX C: OTHER

- Historic Brochure

EXECUTIVE SUMMARY

The Crooks' Hollow Conservation Area Management Plan is the principal guiding policy document for the planning, development and management of the Crooks' Hollow Conservation Area.

Crooks' Hollow Conservation Area is located in the community of Greensville, within the former Town of Flamborough now City of Hamilton. Specifically, this 43 hectare property is situated along the Spencer Creek between Christie Lake Conservation Area and Spencer Gorge- Webster's Falls Conservation Area.

Crooks' Hollow is part of the Niagara Escarpment Parks and Open Space System. Upon approval of the Management Plan by Hamilton Conservation Authority, submission will be made to the Ministry of Natural Resources and Niagara Escarpment Commission for review and approval that the plan conforms to the Niagara Escarpment Plan.

The management strategies are based on site investigations and facility analysis undertaken by HCA staff between May and August 2013. A number of background studies and inventories were reviewed as part of this study including the documentation developed as part of the Environmental Assessment for the removal of the Crooks' Hollow dam. Additional public consultation was generated through a Public Information Centre held in June, and comments received through consultation the consultation period.

The development of concepts, alternatives and management considerations will be released for circulation and response from the general public in September 2013.

The Crooks' Hollow Conservation Area Management Plan sets out park zoning as well as development recommendations to guide management over the next 10 years.

Vision Statement

The Crooks' Hollow Conservation Area, with its riparian landscape, natural environments, trails and cultural heritage features, will provide visitors with a memorable and healthy experience, while ensuring the protection of sensitive natural habitats.

Significant Site Attributes of the Crooks' Hollow Conservation Area

The most prominent natural feature is the Spencer Creek, which flows through the heart of the Conservation Area. The Spencer Creek corridor provides the only natural linkage between the extensive wetlands upstream and the Dundas Valley re-entrant downstream. In this way, the area serves an important hydrological function of maintaining surface water quality, limiting erosion and providing a riparian buffer.

Crooks' Hollow Conservation Area possesses an impressive arrangement of natural and cultural heritage features including:

- Regional Life Science Area of Natural and Scientific Interest and Environmentally Significant Area in Hamilton
- Significant biological communities that are unique both regionally and provincially
- Niagara Escarpment topography and geology
- Significant historical ruins include the Darnley Grist Mill, Morden's Dam, Cockburn Dam/Mill and the Hopkins's House
- Trail connections to Christie Lake CA, Spencer Gorge-Webster's Falls CA and the Bruce Trail

Existing Policy Framework

The Management Plan for the Crooks' Hollow Conservation Area builds on and supports the Hamilton Conservation Authority Strategic Plan 2014-2018 and Provincial Plans including the Niagara Escarpment Plan (2005) and the Greenbelt Plan (2005). Crooks' Hollow Conservation Area is recognized as a component of the Niagara Escarpment Parks and Open Space and is classified as a Historical Park. The proposed zoning for the park includes Natural Zones, Historical Zones and Development Zones.

Summary of Significant Issues and Challenges

Natural Heritage Protection

The conservation area's unique and diverse natural heritage system, as documented within the management plan, is generally protected and secure. However, some deterioration, due to both invasive species and human activity was identified at certain locations along the trail system, highlighting the need for protective measures to be put in place. As part of the updated ecological inventories, several Species at Risk have been identified in the conservation area.

Cultural Heritage Protection

Crooks' Hollow is historically significant area from both a provincial and local perspective. During the early 1800's this area became an important industrial centre for Upper Canada. There are six historical ruins and sites that are found within the study area boundary. Due to a lack of funding and resources, limited attention has been given to the stability and integrity of the ruins over the past twenty years. Certain management steps are now needed to protect ruins from further deterioration. In addition, providing a

renewed emphasis on the interpretation of these interesting historical sites remains an objective.

Facilities and Amenities

The Conservation Area has a main parking lot with an entrance sign, small picnic area, a pay and display fee station, interpretive signage and portable toilet. There is a large pedestrian bridge and viewing areas that have replaced the trail connection over the dismantled Crooks' Hollow dam structure. A 2 kilometre trail links Christie Lake and Webster's Falls including a number of small bridges and boardwalk. In addition, there is also rail fencing and way-finding signage. These site facilities are regularly maintained but require some upgrades in order to provide visitors with a quality outdoor experience.

Recommendations

The management plan identifies a range of improved and/or new facilities to provide enhanced natural heritage protection, visitor experience, cultural heritage interpretation and recreational conveniences. Crooks' Hollow Conservation Area is being positioned as an alternative outdoor destination or access point when Spencer Gorge-Webster's Falls Conservation Area is experiencing peak visitor traffic. Environmental and financial sustainability are defining factors, and in some cases limiting factors, in the proposed management plan recommendations. The main elements of the management plan are as follows:

- Protect and maintain the significant natural and cultural heritage features.
- Implement heritage recommendations from the Heritage Assessment Study done for the Crooks' Hollow dam EA process.
- A system of way-finding, entrance, trail and interpretive signage that is consistently branded and standardized throughout the Crooks' Hollow Conservation Area and other conservation areas.
- Trail improvements including trail drainage and surfacing, additional boardwalk sections, stairways, signage, and phasing out informal trails.
- Promote trail and access linkages between Christie Lake CA, Crooks' Hollow CA, Spencer Gorge-Webster's Falls CA and the Bruce Trail.
- Improve the main entrance drive and parking area facilities and visitor amenities.
- Naturalize the small parking lot located along Crooks Hollow Road.
- Reduce encroachment issues with use of limited property fencing.

Cost Estimate

Total costs to implement the management plan recommendations are \$178,000.

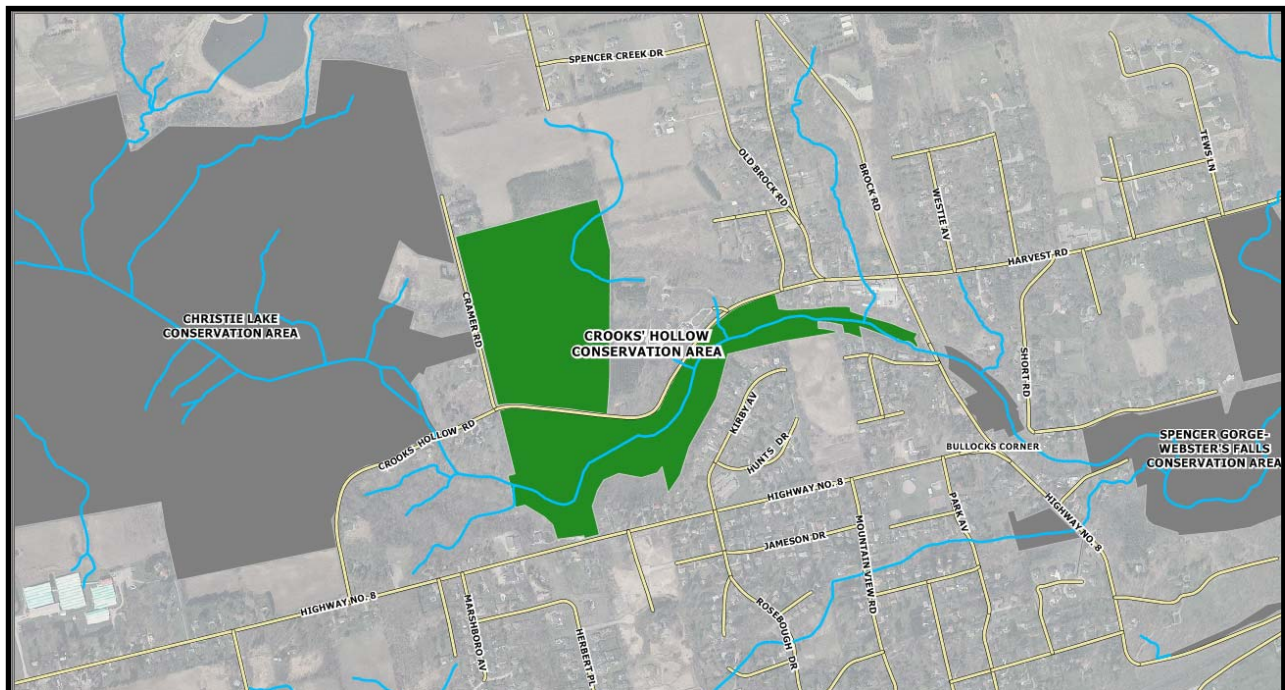
SECTION 1: BACKGROUND

1.1 Study Boundary

Crooks' Hollow Conservation Area is located in the community of Greensville, within the former Town of Flamborough now City of Hamilton. Specifically, these lands are situated along the Spencer Creek between Christie Lake Conservation Area and Spencer Gorge- Webster's Falls Conservation Area. This 43 hectare property is owned by the Hamilton Conservation Authority and managed under the Christie Lake Conservation Area business unit. Figure 1, below, illustrates the location and boundaries (shaded in green) of the study area.

Vehicular access to the Conservation Area is from Crooks' Hollow Road and Brock Road. On a regional scale, the area is in close proximity to Hwy #5 and #8, linking the area to Hamilton and nearby communities in Halton, Wellington, Brant and Waterloo. There are also two additional pedestrian access points located on Kirby Avenue and Crooks Hollow Road.

Figure 1: Study Area Boundary



Crooks' Hollow Conservation Area is one of the environmentally significant areas found within the Spencer Creek watershed. The area contains rocky Niagara Escarpment topography, diverse forest habitats and unique wetland communities. In addition, the Spencer Creek runs through the length of the Conservation Area. The protection of the creek corridor contributes to the health and integrity of the larger natural heritage system within the City of Hamilton and Niagara Escarpment.

Although this area does not draw the large visitations found in the adjoining conservation areas, it is still considered to be a significant local asset. The relatively undisturbed and passive nature of Crooks' Hollow enhances its function as a local use park and open space. The area can also serve a role in providing alternative access and hiking activities to reduce some of the visitor pressure on the Spencer Gorge-Webster's Falls Conservation Area. It also provides a relatively low-key and important open space connection between the much larger adjoining conservation areas.

Crooks' Hollow was Project No. 1, the first conservation area developed by the Spencer Creek Conservation Authority and originally acquired to help protect the municipal water supply for Dundas. The last master plan for the Conservation Area was approved in 1993, making the guiding plan for this area almost twenty years old. Over the past two years, the area has undergone some significant environment changes. The recent removal of the Crooks' Hollow Dam as well as the Master Plan process for Spencer Gorge-Webster's Falls CA, makes this an appropriate time to review and update the management plan for this Area.

1.2 Cultural History

The section of the Spencer Creek located within Crooks' Hollow, is historically significant within both a provincial and regional context. Greensville, along with Dundas, was a hub of early industrial development in Upper Canada. Crooks' Hollow, Bullock's Corner and Greensville grew along or in close proximity to the Spencer Creek.

The water power the creek offered was like a magnet, attracting men to convert its energy into a source of wealth. Within the five twisting kilometres of the Spencer Creek, from before the Beverly boundary to Webster's Falls, the creek drops nearly one hundred feet, which accounts for the fact that there have been over eight milling operations on this short stretch of the creek.



Figure 2: Morden's Dam

James Crooks, an influential entrepreneur, successfully harnessed water power from the Spencer Creek and transformed the area into a prosperous industrial centre in the early 1800s. Morden's Saw Mill (1801), the Darnley Grist Mill (1811) and the Paper Mill (1826) provided jobs and products and increased business opportunities for the

surrounding areas. The Crooks' Hollow and Greensville area also had a tannery, foundry, a blacksmith, an inn and a distillery.

For decades, the area experienced prosperity and growth. However, the construction of the Great Western Railway and changing economics directed passengers, products and trade away from Dundas and Greensville and into Hamilton. The overuse and mismanagement of the creek system also contributed to the decline of growth in this area. Today, only a few ruins remain as visual proof of the area's rich and significant history.

1.3 Management Plan Purpose

The management plan serves as the principal guiding document for the future planning, development and management of the conservation area. It also highlights the objectives, issues and opportunities for the area. The management plan ensures that development and recreational activities permitted within the conservation area are appropriate and adhere to the goals and objectives outlined in the HCA Strategic Plan for 2014-2018. In addition, the Crooks' Hollow Management Plan will fulfill policies of the Niagara Escarpment Plan that requires management agencies to complete master/management plans for each park within the Niagara Escarpment Parks and Opens Space System (NEPOSS).

1.4 Management Planning Process

The management plan is the result of coordinated planning effort between the Land Management Division, Watershed Planning & Engineering Division as well as Customer Services and Park Operations staff. It was a thorough process using background research, data analysis, on-site inventories and investigations, and public consultation sessions.

At the outset of the management plan process, it was agreed that fostering community support for the management plan update was important due to the significant public concerns expressed during the Class Environmental Assessment process for the dam removal. Two Public Information Centres sessions were held during the management planning process. The first Public Information Centre (PIC) was held June, 2013 and the second in October, 2013 at the Christ Church in Greensville. The purpose of PIC #1 was to provide community members with the opportunity to learn more about the scope of the project and to provide their thoughts regarding what should be included in the management plan. The second PIC #2 provided an opportunity for community feedback on the draft management plan which identified the planned improvements to the Area over the next 10 year period.

Community members were invited to attend through email, newspaper notices, and hand-delivered flyers. Additional information, including context maps and the terms of reference were accessible to the public via the HCA website. Approximately 35 people attended PIC #1. The majority of attendees were neighbours to the conservation area. Another 20 people attended PIC #2.

1.5 Summary of Community Feedback

A summary of the comments that were received during the planning development process are included in this section. Copies of the comment forms, emails and other correspondence that was received are included in Appendix B.

There are a number of themes that have been derived from the public comments that were received:

Protection of Natural Features

The majority of those who attended the consultation meeting or submitted comments expressed appreciation for the natural features found within the conservation area. After It is clear that recreational activities, such as bird hiking, dog walking and bird watching are thoroughly enjoyed in this area. Many residents stated that Crooks' Hollow is a place where they go to "restore their spirit" and "rejuvenate their minds" through being in nature. In this regard, public preference is to keep the area as pristine and natural as possible.

Cultural Heritage Features

Residents were very knowledgeable regarding the history of the area. The majority of community members view the historical components of this area to be important and wish to see the historical ruins protected. There were, however, limited ideas about how to promote educational awareness and historical interpretation at the sites of interest.

Recreational Opportunities

The public seems to be relatively content with the park's current uses and the recreational opportunities provided. Most are interested in minimizing park development and are encouraging the HCA to keep the area in its current, passive state. Only a few community members endorsed the idea of making the conservation area more readily accessible to the general public and expanding the recreational facilities.

Residents were concerned that if the area is promoted and marketed, it will simply be used as an "overflow" or "off-shoot" of Spencer Gorge-Webster's Falls CA. Community members wish to maintain the unique historical and environmental characteristics of the creek corridor and thus are wary of changes to recreational uses and development within the conservation area.

Residents suggested that by clearly defining and regulating the park's uses, management strategies could be better planned and issues could be more adequately addressed. For example, if picnicking is to be an endorsed activity, within the conservation area, then picnic tables and waste disposal facilities should be provided. Likewise, if bike riding is permitted, then appropriate trail routes will need to be considered in order to ensure the natural environment is being sustained.

In addition, residents' state that improved trail routes and conditions would help to enhance the recreational enjoyment of the area. One community member mentioned that the main trail from the parking lot was hard to access due to overgrowth and drainage issues. It was also suggested that signage may help to raise awareness regarding the historical and environmental assets of the area.

Elimination of Encroachment and other Negative Behaviours

A number of community members commented that they would like to see the Conservation Authority take stronger measures to address encroachment—particularly the extension of backyards onto the conservation area and cutting of natural vegetation. Others are concerned with the amount of garbage that has been left behind by visitors. They felt that this not only contributes to the degradation of the area's aesthetics, but also the natural features of the area. The current management philosophy has been to "pack out what you pack in". Public opinions suggest that this strategy may need to be reconsidered in order to keep the park clean.

In addition, a few residents expressed their concern with the speed of traffic on Crooks Hollow Road. Although it is not within HCA jurisdiction to lower speed or implement speed bumps on a roadway, it is our goal to ensure a safe experience for our visitors and manage risks within the park. This can be done by directing trails away from the roadway and ensuring appropriate signage at road crossings.

Overall verbal and written comments on the management plan were quite positive and constructive. However there was one element of the proposed plan that a number of local citizens were dissatisfied with. This item was the proposed closure of the old trail section along the Crooks' Hollow Road between the site of the former HCA dam structure and the old Morden dam. A further concern was that the staff had removed a pedestrian trail bridge on this section that was in a state of disrepair. In discussing these concerns with the locals we learned that many people who walked area liked to have the option of a different trail route for their return route. They also indicated that during spring conditions the lower trail may be too wet and muddy to use. They also did not mind that the trail was located immediately adjacent to the road. Although this is a difficult section of trail to manage, staff recommend that this section of trail be maintained and improved to accommodate continued use by pedestrians.

There were a couple of respondents who indicated a desire for a much more manicured approach to the facilities and landscape of the area but they were definitely in the minority. There continues to be some lingering disagreement with the fact the HCA removed the dam but many more people have expressed they are very satisfied with the restoration efforts that were part of the dam removal. They also liked the improvements made to the area in 2013 as part of our commitment to redirect some of the visitor use away from Spencer Gorge-Webster's Falls.

SECTION 2: GOALS AND OBJECTIVES

2.1 Hamilton Conservation Authority

The Hamilton Conservation Authority (HCA) is governed by the Conservation Authorities Act. Section 19 of the Act states:

“The objectives of an Authority are to establish and undertake the area over which it has jurisdiction, a program designed to further the conservation, restoration, development of natural resources other than gas, oil, coal and minerals.”

The Hamilton Conservation Authority is the area’s largest environmental management agency, and is dedicated to the conservation and enjoyment of watershed lands and water resources. The responsibilities involve water resources management to maintain water quality and prevent flooding, the preservation of environmentally sensitive areas, efficient management of recreational resources, and development and delivery of outdoor education programs. The HCA vision and mission statement provide the fundamental framework for this work.

Vision: HCA works to ensure healthy streams and healthy communities in which human needs are met in balance with the needs of the natural environment, now and in the future.

Mission: To lead in the conservation and sustainable management of our watershed’s natural environment.

The Hamilton Conservation Authority’s Strategic Plan 2014-2018 is 5-year plan that charts the course so the HCA can continue to safeguard and enhance our water, natural environment and recreation facilities for the benefit of the watershed residents. The plan identifies five areas of responsibility in the management of the watershed and their lands, and has developed goals for each. The following strategic goals apply to this conservation area.

Responsibility	Goal
Natural Heritage Conservation	Conserve, restore and enhance watershed natural areas and ecological systems.
Conservation Area Experience	Provide customers with high quality, diverse conservation areas to promote outdoor recreation, health and well-being, strengthening public awareness of the benefits of being in or near our conservation areas.
Educational and Environmental Awareness	Provide active outdoor learning experiences for students, teachers, and the community, increasing knowledge and awareness of the value of our environment and heritage.

2.2 Management Plan Objectives

A primary goal of this management plan is to demonstrate how it meets or advances the objectives of the Strategic Plan and creates an optimum balance between environmental protection, resource management and public use.

Objectives of the Management Plan include:

- Protect, restore and enhance the natural ecosystems by ensuring the health and diversity of native species, habitats, landscapes and ecological processes.
- Enhance and interpret the cultural heritage features in a sustainable manner to depict the historical significance of the area.
- Reduce negative behaviors by promoting ongoing public involvement towards a partnership that will foster sustainable living and accomplish watershed management objectives.
- Provide opportunities for appropriate, accessible outdoor recreational activities that are consistent with all other objectives.
- Develop appropriate park zoning, development guidelines and management policies in accordance with NEPOSS.

SECTION 3: PLANNING AND DEVELOPMENT CONTROLS

The Hamilton Conservation Authority must recognize and adhere to a number of provincial policies as it seeks to realize its goals and objectives. These include the Greenbelt Plan and the Niagara Escarpment Plan.

3.1 Greenbelt Plan

The Greenbelt Plan (2005) identifies where urban development should not occur in order to provide permanent protection to the province's agricultural land base and the ecological features and functions within the Greenbelt Plan area. In Hamilton, the area identified for protection includes the Niagara Escarpment Plan Area and the Protected Countryside. The policies of the Niagara Escarpment Plan (NEP) are the policies of the Greenbelt Plan for the Niagara Escarpment Plan Area.

3.2 Niagara Escarpment Plan

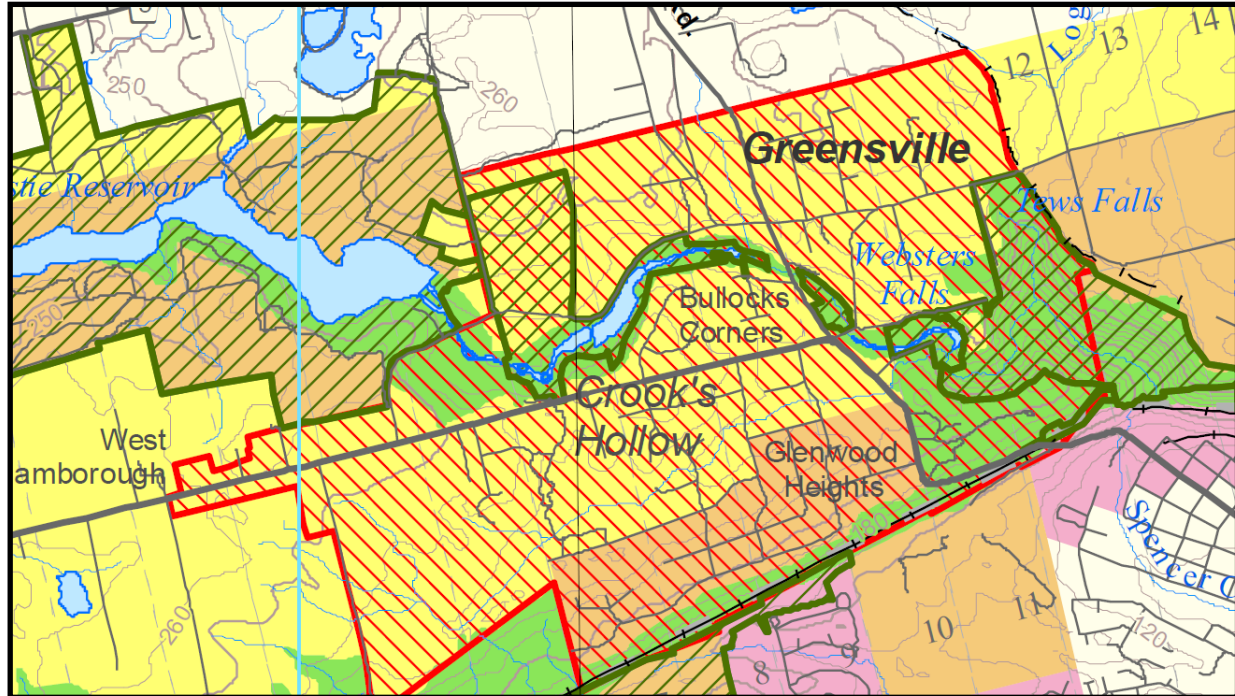
The Niagara Escarpment includes a variety of topographic features and land uses extending 725 kilometers from Queenston on the Niagara River to the islands off Tobermory on the Bruce Peninsula. The Niagara Escarpment is the most prominent natural feature within the City of Hamilton and divides its urban communities into areas with very different characteristics.

The Niagara Escarpment Planning and Development Act established a planning process to ensure that the area would be protected. From this, emerged the Niagara Escarpment Plan (NEP) which serves as a framework of objectives and policies to strike a balance between development, preservation and enjoyment of this important resource. The NEP is the principal provincial planning document to which the Crooks' Hollow Conservation Area must conform.

Figure 2 illustrates that the majority of the study area is designated as *Escarpment Natural Area*. A significant portion is designated as *Escarpment Rural Area*. In addition, the study area is identified as being completely within the *Minor Urban Centre* known as Greenville. The study area is also identified as *Public Lands* within the Niagara Escarpment Parks and Open Space System.

Any development within the NEP area must meet the requirements of the NEP plus the Parkland, Open Space and Trails policies of the Greenbelt Plan.

Figure 3: Niagara Escarpment Designations



3.2.1 Escarpment Natural Areas

The Escarpment Natural Area designation, illustrated in green, includes features which are in a relatively natural state and are the most significant natural and scenic areas of the Escarpment.

The three main objectives of these areas are to:

- Maintain the most natural escarpment features, stream valleys, wetlands and related significant natural areas and associated cultural heritage features;
- Encourage compatible recreation, conservation and education activities; and
- Maintain and enhance the landscape quality of Escarpment features (NEP Policy 1.3).

Some of the permitted uses of relevance to the Management Plan Area include:

- Non-intensive recreation uses such as nature viewing and trail activities except motorized vehicles trails or motorized trail vehicles.
- Forest, wildlife and fisheries management; and
- Uses permitted in Park or Open Space master/management plans which are not in conflict with NEP.

3.2.2 Escarpment Rural Area

The *Escarpment Rural Area*, noted in yellow, is located mainly in the lands north of Crooks' Hollow Road. Pursuant to this NEP designation, these lands are intended to provide a buffer to the more ecologically sensitive areas of the Escarpment.

Three main objectives of these rural areas are to:

- Maintain scenic values of land in the vicinity of the Escarpment;
- Maintain the open landscape character by encouraging the conservation of the traditional cultural landscape and cultural heritage features; and
- To provide a buffer for the more ecologically sensitive areas of the Escarpment (NEP Policy 1.5).

Some of the permitted uses relevant to the management plan area include;

- Forest, wildlife and fisheries management;
- Accessory buildings, structures and facilities;
- Uses permitted in Park or Open Space management plans which are not in conflict with NEP; and

3.2.3 Minor Urban Centre

The entire Crooks' Hollow Conservation Area is located within the Greensville *Minor Urban Centre* (red hatched lines). The principal objective of NEP Policy 1.6 of relevance to the management plan area is to generally direct the growth of the Greensville settlement area *away from the Escarpment Natural Areas and into Escarpment Rural Areas "in a logical manner with the least possible environment and agricultural disruption."*

3.2.4 Niagara Escarpment Parks and Open Space System (NEPOSS)

Part Three of the NEP addresses the Niagara Escarpment Parks and Open Space System (NEPOSS) and sets out policies for a NEPOSS as a framework for the establishment and coordination of a system of publicly owned lands along the escarpment. The concept is for a linear public park system that protects distinctive features and significant areas along the Niagara Escarpment.

The Niagara Escarpment includes more than 130 existing and proposed parks and open space areas within the system, which are generally intended to be linked by the Bruce Trail. The Ministry of Natural Resource (MNR) coordinates the development and administration of the Niagara Escarpment Parks and Open Space System.

The objectives of NEPOSS are:

- To protect unique ecological and historical areas
- To provide adequate opportunities for outdoor education and recreation;
- To provide for adequate public access to the Niagara Escarpment;
- To complete a public system of major parks and open space through additional land acquisition and park and open space planning;
- To secure a route for the Bruce Trail;
- To maintain and enhance the natural environment of the Niagara Escarpment;
- To support tourism by providing opportunities on public land for discovery and enjoyment of Ontario's residents and visitors;
- To provide a common understanding and appreciation of the Niagara Escarpment; and
- To show leadership in supporting and promoting the principles of the Niagara Escarpment's UNESCO World Biosphere Reserve Designation through sustainable park planning, ecological management, community involvement, environmental monitoring, research and education (NEP Policy 3.1.1).

NEPOSS is based on public lands acquired to protect distinctive features and significant areas along the Escarpment such as waterfalls, special plant communities, and wildlife habitats that are associated with the Escarpment.

Classification

NEPOSS assigns a classification of the parks and open spaces based on predominant characteristics of the property. These classifications are intended to serve as a guide to management and use of the park or open space area. The NEP further states the classifications "will be subject to confirmation at the time Park or Open Space Management Plans are prepared or revised".

There are six park and open space classes: Nature Reserve, Natural Environment, Recreation, Historical, Escarpment Access, and Resource Management.

The Crooks' Hollow Conservation Area is classified as Historical. The NEP notes that this classification is intended to protect and interpret distinctive resources representative of the Escarpment's archaeological and historical heritage and characteristics found at this site.

Zoning

Zoning, according to section 3.1.5 of the NEP, is essential to the planning, development and effective management of a park or open space area. Zoning is a park and open

space planning process that examines each specific geographic area within the protected area to determine:

- What natural and cultural heritage features exist?
- What permitted uses and development options will be allowed?
- What management priorities and policies will be put in place for the future?

There are six zones in the NEPOSS, each of which serve a specific purpose and provides planning and management direction to agencies. The types of zones are as follows: Nature Reserve Zone, Natural Zone, Access Zone, Historical Zone, Development Zone, and Resource Management Zone.

Crooks' Hollow Conservation Area has been divided into three zones (Natural, Historical and Development) based on the area's natural heritage, cultural heritage and recreational objectives. The chart found on the next page describes these zones. Map 2, found in Appendix A, illustrates the location of these three zones.

TABLE 1: NEPOSS ZONING

TABLE 1: NEPOSS ZONING				
Zone	Description	Rationale	Management Direction	Permitted Uses
Natural	<p>Natural Zones include aesthetic landscapes in which a minimum of development is permitted to support low-to-moderate-intensity recreational activities.</p> <p>This type of zone includes natural landscapes and high-quality natural settings.</p>	<p>The Natural Zone contains escarpment topography, the Spencer Creek corridor, several unique wetland communities, and a diverse forest canopy.</p>	<p>The Natural Zone features will be protected and enhanced while accommodating a trail corridor.</p>	<p>Low-to-moderate-intensity recreational activities are permitted.</p> <p>A minimal level of development (e.g. trails, way-finding and interpretative signage) is permitted to support low-intensity recreational activities.</p>
Historical	<p>Historical Zones include significant archaeological or cultural heritage features or areas that require management that will ensure the long-term protection of the significant features.</p>	<p>Each historical zone contains an existing cultural heritage feature that is a part of the rich cultural heritage of this area.</p>	<p>Management planning for archaeological or cultural heritage features will focus on the protection, stabilization and maintenance of their present condition.</p>	<p>Development will include protection and interpretation of the cultural heritage features. Examples include signage, QR code programming, defined trails, and historical revitalization.</p>
Development	<p>Development Zones provide the main access to the park or open space, and facilities and services to support the recreational activities available.</p> <p>This type of zone may allow for the development of visitor and park facilities.</p>	<p>Two areas have been designated as development zones. The main access and parking area. The second area is a designated heritage building and garage currently used as a residence and rental property and does not have public access.</p>	<p>A Development Zone will provide access and recreational opportunities that are suited to the natural character of the conservation area and will be maintained in an environmentally sustainable manner.</p> <p>This zone will have minimal negative impact on natural and cultural heritage features.</p>	<p>Development will include improvements to existing access road, parking lot, gates, picnic area, and wayfinding and interpretive signage.</p> <p>Facilities will be developed in a way that will minimize their environmental and visual impact.</p>

SECTION 4: NATURAL INVENTORY AND ASSESSMENT

An environmental analysis of the lands, based on a review of existing studies, plans and policies, maps and site visits, was undertaken during the management plan process. The Ecological Land Classification (ELC) and Natural Areas Inventory (NAI) for this area were updated in 2013. The removal of the Crooks' Hollow Dam in 2012 changed a number of environmental conditions significantly.

These updated natural heritage inventories provided the following:

- Identification of anthropogenic and environmental pressures related to the natural and cultural heritage features within the park;
- Articulation of the natural heritage planning objectives and determine zoning and management direction and actions; and
- Definition of baseline conditions against which managers can evaluate the effectiveness of management plan actions and adapt them as required in the future.

4.1 Environmentally Sensitive Areas

Crooks' Hollow Conservation Area is designated as an Environmentally Significant Area (E.S.A.). In addition, the Ministry of Natural Resources (MNR) has designated Crooks' Hollow as a Regional Area of Natural and Scientific Interest (ANSI). Future plans and development should seek to mitigate negative impacts on the natural features of the site.

The 2013 ELC surveys indicate that there are three environmentally sensitive areas within the Conservation Area. The numbers on the Figure 3, correspond with the following descriptions.

Figure 3: Environmentally Sensitive Areas



1. This area, although mainly comprised of a hardwood forest, contains a population of Carolinian trees (at-risk species). In addition there is a small pond located in this area which is dominated by buttonbush (at-risk species). The jefferson salamander, an endangered species, may be using the pond area as a breeding habitat. Surveys and monitoring of these ponds will be continued for three years to determine whether jefferson salamanders are in this area. It is recommended that this area be buffered and no trail development be considered at this time.
2. There is a relatively large population of green dragon, an herbaceous plant (at-risk species), growing between the trail and the creek corridor. Due to its close proximity to the trail and recreational activities, it may be necessary to implement a buffer or a separation, method such as a boardwalk, in order to protect the species.
3. A perched wetland is found within this area. Staff has been in contact with MNR and is still trying to assess the full significance of this area. Encroachment and cutting of vegetation in this area should be avoided and monitored.

It is also important to note that butternut, another at-risk tree species, is found throughout the Conservation Area. It is recommended that these trees be given a

suitable buffer from recreational activities. GPS coordinates for the locations of the Butternut trees are being collected.

4.2 Topography

The study area is located between the shallow bedrock of the Flamborough plain on the north and the Dundas Valley re-entrant in the Niagara Escarpment to the south. The majority of the study area consists of a moderately-developed meandering stream channel and floodplain. Spencer Creek is affected by seasonal flooding.

4.3 Hydrology

Water quality conditions have been known to fluctuate in response to both natural and habitat conditions and land use management in the area. According to the NAI (2002), warm water conditions prevail in the creek due to a lack of shading and underdeveloped riparian buffer.

The Crooks' Hollow Conservation Area is located within the Middle Spencer Creek Subwatershed and the Christie Lower Reservoir/Crooks' Hollow Catchment Area. The Spencer Creek Watershed Management Plan is an integrated watershed management plan for the Spencer Creek ecosystem. The goal of the Spencer Creek Watershed Plan is to identify the natural environmental attributes of the watershed and recommend appropriate strategies for the protection, restoration and enhancement of these features. There is a desire to maintain high biodiversity in both terrestrial and aquatic habitat, protect wetlands and limit erosion.

4.4 Flora

The majority of the study area is forested containing species such as sugar maple, american beech, white ash and black cherry. These deciduous forests also contain other species including zig-zag goldenrod, jack-in-the-pulpit, and meadow rue in the steep ground layer.

Downstream from the former dam and reservoir area, rich assemblages of wetland communities exist. Alder thicket swamps with a ground cover of skunk cabbage, jewelweed and occasionally rough-leaved goldenrod dominate a moist seepage area with distinct hummock and hollow topography.

Near the Morden's Dam ruin, the Spencer Creek flows along a rocky open channel creating a raised floodplain terrace forested with black walnut, green ash and willow Species. Dogwood, willow thickets and joe-pye-weed cover the ground layer. The aquatic community supports a dense cover of arrowheads, rice cut grass and bur reed in this area.

Further downstream, a small concrete dam (the Cockburn ruin) forms an open aquatic community with an abundance of weedy willow and dogwood thickets. Moreover, the riparian habitat along the Spencer Creek provides the only linkages between the extensive Beverly Swamp wetlands upstream and the Dundas Re-Entrant Valley downstream. Although the downstream riparian corridor is continuous, it is very narrow and vulnerable to further encroachment from existing residential developments.

4.5 Fauna

Nature Counts ELC surveyors (2002) recorded 222 species in this area. Of these, over 16 are locally uncommon species, one is locally rare species and 43 are non-native species.

Butterflies

During field surveys 26 species were recorded. Six of these species are locally uncommon, one is locally rare and one is a special concerned species.

Fish

Fisheries have been assessed in the Christie Reservoir and downstream in the Crooks' Hollow section. In total, 25 species have been collected and recorded. Below the Christie Dam, Spencer Creek flows in a step-pool sequence over bedrock and contains creek chub, longnose dace, minnows and common carp.

Birds

45 species were recorded. Of these 10 are locally uncommon species, one is a locally rare species and two are interior forest species.

Based on NAI surveys there are several at-risk or endangered species found within the Crooks' Hollow area. They include; butternut, green dragon, buttonbush and the jefferson salamander. The ELC team has collected GPS coordinates for many of these these plants which will be mapped.

4.7 Constraints and Opportunities

An environmental analysis identified that there are areas of low, moderate and high ecological constraints within the Crooks' Hollow Conservation Area. The natural constraint areas are shown on Map 3 (Appendix A).

The areas of low constraint consist primarily of deciduous forest and meadow communities. In addition, these areas have already been developed. The area located

north of Crooks Hollow Road is a revenue property used as a private residence, whereas the area located to the south serves as the main entrance and parking lot for the conservation area. These culturally maintained landscapes are the most suitable locations for future recreational development.

A large portion of the conservation area is made up of high-quality deciduous forest comprised of predominately native species. The area also contains raspberry thickets, wetlands and old meadows. As this area is easily accessible and relatively dry, it has been designated as an area of moderate constraint.

The most significant environmental feature of the Conservation Area lands is the Spencer Creek and its associated tributaries and wetlands. The Spencer Creek and the lands to its south have been identified as a high constraint area. The creek corridor contains diverse forest, vegetation and wetland communities. The wetlands, found within this area, support the hydrological functions of Spencer Creek. Trails and other recreational activities should be located outside of this area whenever possible.

In addition, the northern portion of the Conservation Area is considered to be an area of high constraint. This area contains several at-risk species that were identified for the first time during the NAI inventory. There is a steep slope which helps serve as a natural buffer, protecting the unique and endangered species in this area. It is recommended that any future trails or development should not traverse this slope.

SECTION 5: NATURAL FEATURES PROTECTION

This section identifies management strategies for protecting and restoring the riparian areas and aquatic habitats.

5.1 Riparian Buffer

The proper management of the riparian buffer, along the Spencer Creek, is extremely important. The absence of or, insufficient width of, a riparian buffer directly relates to the health of the local aquatic ecosystem. The riparian zone works to provide many ecological functions; improved water quality, flood control, recharged groundwater reserves, protection from erosion, and habitat for terrestrial and aquatic wildlife.

Some key signs that point to the loss of riparian area health include the loss of natural vegetation and excessive erosion of the streambanks. In order to foster a healthy buffer, it is necessary to promote a vigorous growth of trees, shrubs, and grasses. In addition, human activity or disturbance to the riparian buffer needs to be mitigated.

Recommendations:

- Obtain updated riparian buffer mapping for the Spencer Creek in order to prioritize which areas need the most attention
- Reduce encroachment- cutting of vegetation and creation of informal trails
- Erect informative signage
- Control invasive species
- Direct access to the creek to a few specific locations

5.2 Reservoir Remediation

The Crooks' Hollow Dam was removed from the area in 2012, since studies and analysis indicated the dam structure was unstable. The project had several key objectives including:

- Remove the unstable dam structure that had no significant flood control function.
- Restore the natural, riparian habitat in Crooks' Hollow, improve species and habitat diversity and aid in the conservation and recovery of rare flora/fauna that have been documented in this area.
- Improve water quality in Crooks' Hollow, as well as downstream in the Spencer Creek, Cootes Paradise and the Hamilton Harbor.

Post-construction monitoring will continue so that an adaptive environmental management approach can be utilized to ensure objectives are being met over time.

Water temperature, heavy metals, wildlife and aquatic habitat are a few of the parameters that are being assessed over a five year period. In addition, an annual monitoring report will be prepared to summarize the results from surface water monitoring, erosion prevention monitoring and monitoring carried out by the Department of Fisheries. The results of the report will continue to shape management priorities.

5.2 Invasive Species

The ELC and NAI surveys indicate that there are a number of invasive species, including japanese knotweed, phragmites, black locust and purple loosestrife, found within the study area.

As a part of the reservoir remediation plan, a significant amount of planting was done in the area. As these plants are still in their first year of growth, they are subjected to being snuffed out if invasive species are not controlled and monitored. In addition, invasive species works against a healthy riparian buffer. Invasive species may also be introduced through encroachment activities such as the dumping landscape materials from adjacent landowners.

5.4 Encroachment

All activities that occur off of the designated path are considered to have an effect on the health and integrity of the riparian buffer and creek system. Some examples of encroachment include the creation of informal trails, and the unauthorized cutting of vegetation along the riparian buffer.

Informal trails and new access points have been created in the high constraint areas of the park. The proliferation of trails causes numerous impacts on vegetation such as trampling of groundcover, soil compaction, and introduction of invasive species. The simplest approach to mitigate this is to ensure the Management Plan streamlines the number of trails, while providing sufficient access and education to discourage off-trail exploration.

In general, a combination of education and enforcement should be used to address encroachment issues.

Education

Communicating information about the rules and procedures regarding encroachment is important. The Conservation Authority has a brochure on encroachment. The brochure provides useful information and should be delivered to the properties adjacent to the conservation lands.

Enforcement

The HCA enforces encroachment on a complaint basis, meaning that the Authority responds to calls by property owners, trail users and others about incidents of encroachment onto authority lands. The primary goal of enforcement is to achieve compliance by encouraging the offender to cease the encroachment activities. In most cases, property owners will rectify the encroachment once they are contacted. In other cases, it takes a letter and a follow up visit from Conservation Authority staff.

Fencing

Fences serve as an important and obvious marker of the limits of property boundaries and the limits of the Conservation Authority. Fences make it more difficult to encroach as they prevent the extension of backyards by mowing, planting non-native species or storing material. Fences also ensure that our visitors stay on our lands as well. In situations when encroachment issues cannot be resolved through conversation or a mutual agreement, fencing should be erected.

SECTION 6: CULTURAL HERITAGE PROTECTION

Opportunities should be available to inform visitors about the historical significance of the Conservation Area. Some of the heritage sites should be acknowledged with new interpretative signage. Additional educational tools such as the HCA website and smart devices using QR coding can enhance the story delivery. A trail system linking the various historical features will assist the user in understanding the rich cultural heritage of the area as well.

Management planning and schemes should consider how the surrounding natural environment, such as the flow of the Spencer Creek and vegetative growth are undermining or affecting the heritage ruins. Impacts created by visitors also have to be considered. This will help to better determine protection and conservation strategies.

6.1 Heritage Sites Inventory

The locations of the following sites are indicated on Map 1 in Appendix A.

Morden's Mill/Dam:

Jonathan Morden, a sawyer by trade, came to West Flamborough in 1797. In 1801, he built the first sawmill on the upper section of Spencer Creek. In the 1850's, his son James Morden added a grist mill to the site. Both mills were destroyed by fire in 1905 and left in ruins. The walls and foundation of the mill have been destroyed or washed away over time. The dam is the only structure that is still visible at the creek although the stone ruins of Morden's barn foundation can be seen near the road.

Hopkins House:

Although not Morden's original home, this stone building was built by James Morden for his father around 1813. The Morden's lived in this house until 1904, when it was sold to William and Sarah Hopkins and their daughter, Audrey. Following Audrey's death in 1980, the house and property was purchased by the HCA. The house is designated under Part IV of the Ontario Heritage Act. Presently, this house provides revenues as a rental unit.

Cockburn Mill/Dam:

Just downstream from the old site of Crooks' Hollow Dam is the site of the former Wentworth Steam Bending Works Factory. It was built in 1862 by F. Hore, but burnt down in 1886. Another mill was built on the ruins by J. Cockburn and operated until around 1912 when floodwaters destroyed the Cockburn dam. Remnants of both the mill and the dam remain visible today and are located downstream from the pedestrian bridge. Rather than rebuild the Cockburn dam, the decision was made to build a new dam further upstream in 1916 which became the Crooks' Hollow dam and remained in place until 2012.

Darnley Mill:

James Crooks, one of Canada's early successful entrepreneurs, began his empire on the Spencer Creek with the construction of the Darnley Grist Mill in 1811. The original dam and millpond was built by Crooks just above the cascading waterfall. He built his original homestead overlooking the millpond. The grist mill first started running in 1813 and production continued until Crooks' death in 1860. The remnants of original Crooks Family cemetery are located up the hill west of the mill but the remains were relocated at a later date.

The mill was purchased by James Stutt and Robert Sanderson in 1868. They converted the former gristmill into a paper mill. In 1885, a boiler exploded, causing the walls to collapse and the mill to burn down. This, however, did not mean the end of paper production. The mill was rebuilt and modern equipment installed. Stutt and Robertson continued to oversee the business until 1934, when another fire completely ended the operations. The remains of the mill were left to ruin as the industrial potential of the area had dissipated. In 1969, the property was purchased by the HCA.

6.2 Conservation Studies

The last conservation study, for the Darnley mill, was undertaken in 1989. The report states that, at that time, several walls needed to be recapped, debris in the basement needed to be removed and repointing of the walls was necessary. Currently fences surround the Darnley Mill ruin in order to ensure public safety and to mitigate further structural damage.

An updated condition survey is required to assist in developing a more comprehensive scheme for the stabilization and conservation of the Darnley Mill ruins.

6.3 General Maintenance

Vegetation

In order to preserve and protect the historical ruins in this area, routine maintenance of vegetation is necessary. Overtime, roots of plants can open up mortar joints and crack apart walls. Wind forces on the foliage of vegetation can lever apart walls as well. If growth remains unchecked, collapse is inevitable. Such vegetation requires careful pruning and in some cases complete removal.

Repointing

Loss of mortar is also a problem for most ruins, as the soft lime and clay mortars is loosened over time by frost and vegetation. This can lead to accelerating distortion, bulging and collapse. The usual solution is careful repointing and consolidation using mortars closely matching the originals.

6.4 Spencer Adventure

The 'Spencer Adventure' is a recently developed concept which seeks to link the Dundas Peak with the Christie Lake Conservation Area through the Spencer Gorge and Crooks Hollow Conservation Areas. The HCA hopes to promote connections between the parks by promoting a continuous trail throughout the area.

The scheme has two major objectives. In recent years, Spencer Gorge-Webster's Falls Conservation Area has attracted more and more visitors. High numbers of visitors have contributed to some management issues for the HCA. By promoting additional trail connections, traffic can be directed away from Webster's Falls to alleviate parking and overcrowding issues. Secondly, the scheme is a way to raise public awareness regarding the many diverse and unique qualities of the various conservation areas owned by the Hamilton Conservation Authority other than the best known areas.

6.6 Self-Guided Tour/Brochure

A trail map and guide should be developed and made available to trail users at the trailhead. Information should include:

- Location of formal trails and points of interest
- Indication of trail lengths, times and difficulties
- Promote trail connections to Christie Lake CA, Spencer Gorge-Webster's Falls CA and the Bruce Trail.
- Interesting features and facts about the natural and cultural heritage of the area, cross referenced to numbered sign posts
- Rules of conduct for trail use
-

The concept of a self-guided brochure is not new to the Conservation Area. There has, in the past, already been a historical brochure developed for the west end of the Crooks Hollow area (see Appendix 3). This brochure needs to be updated, expanded to features in the east portion of the area and depict historical features and environmental assets to foster stewardship and environmental awareness.

6.5 Interpretative Kiosk

Proper information and signage are minimal throughout the conservation area. Currently there are two interpretative signs within the park; one at the main parking lot, another at the Darnley Mill. These signs are now almost two decades old. They are due for replacement which provides an excellent opportunity for expanding the educational story regarding the area's rich history.

In order to increase visitors' enjoyment, through an appreciation and understanding of the area, the development of an interpretative kiosk located in the main parking lot is recommended. The information presented at the kiosk should be a combination of the history and ecology of the conservation area and the Greenville community.

Located at the trail heads, visitors would gain a sense of the historic background before they hike the area. It is also recommended that a smaller kiosk or landscaped platform be developed at Darnley which illustrates the importance of the milling industry.

In addition, interpretive signage and educational modules should be located at strategic points within the park and along the trails in order to develop a more cohesive understanding of the other historical site. Numbered sign posts, corresponding with information in the brochure, should be erected near Morden's Dam, the Cockburn Dam, the Hopkins House, the Old Crooks' Hollow Dam, and the Darnley Mill.

SECTION 7: DEVELOPMENT RECOMMENDATIONS

7.1 Way-Finding Signage

Appropriate and consistent signage is key to functional operation, safety and enjoyment of the study area. It is recommended that universal graphic symbols for trail classification be provided as well as much needed way-finding, directional signage and maps. This will assist visitors to identify where they are and the relative connections to other parks and features of interest. Provide additional trail information on the HCA website and through QR Coding for smart devices.

Signage is recommended throughout the study area in order to:

- Educate park and trail users about sensitive areas and desired conduct
- Discourage encroachment into natural areas
- Provide directional signage at key entrance points
- Provide additional signage/trail markers between Christie Lake, Crooks' Hollow Heritage Trail, Greenville Optimist Community Park, and Spencer Gorge-Webster's Falls.

7.2 Parking Facilities

Currently, there are two parking lots within the Crooks' Hollow Conservation Area. The main parking lot, located along Crooks' Hollow Road, poses several problems that need to be addressed. Currently, berms surround the parking lot, impeding natural drainage. In addition, hikers must climb over or walk around these berms to access the trails. These berms will be removed.

The parking lot currently has a total of 50 parking spaces. The gravel surfaced portion can accommodate about 15 vehicles and the grass portion can accommodate another 35 vehicles in high visitation seasons of summer and fall. By expanding the parking lot seasonally, the HCA is able to alleviate some of the parking pressures at Spencer Gorge- Webster's Falls CA. The smaller lot, located at the Cockburn Mill ruins is no longer required and will be naturalized in the future although a gate for maintenance activities will be maintained.

Alterations must be made to the grade of the entrance driveway in order to improve visibility when coming in and out of the main parking lot. The removal of several black locust trees will also be undertaken to improve traffic sight lines.

7.4 Boundary/Access Management

Located along Crooks' Hollow Road, there is a split rail fence that is currently falling into disrepair (approx.100m of fencing). The intention is to maintain this type of fencing since it adds to the aesthetics of this historical area. In addition, in cases where encroachment activities cannot be alleviated, the erection of standard farm fencing will be used to define the HCA land holdings.

7.5 Trails

The Crooks Hollow Heritage Trail is the only formal trail running through the Conservation Area. The meandering, 2 kilometer trail follows the Spencer Creek from Webster's Falls to Christie Lake. There are several locations, within the Conservation Area, where informal trails have been created. In some cases, it is advantageous to make these an approved trail in order to mitigate negative environmental effects. Within the northern section of the Conservation Area, informal trails are beginning to develop. These should be discouraged until the HCA is able to determine the potential impacts on the significant natural areas.

The recommended trail system is based on the following principles:

- Trails should be located on lands with low and moderate environmental constraints and connect to existing trails;
- Wet areas will require additional sections of boardwalks
- Consider and plan for connections to future trails; and
- Located to minimize impacts on privacy of adjacent property owners.

In addition, a small access spur will be added to the Crooks' Hollow Heritage Trail. The Cockburn Mill is currently covered in vegetation and cannot be seen along the Heritage Trail. It is recommended the trail is re-routed to take visitors through the ruins.

The development or changes to a trail system should have no negative impacts on the surrounding environment or on the rights of private landowners. Every effort will be made to cooperate with adjacent landowners to ensure that the proposed trail is beneficial to both local and regional residents.

7.6 Trail Improvements and Maintenance

Trail maintenance and upkeep is an important conservation strategy that helps to foster a healthy balance between recreational and environmental needs. It is recommended that trail brushing and minor surfacing should happen on a semi-annual basis. Major trail maintenance, such as resurfacing, boardwalk construction, bridge repairs, and improvements to drainage patterns will need to be assessed on a regular basis.

Currently, in some areas, weather conditions and trail use have had a negative impact on the trail surface and surrounding vegetation. There are several sections of the trail that need to be redesigned for better runoff management, groundwater seepage and inundation after winter flooding. These areas are constantly wet and become muddy and wider as pedestrians continue to use them or try and go around them to keep feet clean.

The Crooks' Hollow Heritage Trail loop which is located along Crooks' Hollow Road in the central area of the park will be maintained as part of the trail system and replacements of the two small pedestrian bridges.

SECTION 8: IMPLEMENTATION AND MONITORING

8.1 Implementation

The implementation of the management plan should commence as soon as possible after the Management Plan is approved. The implementation of the plan will be phased as part of the annual HCA Capital and Major Maintenance Budget and priority setting. Table 2, outlines the recommended tasks and projects.

8.2 Monitoring and Review

The Management Plan should be monitored and reviewed every ten years to determine if major changes to the management plan are needed. The monitoring and review should include:

- Monitoring of the natural areas of off-trail use to determine whether additional trails or other management measures are needed;
- Monitoring and review of incidents of encroachment to determine if the approach to enforcement is achieving compliance
- The ten-year review of the management plan should be undertaken with neighbourhood input to determine community members think should or should not be changed.
- Monitoring of the natural systems to determine there is overall improvement or losses.

8.3 Estimated Project Costs

The development of the site features including interpretative and way-finding signage, trail improvements, historical site maintenance and restoration plantings will depend on available funding, grants and donations. Estimated costs on the following page.

TABLE 2: RECOMMENDED TASKS AND PROJECTS

Recommendations	Implementation Tasks
Parking Facilities	<ul style="list-style-type: none"> - Remove berms - Improve the grade of the entrance driveway - Remove trees & vegetation in order to improve the site lines - Naturalize the smaller parking lot
Trails	<ul style="list-style-type: none"> - Add trail spur to Cockburn Mill ruins - Phase out informal trails that have not been incorporated into the defined trail system - Improve surface and drainage issues located between the small parking lot to Greenville Optimist Community Park (about 400 m) Improve trail linkages to Spencer Gorge-Webster's' Falls CA/Christie Lake CA.
Way-Finding/Interpretative/Warning Signage	<ul style="list-style-type: none"> - Prepare an overall sign/way finding strategy to ensure consistent theme for marketing, and appropriate letter size, etc. for directional informational signage - Improve trail markers - Install signage to indicate cultural and natural heritage features as well as sensitive habitat areas
Fencing & Encroachment	<ul style="list-style-type: none"> - Address encroachment issues through direct landowner contact and fencing if required - Repair and maintain the heritage style split rail fencing along Crooks' Hollow Road
Spencer Creek Access	<ul style="list-style-type: none"> - Direct visitors to specific access spots through signage and trail placement
Habitat Restoration	<ul style="list-style-type: none"> - Restore habitats negatively affected by human interactions and informal trails - Identify and remove invasive species where practical - Continue monitoring the reservoir remediation area
Enhance/Maintain Cultural Heritage Ruins	<ul style="list-style-type: none"> - Conduct an updated Darnley Mill Condition and Conservation Study - Remove of vegetation and graffiti - Signage depicting their historical value - Installation of interpretative kiosk at main parking lot - Self-Guided Brochure to enhance the educational value of these historical locations

Item	Unit	Unit Price	Quantity	Total
<i>Way-Finding and Interpretive Signage</i>				
Directional Trail Markers	Each	100.	10	\$1,000.
Interpretative Signage	Each	2500.	3	\$7,500.
Trail Map Signage	Each	2500.	2	\$5,000.
Information/Warning Signage	Each	100.	10	\$1,000.
New Entrance Sign	Each	4,000	1	\$4,000.
<i>Structures</i>				
Pedestrian Bridges	Allowance			\$22,000.
Boardwalks	Linear Metre	100.	50	\$15,000.
Stairways	Allowance			\$45,000.
Split Rail Fence Repairs	Linear Metre	25.	120	\$3,000.
<i>Trail Improvements and Maintenance</i>				
Improved surface and drainage issues (add culverts)	Allowance			\$10,000.
Re-routing of Heritage Trail	Linear metres	30	100	\$3,000.
Formalize Trails	Allowance			\$5,000.
<i>Improved Parking Facilities</i>				
Remove berms, naturalize old parking area	Allowance			\$3,500.
Re-grade driveway, resurface lot, new gates	Allowance			\$15,000.
<i>Other Improvements</i>				
Restoration plantings	Allowance			\$5,000.
Darnley Mill Condition & Conservation Study	Allowance			\$15,000.
Vegetation clearing & graffiti removal at heritage ruins	Allowance			\$15,000.
Trail Benches	Each	1,500.	2	\$3,000.
Grand Total				\$178,000.