

APPENDIX A
Natural Environment – Existing Conditions Report

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION.....	1
1.1. General.....	1
2.0 PLANNING CONTEXT	4
2.1. General.....	4
2.2. Provincial Policy Statement	4
2.3. Endangered Species Act, 2007	6
2.4. Conservation Authorities Act, 1990 & Ontario Regulation 161/06	7
2.5. Urban Hamilton Official Plan, 2013	9
3.0 BIOPHYSICAL INVENTORY METHODOLOGY	11
3.1. Background Review.....	11
3.2. Vegetation.....	12
3.3. Tree inventory.....	12
3.4. Ecological Land Classification.....	13
3.5. Breeding and Migratory Bird Surveys	14
3.6. Aquatic Habitat Assessment	14
3.7. Wildlife Observations.....	14
4.0 BIOPHYSICAL INVENTORY RESULTS	17
4.1. Background Review.....	17
4.2. Vegetation Inventory	17
4.3. Tree inventory.....	24
4.4. Ecological Land Classification.....	26
4.5. Breeding and Migratory Bird Surveys	29
4.6. Incidental Wildlife Observations.....	41
4.7. Species at Risk and Species of conservation concern.....	41
4.8. Aquatic habitat assessment.....	49
5.0 SIGNIFICANT NATURAL FEATURES.....	51
6.0 SUMMARY.....	54
7.0 REFERENCES.....	56

LIST OF TABLES

	<u>Page No.</u>
Table 1: Field Study Information.....	12
Table 2: Plant Species Documented during Vegetation Surveys and in the Background Review	19
Table 3: Tree Inventory Results	24
Table 4: Description of ELC Communities	28
Table 5: Birds Documented in Background Review and during Breeding and Migratory Surveys	32
Table 6: Incidental Wildlife Species Documented.....	41
Table 7: Occurrence Records and Habitat Screening for Species at Risk and Species of Conservation Concern	42
Table 8: City of Hamilton Significant Woodland Criteria	52
Table 9: Evaluation of Wildlife Habitat Significance	53

LIST OF FIGURES

	<u>Page No.</u>
Figure 1: Study Area	2
Figure 2: Designated Natural Features	3
Figure 3: Wildlife Survey Locations	16
Figure 4: Site Investigation Results	27

APPENDICES

- Appendix A: City of Hamilton Official Plan Mapping
- Appendix B: Photos of ELC Communities

1.0 INTRODUCTION

1.1. GENERAL

Dillon Consulting Limited (Dillon) was retained by the City of Hamilton (City) to complete the Conceptual Design and Class Environmental Assessment (EA) for the Cherry Beach Shoreline Protection Project. The project will involve the restoration of approximately 300 metres of eroding Lake Ontario shoreline. As part of the Class EA, natural environment data was collected in 2012 to confirm any environmental sensitivity within the study area. Additional fieldwork was completed by Dillon in the spring and summer of 2013 to support of a Linkage Assessment for the City. The results of this fieldwork have been included in this updated memo. The site is currently a mix of woodland, residential housing, commercial area and vacant land. The study area is bound by Lake Ontario to the north, Millen Road to the west, Queen Elizabeth Way (Provincial Highway) to the south, and a channelized drainage feature to the east (**Figure 1**). The total project area is approximately 10.32 hectares in size.

The Cherry Beach Shoreline Restoration Class Environmental Assessment (Class EA) includes the Cherry Beach Development Area which is located along the Lake Ontario shoreline and was the focus of a Linkage Assessment completed by Dillon on behalf of the City in 2013. The Cherry Beach Shoreline Restoration Class EA provided preliminary documentation of natural environment existing conditions. Information from the Class EA study (e.g. field assessment data) has been updated with data collected during 2013 studies in support of the Linkage Assessment.

This report includes a review of the study area's terrestrial and aquatic existing conditions and a screening of for species listed under the *Endangered Species Act (ESA), 2007* using data collected during site investigations carried out in 2012 and 2013.



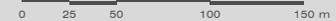
**CHERRY BEACH
SHORELINE RESTORATION
CLASS EA
NATURAL ENVIRONMENT
EXISTING CONDITIONS**

SUBJECT PROPERTY
FIGURE 1

 Study Area



1:4,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: GM
MAP MODIFIED BY: JWH
MAP CHECKED BY: DR
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
\\dillon.ca\DILLON_DFS\Toronto\Toronto GIS\197839 - Cherry
Beach\Mapping



PROJECT: 137839
STATUS: DRAFT
DATE: 4/14/2014



**CHERRY BEACH
SHORELINE RESTORATION
CLASS EA
NATURAL ENVIRONMENT
EXISTING CONDITIONS**

DESIGNATED NATURAL FEATURES
FIGURE 2

- Study Area
 - Regulated Area (HCA, 2013)
 - Forest Canopy (City of Hamilton)
 - Water Body
- City of Hamilton Official Plan**
- Core Area
 - Linkage
 - Parks & General Open Space



1:7,000
0 25 50 100 150 m



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, CITY OF HAMILTON,
HAMILTON CONSERVATION AUTHORITY

MAP CREATED BY: GM
MAP CHECKED BY: DR
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137839 - Cherry Beach\Mapping\



PROJECT: 137839
STATUS: DRAFT
DATE: 4/14/2014

2.0 PLANNING CONTEXT

2.1. GENERAL

The following section has been prepared to identify the applicable land use planning policies related to the natural environment. Various regulatory agencies and legislative authorities have established a number of policies as outlined below, whose purpose is to protect ecological features and functions. This section is not intended to constitute a comprehensive land use planning assessment; rather, it identifies relevant environmental policies and regulations. The documents referenced below can be read in their entirety for a more detailed understanding of the land use policy framework applicable to the study area.

The following documents were reviewed in the preparation of this Existing Conditions Report:

- ❑ Provincial Policy Statement, 2014
- ❑ Endangered Species Act, 2007
- ❑ Conservation Authorities Act, 1990 & *Ontario Regulation 161/06*
- ❑ City of Hamilton - Urban Hamilton Official Plan, 2013

2.2. PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement, 2014 (PPS) provides overall policy direction on matters of provincial interest related to land use planning and development in Ontario. The PPS provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural environment. A new PPS to come into effect April 30, 2014 replaces the PPS issued March 1, 2005.

The protection of Ontario's Natural Heritage System is dictated under Policy 2.1 of the PPS.

Policy 2.1.2 states *"The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features."*

Policy 2.1.3 states *"Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas."*

Policy 2.1.4 states *"Development and site alteration shall not be permitted in:*

- a) *significant* wetlands in Ecoregions 5E, 6E and 7E; and
- b) *significant* coastal wetlands."

Policy 2.1.5 states “*Development and site alteration shall not be permitted in:*

- a. *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- b. *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- c. *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- d. *significant wildlife habitat*;
- e. *significant areas of natural and scientific interest*; and,
- f. *coastal wetlands* in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

Unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

Policy 2.1.6 states “*Development and site alteration is not permitted in fish habitat areas in accordance with provincial and federal requirements*”. (Fish habitat is defined under the Federal Fisheries Act, (R.S.C, 1985, c.F-14, s. 2), as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes).

Policy 2.1.7 states “*Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*”

Policy 2.1.8 states that “*Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.*”

The PPS defines “significant” as follows:

- a) “In regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;
- b) In regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management; and,
- c) In regard to other features and policy in 2.1, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system.”

The PPS define Habitat of Endangered Species and Threatened Species as follows:

- a) with respect to a species listed on the Species at Risk in Ontario List as an endangered or threatened species for which a regulation made under clause 55(1)(a) of the Endangered

Species Act, 2007 is in force, the area prescribed by that regulation as the habitat of the species;
or

- b) with respect to any other species listed on the Species at Risk in Ontario List as an endangered or threatened species, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, as approved by the Ontario Ministry of Natural Resources; and

places in the areas described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences.

Potential significance of natural heritage features are typically evaluated based on their size, shape, age, degree of disturbance, sensitive species, species diversity, corridor function, adjacent land use and special agency designated lands (i.e. ANSI, ESA). Parameters defining significance criteria follow those suggested in the PPS and supporting Natural Heritage Reference Manual (NHRM) (Ministry of Natural Resources, 1999). Identification and evaluation of significance wildlife habitat is augmented by the Significant Wildlife Habitat Technical Guide (SWHTG) (Ministry of Natural Resources, 2000) and Ecoregion 7E Criteria Schedules (Ministry of Natural Resources, 2013).

2.3. ENDANGERED SPECIES ACT, 2007

In June 2008, the *Endangered Species Act, 2007 (ESA, 2007)* came into effect in Ontario. The purpose of this Act is to identify Species at Risk (SAR) based on the best available scientific information; to protect SAR and their habitats, and to promote the recovery of SAR; and to promote stewardship activities to assist in the protection and recovery of SAR. Any *Extirpated, Endangered or Threatened* species is protected immediately at the time it is listed. Further, the habitats of *Endangered* and *Threatened* species are protected from damage or destruction immediately upon listing. For the purposes of the *ESA, 2007* the Committee on the Status of Species at Risk in Ontario (COSSARO) classifies species in accordance with the following:

1. "A species shall be classified as an extinct species if it no longer lives anywhere in the world.
2. A species shall be classified as an extirpated species if it lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
3. A species shall be classified as an endangered species if it lives in the wild in Ontario but is facing imminent extinction or extirpation.
4. A species shall be classified as a threatened species if it lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
5. A species shall be classified as a special concern species if it lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered because of a combination of biological characteristics and identified threats."

In accordance with Section 9 of the *ESA, 2007* “No person shall,

- a. *kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;*
- b. *possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,*
 - i. *a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,*
 - ii. *any part of a living or dead member of a species referred to in subclause (i),*
 - iii. *anything derived from a living or dead member of a species referred to in subclause (i); or*
- c. *sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).”*

In accordance with Section 10 of the *ESA, 2007* “No person shall damage or destroy the habitat of,

- a. *a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species; or*
- b. *a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause.”*

The *ESA, 2007* defines “habitat” as:

- a. *“with respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or*
- b. *with respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding,*

and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences.”

This report will address potential impacts to SAR and associated habitats and ecological linkages, on and adjacent to the study area.

2.4. CONSERVATION AUTHORITIES ACT, 1990 & ONTARIO REGULATION 161/06

The *Conservation Authorities Act* was initially created in 1946 in response to erosion and drought concerns, recognizing that these and other natural resource initiatives are best managed on a watershed basis. Section 28 of the *Conservation Authorities Act, 1990* contains provisions for a conservation authority to make regulations applicable in the area under its jurisdiction, including but not limited to:

- b. *“prohibiting, regulating or requiring the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland;*
- c. *prohibiting, regulating or requiring the permission of the authority for development if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development.”*

In accordance with the Act, the Hamilton Conservation Authority (HCA) is authorized to implement and enforce the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (*Ontario Regulation 161/06*). Section 2(1) of this Regulation states that *no person shall undertake development, or permit another person to undertake development in or on the areas within the jurisdiction of the Authority that are:*

- (a) *adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beaches, including the area from the furthest offshore extent of the Authority’s boundary to the furthest landward extent of the aggregate of the following distances:*
 - (i) *the 100 year flood level, plus the appropriate allowance for wave uprush and other related hazards,*
 - (ii) *the predicted long term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period,*
 - (iii) *where a dynamic beach is associated with the waterfront lands, an allowance of 30 metres inland to accommodate dynamic beach movement, and*
 - (iv) *an allowance of 15 metres inland;*
- (b) *river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse, the limits of which are determined in accordance with the following rules:*
 - (i) *where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of bank, plus 15 metres, to a similar point on the opposite side,*
 - (ii) *where the river or stream valley is apparent and has unstable slopes, the valley extends from the predicted long term stable slope projected from the existing stable slope or, if the toe of the slope is unstable, from the predicted location of the toe of the slope as a result of stream erosion over a projected 100-year period, plus 15 metres, to a similar point on the opposite side,*
 - (iii) *where the river or stream valley is not apparent, the valley extends the greater of,*
 - (A) *the distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side, and*
 - (B) *the distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side;*
- (c) *hazardous lands;*
- (d) *wetlands; or*

- (e) *other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially significant wetlands, and areas within 30 metres of all other wetlands. O. Reg. 161/06, s. 2 (1); O. Reg. 60/13, s. 1 (1, 2).*

2.5. URBAN HAMILTON OFFICIAL PLAN, 2013

Within the City of Hamilton, the Natural Heritage System consists of *Core Areas*, *Linkages*, and the matrix of lands between them which may be suitable for restoration. The systems approach involves delineating a Natural Heritage System which includes *Core Areas*, as well as supportive features (*Linkages*) that maintain the ecological functionality and connectivity of the natural system. Connecting natural areas allows wildlife and plants to move between habitat patches. These connections are important for maintaining biodiversity, and the long-term health and viability of natural systems. Protection and restoration of impaired or degraded habitat and habitats in diminishing supply, such as meadows, is vital for a fully functional Natural Heritage System. Using the systems approach, the City shall look at the restoration potential of natural areas adjacent to *Core Areas*, not just the habitat that currently exists.

Chapter C – City Wide Systems and Designations, Section 2 – Natural Heritage System and the policies regarding *Linkages* (2.7) of the Urban Hamilton Official Plan (UHOP) were the basis for the assessment of the *Linkage* identified within the Cherry Beach Development Area. These policies are as follows:

Policy 2.7 states “*Linkages are natural areas within the landscape that ecologically connect Core Areas. Connections between natural areas provide opportunities for plant and animal movement, hydrological and nutrient cycling, and maintaining ecological health and integrity of the overall Natural Heritage System. The City recognizes the importance of Linkages shown on Schedule B-Natural Heritage System in reducing the adverse impacts of habitat fragmentation on natural areas. Habitat fragmentation results in loss of species diversity and reduced ecosystem health and resilience. It is the intent of this policy that Linkages be protected, restored, and enhanced to sustain the Natural System wherever possible.*”

Policy 2.7.1 states “*The City shall encourage the connection of Core Areas within the municipality and adjacent to its municipal boundaries through the identification of Linkages in Environmental Impact Statements, Secondary Plans, watershed plans and other studies.*”

Policy 2.7.2 states “*On its own properties, including road rights-of-way, utilities, major infrastructure facilities, and storm water management ponds, the City shall enhance Linkages by restoring natural habitat, where appropriate. The City shall support the naturalization of vegetation in inactive sections of parks and open spaces where appropriate.*”

Policy 2.7.3 states “*The City shall require the incorporation of Linkages into a design of new development requiring approval by this Plan to retain and enhance the cultural, aesthetic, and environmental qualities of the landscape, wherever possible and deemed feasible to the satisfaction of the City.*”

Policy 2.7.4 states “*Since Linkages are best enhanced and protected through larger scale planning processes, Secondary Plan shall identify and evaluate Linkages in greater detail, including Linkages currently identified on Schedule B-Natural Heritage System and those that may be newly identified*

through the planning process. Linkages shall be mapped in Secondary Plans and policies for their protection and enhancement included.”

Policy 2.7.5 states “Where new development or site alteration is proposed within a Linkage in the Natural Heritage System as identified in Schedule B-Natural Heritage System, the applicant shall prepare a Linkage Assessment. On sites where an Environmental Impact Statement (EIS) is being prepared, the Linkage Assessment can be included as part of the EIS report. Any required Linkage Assessment shall be completed in accordance with Policy F.3.2.1.11-Linkage Assessments.”

Policy 2.7.7 states “In addition to the Linkages identified on Schedule B-Natural Heritage System, there may be Hedgerows that are worthy of protection, especially where:

- a) they are composed of mature, healthy trees and generally provide a wide, unbroken linkage between Core Areas;*
- b) there is evidence that wildlife regularly use them as movement corridors or habitat;*
- c) they contain tree species which are threatened, endangered, special concern, provincially or locally rare; or,*
- d) groupings of trees which are greater than 100 years old.”*

3.0 BIOPHYSICAL INVENTORY METHODOLOGY

3.1. BACKGROUND REVIEW

Prior to field studies, a background review of the following applicable secondary sources was conducted:

- ❑ Aerial photography;
- ❑ Land Information Ontario (LIO)- Natural Resource and Values Information System (NRVIS);
- ❑ Urban Hamilton Official Plan (2013) and associated schedules;
- ❑ Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC);
- ❑ Hamilton Natural Areas Inventory and Species Checklist (Nature Counts Project, 2003)
- ❑ Agency consultation (e.g. HCA, MNR);
- ❑ Wildlife Atlases;
 - Ontario Breeding Bird Atlas (OBBA) (Cadman *et al.*, 2005);
 - Atlas of the Mammals of Ontario (Dobbyn, 1994);
 - Ontario Herpetofaunal Atlas (Oldham and Weller, 2000);
 - Atlas of Reptiles and Amphibians in Ontario (Ontario Nature, 2013);
 - Ontario Odonata Atlas (NHIC)
- ❑ Fish Collection Records:
 - Department of Fisheries and Oceans Canada (DFO) aquatic species at risk mapping; and,
- ❑ Watershed and Natural Heritage Reports (e.g. HCA Watershed Reports & Natural Areas Inventory).

Field studies were conducted following the background review. Studies were conducted on the dates and conditions outlined in **Table 1**.

Table 1: Field Study Information

Field Survey	Dates	Conditions	Timing	Personnel
Vegetation Assessment & Tree Inventory	February 28, 2012	-1°C, cloudy	Morning	J. Harris
	July 26, 2012	22°C, drizzle	Morning	J. Harris
	May 13, 2013	6°C, cloudy	Afternoon	R. Baxter
	September 3, 2013	20°C, cloudy	Midday	R. Baxter
Ecological Land Classification	February 28, 2012	-1°C, cloudy	Morning	J. Harris
	July 26, 2012	22°C, drizzle	Morning	J. Harris
	May 13, 2013	20°C, cloudy	Midday	R. Baxter
	September 03, 2013			
Breeding Bird Surveys	June 05, 2013	12°C, cloudy	Early Morning	R. Baxter
	June 19, 2013	20°C, clear	Morning	
Migratory Bird Survey	April 30, 2013	15°C, cloudy	Midday	R. Baxter
	May 13, 2013	6°C, cloudy	Midday	
	May 17, 2013	10°C, clear	Morning	
	August 30, 2013	30°C, clear	Morning	
	September 18, 2013	20°C, clear	Midday	
	October 08, 2013	20°C, clear	Midday	
Aquatic Habitat Assessment	February 28, 2012	-1°C, cloudy	Morning	B. Gottfried
	May 17, 2013	15°C, cloudy	Morning	R. Baxter
	May 22, 2013	23°C, cloudy	Morning	R. Baxter
	July 17, 2013	32°C, clear	Morning	B. Gottfried
Wildlife Surveys (Incidental)	Occurred during other surveys	Various	Various	R. Baxter J. Harris B. Gottfried

3.2. VEGETATION

Vegetation surveys were carried out in the late winter, mid to late spring and late summer. Surveys consisted of area searches to determine the presence, richness and abundance of floral species presence within the study area. Species nomenclature is based on the Ontario Plant List (Newmaster *et al.*, 1998).

3.3. TREE INVENTORY

Tree inventory and condition assessments were conducted for trees with a Diameter at Breast Height (DBH) of > 10cm along the Cherry Beach shoreline and potential options for access roads. The information collected includes the following:

- Identification of the tree species;
- A measurement of the tree diameter at breast height (1.38 m);
- A tree condition assessment (winter condition);
- Photo documentation of trees assessed; and
- Location of the tree using a GPS unit.

The condition rating system was based on a qualitative visual assessment by a terrestrial biologist. The hazard potential of trees was assessed using the method outlined in the International Society of Arboriculture publication *A Photographic Guide to the Evaluation of Hazard Trees in Urban Area - 2nd*

Edition (Matthey and Clark, 1994). Using this guide, an overall condition rating (i.e., dead, poor, fair, good or excellent) was given to the inventoried trees. These condition ratings are useful when evaluating the retention and/or replacement value of individual tree stands.

A description of each condition rating is as follows.

Dead – The specimen tree is considered dead when it has no living tissue

Hazard Tree – The specimen tree could either be alive or dead but poses a hazard to residents. These trees have the potential for splitting, breaking and/or falling over during inclement weather, and because of their proximity to residential neighbourhoods, could cause personal injury and/or severe damage to municipal infrastructure and private property.

Poor Condition – Trees in poor condition show major symptoms of decline. At least 50% of main scaffold branches are dead, missing or in diseased state. The trunk shows evidence of advanced rot, deadwood or is hollow throughout. Twig development on the main branches or through sucker growth is limited. Callus growth around wounds is minimal. A tree in poor condition could become a safety hazard and may require removal prior to development.

Fair Condition – Trees in fair condition show moderate symptoms of decline in lower canopy or scaffold branches, but at least 50% of scaffold branches are present and viable. Trunk shows limited evidence of rot or insect damage. Callus growth is present near wound areas. Trees that have scaffold branches that are healthy but are in a "Y" formation may also be included in this category if included bark is evident due to the risk of splitting or breakage as the tree matures. Removal or preservation of these trees depends on the location of the specimen and associated hazard potential and would depend on the species and its tolerance to grading, trenching and surviving in an urban environment. Some major arboriculture maintenance may be required in the future and may include major scaffold or secondary branch removal, bracing and/or cabling.

Good Condition - The specimen tree shows no symptoms of decline in the trunk, and all scaffold branches are present and are in good condition. Most scaffold branches are at right angles to the trunk, and show good vigour. Small amounts of dead wood may be present in secondary branches, but account for less than 25% of the canopy. Depending on the grading in the immediate area, a tree in good condition would be recommended for preservation. Such a tree would survive to maturity without major arboriculture maintenance.

Excellent Condition - The specimen tree shows no symptoms of decline in trunk, scaffold or secondary branches. Trees in this condition have an excellent growth habit and should survive to maturity without major arboriculture maintenance.

3.4. ECOLOGICAL LAND CLASSIFICATION

During field investigations, vegetation was characterized using the Ecological Land Classification System (ELC) for Southern Ontario (Lee *et al.*, 1998). Where present, vegetation community boundaries were determined through the review of aerial photography, and then further refined through on-site soil and vegetation studies. Soil studies involved the examination of a 120 cm soil core extracted with a hand

auger. This allows for the describing of soil texture and site moisture characteristics which influence plant distributions and the resulting vegetation assemblage. Other physical traits such as topography and slope aspect were also noted within each community. Soil investigations were completed in order to gain a better understanding of ecological conditions on site. Vegetation studies involved identifying the dominant species in each vegetation cover type based on visual estimates of species abundances and biomass, or, in the case of accessible forest stands, by quantitative sampling using a factor 2 wedge prism.

Field data collection was undertaken in order to classify and map these ecological communities to the vegetation level. In 2007, the Ministry of Natural Resources refined their first approximation codes to more fully encompass the vast range of natural and cultural communities across southern Ontario. Through this process, many of the original codes have changed slightly and quite a number of new codes were added. The second approximation ELC codes have been used for this assessment as they are more representative of the vegetation communities within the study area.

3.5. BREEDING AND MIGRATORY BIRD SURVEYS

Surveys were undertaken during the core breeding season (between May 1 and July 31) to determine avian species richness, abundance, and displayed breeding behaviour within the study area. Migratory bird surveys were undertaken during the spring and fall migratory periods. Surveys were completed in April/May and August/September/October to record the number of species stopping over in the study area.

Breeding bird surveys followed methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001) were conducted in June 2013 and between dawn and 5 hours after sunrise. Surveys were completed twice over the course of the breeding season to ensure that both early and late breeders were detected. The breeding bird surveys consisted of point counts to establish quantitative estimates of bird abundances in major habitat types within the study area. Breeding evidence for each bird species was documented using Breeding Bird Atlas Evidence Codes. Point count locations are displayed on **Figure 3**.

Area searches were used to survey for breeding and migratory birds. Area search surveys involved noting individual bird species and their corresponding breeding evidence (if applicable) while traversing the study area. The habitat and location of each bird observation were also noted. The area search route was spaced throughout the study area and is displayed on **Figure 3**.

3.6. AQUATIC HABITAT ASSESSMENT

Approximately, 500 m of shoreline that borders the study area and mapped tributaries were assessed for fish habitat conditions by way of a shore-based reconnaissance in February, 2012; May, 2013; and July, 2013. The assessment included characterization of cover abundance and type, substrates, bank conditions and general habitat features. Observations into the water were made from the shoreline using polarized glasses as conditions permitted. Potentially elevated lake levels, as well as wave action impacting fish habitat conditions were also considered during this assessment.

3.7. WILDLIFE OBSERVATIONS

During field studies, incidental wildlife observations and evidence of wildlife and/or wildlife habitat (e.g., dens, cavity trees, tracks and scat) were noted.



**CHERRY BEACH
SHORELINE RESTORATION
CLASS EA
NATURAL ENVIRONMENT
EXISTING CONDITIONS**

SURVEY LOCATIONS

FIGURE 3

- Breeding Bird Survey Point Count
- Breeding Bird & Migratory Bird Area Search Route
- Study Area
- CVC_1: Business Sector
- CVR_3: Single Family Residential
- MEMM3: Dry-Fresh Mixed Meadow
- Mown Grass
- OAO: Open Aquatic
- SHO: Open Shoreline
- TAGM5: Fencerow
- WODM4: Dry-Fresh Deciduous Woodland



1:4,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, CITY OF HAMILTON,
HAMILTON CONSERVATION AUTHORITY

MAP CREATED BY: GM
MAP MODIFIED BY: JWH
MAP CHECKED BY: DR
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137839 - Cherry Beach\Mapping\



PROJECT: 137839
STATUS: DRAFT
DATE: 4/14/2014

4.0 BIOPHYSICAL INVENTORY RESULTS

4.1. BACKGROUND REVIEW

A review of secondary source information relevant to the project was completed prior to field studies. The findings of this review are as follows:

- ❑ An HCA Regulated Area associated with Lake Ontario and a channelized watercourse is located within the study area (**Figure 2**). The policies of *Ontario Regulation 161/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* apply to the development.
- ❑ Two areas of the study area are designated as *Linkage* on Schedule B of the UHOP (see **Appendix A**). According to the UHOP, *Linkage* areas are “*natural areas within the landscape that ecologically connect Core Areas. They are avenues along which plants and animals can propagate, genetic interchange can occur, populations can move in response to environmental changes and life cycle requirements and species can be replenished from other natural areas. Conserving linkages also protects and enhances Core Areas*”.
- ❑ A small portion of the study area is also designated as *Parks and Open General Space* on Schedule B of the UHOP (see **Appendix A**). According to the UHOP, lands designated as Open Space are “*public or private areas where the predominant use of or function of the lands is for recreational activities, conservation management and other open space uses*”.
- ❑ A *Core Area* (i.e., Community Beach Ponds Environmentally Significant Area) is located west of the study area in the Green Millen Shore Estates Condo Development Area as shown on Schedule B of the UHOP (see **Appendix A**). According to the UHOP, *Core Areas* are “*include key natural heritage features, key hydrological features and provincially significant and local natural areas that are more specifically identified by Schedule B-1-8 – Detailed Natural Heritage Features. Core Areas are the most important components in terms of biodiversity, productivity, and ecological and hydrological functions*”
- ❑ Lake Ontario is designated as a Key Hydrologic Feature (Lakes and Littoral Zones, Streams) in Schedule B-5 of the City of Hamilton Urban Official Plan (see **Appendix A**).
- ❑ Through review of historic occurrence records for SAR and Species of Conservation Concern (SCC) for the City of Hamilton, it was determined that there is the potential for 64 SAR/SCC to occur in the general area of the project (See **Section 4.9**).

4.2. VEGETATION INVENTORY

A total of 96 plant species were documented in the study area while conducting the ELC survey. A list of plant species observed during field studies within the study area is included in **Table 2**. Of the 96 species observed, seven (7) were identified down to Genus level due to the timing of vegetation field surveys and the absence of key identification plant features (e.g., flowering parts). Of the remaining 89 species, 36% are listed as native species and 64% are listed as introduced species. The plant species observed are considered to have *Secure* (S5) or *Apparently Secure* (S4) populations within the Province of Ontario. Species with a S4 ranking are common and *Apparently Secure* in Ontario; usually with more than 100 occurrences in the province. Species with a S5 ranking are defined as very common with a demonstrably *Secure* population in Ontario.

None of the plant species identified as potentially occurring SAR or SCC during the collection of background information belong to any of the Genus' where the specimen was not able to be further identified down to species. Some SAR and Species of Conservation Concern flower only in the spring but are perennials and can still be identified using other features. None of the spring flowering plants were identified within the Study Area.

The Co-efficient of Conservatism (CC) provides additional information on the nature of the site. Co-efficient of Conservatism values range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a landscape that is relatively unaltered or is in a pre-settlement condition. For example, a CC of 0 is given to plants such as Manitoba Maple (*Acer negundo*), that have demonstrated little fidelity to any remnant natural community (i.e. may be found almost anywhere). Similarly, a CC of 10 is applied to plants like Shrubby Cinquefoil (*Potentilla fruticosa*) that are almost always restricted to a pre-settlement remnant and a high quality natural area. Introduced plants were not part of the pre-settlement flora, so no CC value is applied to these.

None of the plant species observed on the study area had a CC of 7 or greater. The mean CC for the site was 2.18 out of a possible 10 (for native species) indicating an environment that has undergone extensive disturbance which would account for the high number of non-native species observed.

The City of Hamilton local rarity status for each species was also noted (if applicable) using the ranking available in the Hamilton Naturalist's Club Nature Counts Project – Hamilton Natural Areas Inventory (2003). The native species observed during the field surveys are considered to be common to the Hamilton area.

Table 2: Plant Species Documented during Vegetation Surveys and in the Background Review

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	Coefficient Conservation	Coefficient Wetness	NHIC Database	Observed in the field
<i>Acer negundo</i>	Manitoba Maple	---	---	S5	---	0	-2		●
<i>Acer platanoides</i>	Norway Maple	---	---	SE5	I	---	5		●
<i>Acer saccharinum</i>	Silver Maple	---	---	S5	---	5	-3		●
<i>Acer saccharum ssp. saccharum</i>	Sugar Maple	---	---	S5	---	4	3		●
<i>Aesculus hippocastanum</i>	Horse Chestnut	---	---	SE2	I	---	5		●
<i>Alliaria petiolata</i>	Garlic Mustard	---	---	SE5	I	---	0		●
<i>Ambrosia artemisiifolia</i>	Common Ragweed	---	---	S5	---	0	3		●
<i>Aplectrum hyemale</i>	Putty-root	---	---	S2	H	10	1	●	
<i>Apocynum sp</i>	Dogbane Species	---	---	---	---	---	---		●
<i>Arctium minus ssp. minus</i>	Common Burdock	---	---	SE5	I	---	5		●
<i>Asclepias syriaca</i>	Common Milkweed	---	---	S5	---	0	5		●
<i>Asparagus officinalis</i>	Asparagus	---	---	SE5	I	---	3		●
<i>Bidens frondosa</i>	Devil's Beggar-ticks	---	---	S5	---	3	-3		●
<i>Brassica nigra</i>	Black Mustard	---	---	SE5	I	---	5		●
<i>Calystegia sepium ssp. angulata</i>	Hedge Bindweed	---	---	S5	---	2	0		●
<i>Carex oligocarpa</i>	Few-fruited Sedge	---	---	S2	---	9	5	●	
<i>Carex vulpinoidea</i>	Fox Sedge	---	---	S5	---	3	-5		●
<i>Centaurea macrocephala</i>	Bighead Knapweed	---	---	SE1	---	---	5		●
<i>Chenopodium album var. album</i>	Lamb's Quarters	---	---	SE5	I	---	1		●
<i>Chimaphila maculata var. maculata</i>	Spotted Wintergreen	END	END	S1	H	10	5	●	
<i>Cichorium intybus</i>	Chicory	---	---	SE5	I	---	5		●
<i>Cirsium arvense</i>	Canada Thistle	---	---	SE5	I	---	3		●
<i>Cirsium vulgare</i>	Bull Thistle	---	---	SE5	I	---	4		●
<i>Convallaria majalis</i>	Lily-of-the-valley	---	---	SE5	I	---	5		●
<i>Convolvulus arvensis</i>	Field Bindweed	---	---	SE5	I	---	5		●

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	Coefficient Conservation	Coefficient Wetness	NHIC Database	Observed in the field
<i>Conyza canadensis</i>	Horseweed	---	---	S5	---	0	1		●
<i>Cornus stolonifera</i>	Red-osier Dogwood	---	---	S5	---	2	-3		●
<i>Dactylis glomerata</i>	Orchard Grass	---	---	SE5	I	---	3		●
<i>Daucus carota</i>	Wild Carrot	---	---	SE5	I	---	5		●
<i>Dipsacus fullonum</i> ssp. <i>sylvestris</i>	Common Teasel	---	---	SE5	I	---	5		●
<i>Echinochloa crusgalli</i>	Barnyard Grass	---	---	SE5	I	---	-3		●
<i>Elymus repens</i>	Quack Grass	---	---	SE5	I	---	3		●
<i>Equisetum arvense</i>	Field Horsetail	---	---	S5	---	0	0		●
<i>Erigeron annuus</i>	Daisy Fleabane	---	---	S5	---	0	1		●
<i>Erigeron philadelphicus</i> ssp. <i>philadelphicus</i>	Philadelphia Fleabane	---	---	S5	---	1	-3		●
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	Common Strawberry	---	---	S5	---	2	1		●
<i>Fraxinus pennsylvanica</i>	Green Ash	---	---	S5	---	3	-3		●
<i>Galium aparine</i>	Cleavers	---	---	S5	---	4	3		●
<i>Geum</i> sp	Avens Species	---	---	---	---	---	---		●
<i>Glechoma hederacea</i>	Ground Ivy	---	---	SE5	I	---	3		●
<i>Hemerocallis fulva</i>	Tawny Day-lily	---	---	SE5	I	---	5		●
<i>Hieracium paniculatum</i>	Panicled Hawkweed	---	---	S2	H	10	5	●	
<i>Hypericum perforatum</i>	Common St. John's-wort	---	---	SE5	I	---	5		●
<i>Iris</i> sp	Iris Species	---	---	---	---	---	---		●
<i>Juglans nigra</i>	Black Walnut	---	---	S4	---	5	3		●
<i>Juniperus chinensis</i>	Chinese Juniper	---	---	SNA	---	---	---		●
<i>Lactuca canadensis</i>	Tall Lettuce	---	---	S5	---	3	2		●
<i>Lactuca serriola</i>	Prickly Lettuce	---	---	SE5	I	---	0		●
<i>Lamium purpureum</i>	Purple Dead-nettle	---	---	SE3	I	---	5		●
<i>Lathyrus latifolius</i>	Everlasting Pea	---	---	SE4	I	---	5		●

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	Coefficient Conservation	Coefficient Wetness	NHIC Database	Observed in the field
<i>Leonurus cardiaca</i> ssp. <i>cardiaca</i>	Motherwort	---	---	SE5	I	---	5		●
<i>Lonicera tatarica</i>	Tartarian Honeysuckle	---	---	SE5	I	---	3		●
<i>Lotus corniculatis</i>	Birds-foot Trefoil	---	---	SE5	I	---	1		●
<i>Lysimachia nummularia</i>	Moneywort	---	---	SE5	I	---	-4		●
<i>Malus</i> sp	Crabapple Species	---	---	---	---	---	---		●
<i>Melilotus alba</i>	White Sweet-clover	---	---	SE5	I	---	3		●
<i>Mentha arvensis</i> ssp. <i>borealis</i>	Wild Mint	---	---	S5		3	-3		●
<i>Mentha X piperita</i>	Peppermint	---	---	SE4	I	---	-5		●
<i>Myosotis scorpioides</i>	Common Forget-me-not	---	---	SE5	I	---	-5		●
<i>Narcissus pseudonarcissus</i>	Daffodil	---	---	SE2	---	---	0		●
<i>Nuphar advena</i>	Large Yellow Pond-lily	---	---	S3	H	7	-5	●	
<i>Onosmodium molle</i> ssp. <i>hispidissimum</i>	Shaggy False Gromwell	---	---	S2	H	8	5	●	
<i>Panicum capillare</i>	Witch Grass	---	---	S5	---	---	---		●
<i>Phalaris arundinacea</i>	Reed Canary Grass	---	---	S5		0	-4		●
<i>Phlox paniculata</i>	Fall Phlox	---	---	SE3	I	---	3		●
<i>Phragmites australis</i> spp. <i>australis</i>	European Common Reed	---	---	S5	---	0	-4		●
<i>Physalis alkekengi</i>	Chinese Lantern	---	---	SE2	I	---	5		●
<i>Picea pungens</i>	Colorado Blue Spruce	---	---	SNA	I	---	---		●
<i>Plantago major</i>	Common Plantain	---	---	SE5	I	---	-1		●
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky Blue Grass	---	---	S5	I	0	1		●
<i>Polygonum persicaria</i>	Lady's Thumb	---	---	SE5	I	---	-3		●
<i>Populus alba</i>	European White Poplar	---	---	SE5	I	---	5		●
<i>Populus deltoides</i> ssp. <i>deltoides</i>	Eastern Cottonwood	---	---	S5	---	4	-1		●
<i>Populus grandidentata</i>	Largetooth Aspen	---	---	S5	---	5	3		●

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	Coefficient Conservation	Coefficient Wetness	NHIC Database	Observed in the field
<i>Prunus virginiana</i> ssp. <i>virginiana</i>	Choke Cherry	---	---	S5	---	2	1		●
<i>Pyrus communis</i>	Common Pear	---	---	SE4	I	---	5		●
<i>Ranunculus acris</i>	Tall Buttercup	---	---	SE5	I	---	-2		●
<i>Rhamnus cathartica</i>	Common Buckthorn	---	---	SE5	I	---	3		●
<i>Rhus radicans</i> ssp. <i>negundo</i>	Climbing Poison-ivy	---	---	S5	---	5	-1		●
<i>Rhus radicans</i> ssp. <i>rydbergii</i>	Western Poison-ivy	---	---	S5	---	0	0		●
<i>Rhus typhina</i>	Staghorn Sumac	---	---	S5	---	1	5		●
<i>Ribes</i> sp	Currant Species	---	---	---	---	---	---		●
<i>Robinia pseudo-acacia</i>	Black Locust	---	---	SE5	I	---	4		●
<i>Rosa rubiginosa</i>	Eglantine	---	---	SE4	I	---	5		●
<i>Rubus idaeus</i> ssp. <i>idaeus</i>	Red Raspberry	---	---	SE1	I	---	5		●
<i>Rumex crispus</i>	Curly Dock	---	---	SE5	I	---	-1		●
<i>Sabatia angularis</i>	Square-stemmed Rose Pink	---	---	SX	H	9	-1	●	
<i>Salix alba</i>	White Willow	---	---	SE4	I	---	-3		●
<i>Setaria viridis</i>	Green Foxtail	---	---	SE5	I	---	5		●
<i>Solanum dulcamara</i>	Bittersweet Nightshade	---	---	SE5	I	---	0		●
<i>Solidago canadensis</i>	Canada Goldenrod	---	---	S5	---	1	3		●
<i>Solidago</i> sp	Goldenrod Species	---	---	---	---	---	---		●
<i>Sonchus arvensis</i> ssp. <i>arvensis</i>	Field Sow-thistle	---	---	SE5	I	---	1		●
<i>Stellaria media</i>	Common Chickweed	---	---	SE5	I	---	3		●
<i>Syringa vulgaris</i>	Common Lilac	---	---	SE5	I	---	5		●
<i>Taraxacum officinale</i>	Common Dandelion	---	---	SE5	I	---	3		●
<i>Thuja occidentalis</i>	Eastern White Cedar	---	---	S5	---	4	-3		●
<i>Trifolium pratense</i>	Red Clover	---	---	SE5	I	---	2		●
<i>Tussilago farfara</i>	Coltsfoot	---	---	SE5	I	---	3		●

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	Coefficient Conservation	Coefficient Wetness	NHIC Database	Observed in the field
<i>Verbascum thapsus</i>	Common Mullein	---	---	SE5	I	---	5		●
<i>Vicia cracca</i>	Cow Vetch	---	---	SE5	I	---	5		●
<i>Viola sororia</i>	Common Blue Violet	---	---	S5	---	4	1		●
<i>Vitis riparia</i>	Riverbank Grape	---	---	S5	---	0	-2		●

1. Federal Species at Risk Act (Source: SARA Public Registry, 2007) Note: END – Endangered
2. Provincial Endangered Species Act (Source: OMNR website, 2007)
3. Subnational (Provincial) Rank (Source: OMNR National Heritage Information Centre website, 2007):
 S-ranks - S5 = Very Common; S4= Common; S3 = Rare-Uncommon; S2 = Rare; S1 = Extremely Rare; SNA (SE) = conservation status ranking not applicable (exotic),
 ? -status uncertain
4. Status in Hamilton according to Hamilton Naturalist's Club (2003); H = Rare in Hamilton Region; h = uncommon in Hamilton Region; ex = extirpated from Hamilton; I = introduced

4.3. TREE INVENTORY

The tree inventory revealed that the study area contained native and non-native woodland tree species. Thirty-one (31) live trees were documented within 20 metres of the shoreline edge and road access options. One dead snag was also observed.

Of these 31 live trees, eight species were observed:

- 8 Green Ash (*Fraxinus pennsylvanica*)
- 6 Silver Maple (*Acer saccharinum*)
- 2 Norway Maple (*Acer platanoides*)
- 8 Manitoba Maple (*Acer negundo*)
- 1 Sugar Maple (*Acer saccharum*)
- 1 Large-toothed Aspen (*Populus grandidentata*)
- 2 Black Locust (*Robinia pseudo-acacia*)
- 3 White Willow (*Salix alba*)

The majority of these trees were found to be in “Good” condition (58%), while 29% were in “Fair” condition 12% in “Poor” condition. Three trees examined showed signs of being potential hazard trees based on their location along the shoreline. The ground under these potential hazard trees has eroding away and has created a situation where the trees are prone to failure. Information regarding the tree species observed is provided below in **Table 3**.

Table 3: Tree Inventory Results

GPS ID	Species		DBH (cm)	Condition ¹					Notes
	Scientific	Common		E	G	F	P	D	
738	<i>Acer negundo</i>	Manitoba Maple	24				✓		Heavily pruned, exposed roots
743	<i>Acer negundo</i>	Manitoba Maple	39		✓				Suckering at base, significant lean
756	<i>Acer negundo</i>	Manitoba Maple	62				✓		Heavily pruned, suckering all over tree, deadwood at base
757	<i>Acer negundo</i>	Manitoba Maple	38,35,37			✓			Deadwood in trunk, suckering
758	<i>Acer negundo</i>	Manitoba Maple	28				✓		Major deadwood in tree, one main leader broken
759	<i>Acer negundo</i>	Manitoba Maple	39		✓				

GPS ID	Species		DBH (cm)	Condition ¹					Notes
	Scientific	Common		E	G	F	P	D	
760	<i>Acer negundo</i>	Manitoba Maple	37			✓			One dead leader branch, previously pruned, dead tree leaning against this tree, could pose a hazard
761	<i>Acer negundo</i>	Manitoba Maple	52		✓				Central leader pruned, suckering, cavities in trunk
733	<i>Acer platanoides</i>	Norway Maple	43		✓				
736	<i>Acer platanoides</i>	Norway Maple	27			✓			Suckering at base, deadwood in trunk, physical damage to trunk
737	<i>Acer saccharinum</i>	Silver Maple	52			✓			Bank starting to cut under tree, deadwood at base of tree, exposed roots, previously pruned
740	<i>Acer saccharinum</i>	Silver Maple	73				✓		Broken secondary branches, bank starting to cut under tree, large cavity in trunk
741	<i>Acer saccharinum</i>	Silver Maple	38,48			✓			Few buds, dead secondary branches
744	<i>Acer saccharinum</i>	Silver Maple	52,71.5,70		✓				Suckering at base, previously pruned
746	<i>Acer saccharinum</i>	Silver Maple	82.5		✓				
752	<i>Acer saccharinum</i>	Silver Maple	102		✓				
734	<i>Acer saccharum spp. saccharum</i>	Sugar Maple	49		✓				
742	<i>Fraxinus pennsylvanica</i>	Green Ash	33,35		✓				Included bark at base
747	<i>Fraxinus pennsylvanica</i>	Green Ash	54			✓			Suckering on tree, large chunk missing out of trunk
748	<i>Fraxinus pennsylvanica</i>	Green Ash	42		✓				
750	<i>Fraxinus pennsylvanica</i>	Green Ash	54		✓				
751	<i>Fraxinus pennsylvanica</i>	Green Ash	47		✓				
753	<i>Fraxinus pennsylvanica</i>	Green Ash	56		✓				
754	<i>Fraxinus</i>	Green Ash	44,45		✓				

GPS ID	Species		DBH (cm)	Condition ¹					Notes
	Scientific	Common		E	G	F	P	D	
	<i>pennsylvanica</i>								
755	<i>Fraxinus pennsylvanica</i>	Green Ash	41,38		✓				
745	<i>Populus grandidentata</i>	Large-toothed Aspen	31,43		✓				
735	<i>Robinia pseudo-acacia</i>	Black Locust	44		✓				
739	<i>Robinia pseudo-acacia</i>	Black Locust	54		✓				Included bark
730	<i>Salix alba</i>	White Willow	13,12,11			✓			Exposed roots, previously pruned, suckering at base
731	<i>Salix alba</i>	White Willow	17,17,28			✓			Exposed roots, previously pruned, suckering at base
732	<i>Salix alba</i>	White Willow	22,11,11,11			✓			Exposed roots, previously pruned, suckering at base
749	<i>Unknown</i>	Unknown	17					✓	

¹Condition: E = Excellent; G = Good; F = Fair; P = Poor; D = Dead

4.4. ECOLOGICAL LAND CLASSIFICATION

Within the Cherry Beach Development Area, three natural ecological communities and five cultural community designations were observed. All natural vegetation units surveyed are considered common in Ontario. The location, type and boundaries of these natural features are delineated on **Figure 4**. **Table 4** outlines the communities documented during ELC surveys. Reference photos can be found in **Appendix B**.

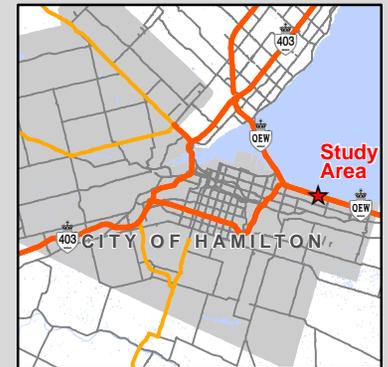


CHERRY BEACH SHORELINE RESTORATION CLASS EA NATURAL ENVIRONMENT EXISTING CONDITIONS

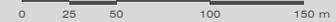
SITE INVESTIGATION RESULTS

FIGURE 4

- Mixers
- Steel Water Pipe
- Weeping Tile Drain
- Concrete Culvert
- CSP Culvert
- Monarch Butterfly Observation
- Watercourse
- Study Area
- CVC_1: Business Sector
- CVR_3: Single Family Residential
- MEMM3: Dry-Fresh Mixed Meadow
- Mown Grass
- OAO: Open Aquatic
- SHO: Open Shoreline (Candidate Shorebird Migratory Stopover Area)*
- TAGM5: Fencerow
- WODM4: Dry-Fresh Deciduous Woodland
- Removed Woodland



1:4,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, CITY OF HAMILTON,
HAMILTON CONSERVATION AUTHORITY

*Based on criteria outlined in the MNR Significant Wildlife Habitat Technical Guide and Associated Ecoregion Schedule for 6E

MAP CREATED BY: GM
MAP CHECKED BY: DR
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137839 - Cherry Beach\Mapping\



PROJECT: 137839
STATUS: DRAFT
DATE: 4/14/2014

Table 4: Description of ELC Communities

ELC Code	Classification	Soils	Vegetation	Comments
NATURAL COMMUNITIES				
MEMM3	Dry-Fresh Mixed Meadow	Silty Loam; moisture = 2 (Fresh)	This meadow community contains areas of Canada Goldenrod (<i>Solidago canadensis</i>) and White Sweet-Clover (<i>Melilotus albus</i>), with a mix of graminoid and forb species throughout. Species observed include Wild Carrot (<i>Daucus carota</i>), Orchard Grass (<i>Dactylis glomerata</i>), Kentucky Blue Grass (<i>Poa pratensis</i>), Quack Grass (<i>Elymus repens</i>) and Common Ragweed (<i>Ambrosia artemisiifolia</i>). The meadow primarily consists of an herbaceous ground layer (below 0.5 m) with rare occurrences of woody shrub and tree species present in the understory (0.5 m – 2 m in height) and sub-canopy (2 m – 10 m in height). Woody species observed include Staghorn Sumac (<i>Rhus typhina</i>), Manitoba Maple (<i>Acer negundo</i>), Black Locust (<i>Robinia pseudoacacia</i>) and Green Ash (<i>Fraxinus pennsylvanica</i>). Non-native species have a dominant presence in this community.	This community occurs in several locations throughout the study area. North of Cherry Beach Road, the community takes form as three smaller polygons that are mechanically maintained (cut) periodically and are situated on former residential properties. South of Cherry Beach Road, the community is found as manicured linear polygons that border North Service Road. See Photo 1 in Appendix B .
WODM4	Dry-Fresh Deciduous Woodland	Silty Loam; moisture = 2 (Fresh)	This woodland community is a mix of natural woodland areas and naturalizing deciduous hedgerows associated with former residential properties. The woodland contains abundant Green Ash and occasional Manitoba Maple, White Willow (<i>Salix alba</i>), Black Locust, and Silver Maple (<i>Acer saccharinum</i>) in the canopy layer (> 10 m in height). The sub-canopy contains abundant Manitoba Maple with occasional White Poplar (<i>Populus alba</i>) and Norway Maple (<i>Acer platanoides</i>). The understory consists of primarily non-native woody species including Common Buckthorn (<i>Rhamnus cathartica</i>), Tartarian Honeysuckle (<i>Lonicera tatarica</i>) and Red Raspberry (<i>Rubus idaeus</i>). The ground layer is also comprised of mainly non-native species such as Wild Carrot, Kentucky Blue Grass, Orchard Grass, Common Dandelion (<i>Taraxacum officinale</i>) and Common Burdock (<i>Arctium minus</i>).	This community is occurs primarily within the eastern portion of the study area, north and south of Cherry Beach Road. The community is dominated by non-native species typical of urban areas. North of Cherry Beach Road, the community is situated on former residential property lands. The residences that were once located on these properties have been removed. There are also two remaining residences that are privately owned and occupied. See Photo 2 in Appendix B .
OAD	Open Water	n/a	This community type represents open water features with little to no submergent and emergent vegetation observable from the shoreline. There may be aquatic submergent vegetation (e.g. pondweed, milfoil) that was not visible from the shoreline.	This community is associated with Lake Ontario. For health and safety reasons an in-water vegetation assessment was not completed. See Photo 3 in Appendix B .
CULTURAL COMMUNITIES				
SHO	Open Shoreline Community Series	n/a	This community consists of artificial shoreline erosion control structures (e.g., rip-rap and retaining walls) with natural shoreline areas that are actively eroding. Natural shoreline areas are comprised of cobble, coarse sand and crushed mussel shells.	Community occurs along the approx. 500 m of Lake Ontario shoreline that borders the northern extent of the study area. See Photo 3 and Photo 4 in Appendix B .
CVR_3	Single Family Residential	n/a	Vegetation associated with this community consists of manicured lawns, ornamental gardens and other landscaped features (e.g., landscape trees).	This community is located in several locations throughout the study area. Residential properties are located off of 1 Private Road, 2 Private Road and 3 Private Road. One large private community (Bal Harbour) is located in the northwest corner of the study area and two smaller private homes are located in the southwest corner off of Millen Road. A large private community (Seaside Village) is located east of the study area and borders the channelized drain the acts as the eastern boundary of the study area. See Photo 5 in Appendix B .
CVC_1	Business Sector	n/a	Vegetation associated with this community consists of manicured lawns, ornamental gardens and landscape trees.	This community consists of one large polygon (Lake Trail Motel) located in the south centre of the study area. See Photo 6 in Appendix B .
n/a	Mown Grass	n/a	Vegetation associated with this community consists of non-native Kentucky Blue Grass or meadow communities that are routinely mown throughout the growing season.	Community is associated with residential housing and business sector but also as two smaller polygons in the northeast corner and as linear polygons located within the road right-of-way for North Service Road.
TAGM5	Fencerow	n/a	This community consists of deciduous tree species growing along a property line. Species are similar in composition to the WODM4 community, but are primarily on private lands.	This linear community is located along the property line of the Lake Trail Motel and adjacent residential properties.

4.5. BREEDING AND MIGRATORY BIRD SURVEYS

Breeding Bird

Breeding bird point counts and area searches were completed within the study area on June 5 and 19, 2013 (**Figure 3**). A list of the 24 bird species observed within or adjacent to the study area during the breeding season is provided in **Table 5**. The species observed are common in meadow, forest and forest edge environments found in Ontario as indicated by their primary nesting habitat (Couturier, 1999).

The majority of birds observed have primary habitats within open woodland or urban areas, which correlates with the breeding season survey results, as most species were utilizing the open woodland within the study area. Species richness and abundance within the study area was limited. In particular, the small, fragmented meadow habitats had very low species richness and abundance, with a few individual species (e.g., Eastern Kingbird, American Goldfinch, etc.) primarily in the meadow habitat south of Cherry Beach Road and north of the North Service Road.

A total of four area-sensitive open country bird species were observed during breeding bird surveys including American Goldfinch (*Carduelis tristis*), Eastern Kingbird (*Tyrannus tyrannus*), Northern Rough-winged Swallow (*Stelgidopteryx serripennis*), and Barn Swallow (*Hirundo rustica*); however, candidate area-sensitive breeding bird habitat, including open country breeding bird habitat, marsh bird breeding habitat, shrub/early successional bird breeding habitat and woodland area-sensitive bird breeding habitat, as defined by the SWHTG, does not exist within the study area.

One provincially *Threatened* SAR, Barn Swallow, was observed aerial foraging within the study area. Barn Swallow generally require buildings or other man-made structures for nesting, which are present in the study area, but are located on private lands and at the time of site investigation surveys could not be accessed to assess nesting activity.

One SCC, Caspian Tern (*Hydroprogne caspia*), was observed either flying over or foraging on Lake Ontario during the breeding bird survey. This species was not observed landing within the study area or exhibiting breeding evidence during the breeding bird surveys.

Migratory Bird

Six migratory bird survey events were completed on April 30th, May 13th, May 17th, August 30th, September 18th and October 8th, 2013. Woodland habitat size and the absence of provincial indicator species preclude the potential shorebird or landbird migratory stopover area habitat from consideration as provincially significant wildlife habitat. A total of 49 species were observed during the spring and fall migratory bird surveys, with 10 species observed flying over the site or on Lake Ontario. Therefore, a total of 39 species were observed within the study area boundaries (principally woodland), with a species richness of 23 in the spring migratory season and 27 in the fall migratory season. Fifteen (15) avian migrants were also observed during the breeding season, which signifies that 23 species (9 in spring and 20 in fall) were exclusively migratory species; although, it is expected that some individuals of bird species observed during the breeding and migratory periods solely used the study area for migratory purposes.

It should be noted that while one year of migratory surveys can inform the function of a particular habitat, migratory bird species richness and abundance can be variable from year to year. Generally, a

longitudinal correlational research study that involves repeated observations of the same variables over several years is recommended to attain reliable and accurate migratory bird empirical data.

Spring

For this assessment we have assumed that the species observed during the migratory period were migrants, and applied no correction factor to exclude potential resident breeding birds. Overall species richness was 23 migratory bird species. Species richness was relatively stable throughout the 2013 spring migratory season, with 15 species being observed on April 30th, 12 species being observed on May 13th, and 12 species on May 17th. A total of 118 individual birds were observed during spring migration; 35 on April 30th, 32 on May 13th, and 51 on May 17th, 2013.

Migratory birds observed were mainly passerines that utilized woodland habitat. Other lesser used habitats included meadow areas, as well as shoreline and open water of Lake Ontario (e.g., Common Terns (*Sterna hirundo*), Double-Crested Cormorant (*Phalacrocorax auritus*) and Long-Tailed Duck (*Clangula hyemalis*) were observed flying low over or floating on the lake).

In general, species richness and abundance in the Cherry Beach study area was low when compared to larger migratory “hotspot” habitats along the Great Lakes such as Point Pelee National Park, Long Point Provincial Park and Rondeau Provincial Park on Lake Erie, and Presqu'ile Provincial Park and Leslie Street Spit on Lake Ontario. Moreover, compared to the Cherry Beach Study area, historical data collected at Fifty Point Conservation Area, approximately 7 km to the east, indicates higher species richness and abundance (e.g., species richness of 68 species in 2005 and 44 species in 2008; Dougan and Associates, 2006 & 2008). It should be noted that survey effort was considerably higher for the Fifty Point Conservation Area study, as twelve spring migratory survey events in 2005 and ten survey events in 2008 were completed; while three spring migratory survey events were completed, a potential limitation of the study.

The Cherry Beach study was conducted during the same migratory season and used the same survey methodology and analysis approach as the Confederation Park EIS and Trillium Gardens Park Linkage Assessment studies, located approximately 2 km to the west and 2 km to the east, respectively. Species richness at Cherry Beach during the spring migratory period was less than at Confederation Park, Area G – Stoney Creek Pond ESA, (45 species; Dillon 2014a – report in progress) and Trillium Gardens Park (25 species; Dillon 2014b – report in progress). Similarly, spring migratory avian abundance at Cherry Beach (118 individual birds) was less than Confederation Park (374 individual birds)

Fall

Species richness and abundance in the Cherry Beach study area increased as the 2013 fall migratory season progressed, with 2 species being observed on August 30th, 14 on September 18th and 18 species on October 8th. Overall fall species richness was 27 species of predominately common passerines. A total of 67 individual birds were observed during spring migration; 1 on August 30th, 23 on September 18th, and 43 on October 8th, 2013. Birds were primarily observed in open woodland habitat, with occasional use of shoreline, open water, and meadow habitats within and immediately adjacent to the study area.

Comparing the Cherry Beach data results collected for the fall migratory period to the Confederation Park EIS (Stoney Creek Pond ESA) and Trillium Gardens Park Linkage Assessment study reveal a similar result to the spring dataset. Fall migratory bird species richness at Cherry Beach (27 species) was less than at Confederation Park (Stoney Creek Pond ESA) (43 species; Dillon 2014a – report in progress), but

was higher than what was observed at the Trillium Gardens Park study area (18 species; Dillon 2014b – report in progress). Similarly, migratory bird abundance at Cherry Beach (67 individual birds) was lower than Confederation Park (Stoney Creek Pond ESA) (243 individual birds; Dillon 2014a – report in progress), but was slightly higher than fall results at Trillium Gardens (58 individual birds; Dillon 2014b – report in progress).

A complete list of birds observed during migratory bird surveys is provided in **Table 5**. In addition, **Table 5** lists bird Species at Risk and Species of Conservation concern that were not observed on site, but were recorded in the general area during Ontario Breeding Bird Atlas from 2001-2005. A discussion of the potential for the site to provide habitat for these species is provided in **Table 7**.

Table 5: Birds Documented in Background Review and during Breeding and Migratory Surveys

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Empidonax alnorum</i>	Alder Flycatcher+	---	---	S5B	h		●			Treed/shrubby swamp	
<i>Corvus brachyrhynchos</i>	American Crow	---	---	S5B	---		●			Woodlands	
<i>Carduelis tristis</i>	American Goldfinch+	---	---	S5B	---		●	●	●	Early Successional	Woodland/ Mixed Meadow/ Residential
<i>Falco sparverius</i>	American Kestrel+	---	---	S4	h		●			Agricultural	
<i>Setophaga ruticilla</i>	American Redstart+	---	---	S5B	h		●			Deciduous Woodlands	
<i>Turdus migratorius</i>	American Robin	---	---	S5B	---		●	●	●	Urban	Woodland
<i>Spizella arborea</i>	American Tree Sparrow	---	---	S4B	---				●	---	
<i>Scolopax minor</i>	American Woodcock	---	---	S4B	---		●			Early Successional	
<i>Icterus galbula</i>	Baltimore Oriole	---	---	S4B	---			●	●	Deciduous Woodlands	Woodland
<i>Riparia riparia</i>	Bank Swallow+	---	---	S4B	h		●			Lakes/Ponds/ Rivers	
<i>Hirundo rustica</i>	Barn Swallow+	---	THR	S4B	---		●	●		Agricultural	Fly-over
<i>Ceryle alcyon</i>	Belted Kingfisher	---	---	S4B	h		●		●	Lakes/Ponds/ Rivers	
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo+	---	---	S5B	h		●			Early Successional	
<i>Dendroica fusca</i>	Blackburnian	---	---	S5B	H				●	Coniferous	

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
	Warbler+									Woodlands	
<i>Poecile atricapillus</i>	Black-capped Chickadee	---	---	S5	---		●		●	Mixed Woodlands	
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron*+	---	---	S3B, S3N	h	●				Islands	
<i>Dendroica striata</i>	Blackpoll Warbler	---	---	S4B	---				●	---	
<i>Dendroica caerulescens</i>	Black-throated Blue Warbler+	---	---	S5B	H				●		
<i>Dendroica virens</i>	Black-throated Green Warbler+	---	---	S5B	H				●	Mixed Woodlands	
<i>Cyanocitta cristata</i>	Blue Jay	---	---	S5	---		●		●	Coniferous Woodlands	
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher	---	---	S4B	h		●			Deciduous Woodlands	
<i>Dolichonyx oryzivorus</i>	Bobolink+	---	THR	S4B	---		●			Agricultural	
<i>Toxostoma rufum</i>	Brown Thrasher+	---	---	S4B	h		●			Early Successional	
<i>Molothrus ater</i>	Brown-headed Cowbird	---	---	S4B	---		●	●	●	Agricultural	Woodland
<i>Branta canadensis</i>	Canada Goose	---	---	S5	---		●	●	●	Tundra	Flying Over/ Open water/lake
<i>Wilsonia canadensis</i>	Canada Warbler*+	THR	SC	S4B	H		●			Deciduous Woodlands	
<i>Thryothorus ludovicianus</i>	Carolina Wren	---	---	S4	H		●			Open Woodlands	

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Sterna caspia</i>	Caspian Tern*	---	---	S3B	---			●		Islands	Flying Over/Lake
<i>Bombycilla cedrorum</i>	Cedar Waxwing	---	---	S5B	---		●	●		Open Woodlands	Woodland
<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler+	---	---	S5B	h		●			Early Successional	
<i>Chaetura pelagica</i>	Chimney Swift	THR	THR	S4B, S4N	h		●			Urban	
<i>Spizella passerina</i>	Chipping Sparrow	---	---	S5B	---		●		●	Coniferous Woodlands	
<i>Quiscalus quiscula</i>	Common Grackle	---	---	S5B	---		●	●	●	Woodlands	Woodland/ Residential
<i>Gavia immer</i>	Common Loon	---	---	S5B, S5N					●	---	
<i>Sterna hirundo</i>	Common Tern	---	---	S4B	---				●	Islands	
<i>Geothlypis trichas</i>	Common Yellowthroat	---	---	S5B	---		●			Marsh	
<i>Accipiter cooperii</i>	Cooper's Hawk+	---	---	S4B, SZN	H		●			Deciduous Woodlands	
<i>Junco hyemalis</i>	Dark-eyed Junco+	---	---	S5B	---				●	Coniferous Woodlands	
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	---	---	S5B	---			●	●	Islands	Open water/lake
<i>Picoides pubescens</i>	Downy Woodpecker	---	---	S5	---		●		●	Deciduous Woodlands	
<i>Sialia sialis</i>	Eastern Bluebird+	---	---	S5B	h		●			Agricultural	
<i>Tyrannus tyrannus</i>	Eastern Kingbird+	---	---	S4B	---		●	●		Early Successional	Mixed Meadow/

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
											Woodland
<i>Sturnella magna</i>	Eastern Meadowlark+	THR	THR	S4B	---		●			Agricultural	
<i>Sayornis phoebe</i>	Eastern Phoebe+	---	---	S5B	h		●		●	Woodlands	
<i>Otus asio</i>	Eastern Screech-owl	---	---	S4	h		●			Woodlands	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee+	---	---	S4B	h		●			Open Woodlands	
<i>Contopus virens</i>	Eastern Wood-pewee	---	---	S4B	---		●			Deciduous Woodlands	
<i>Sturnus vulgaris</i>	European Starling	---	---	SNA	---		●	●	●	---	Woodland
<i>Regulus satrapa</i>	Golden-crowned Kinglet+	---	---	S5B	H				●	Coniferous Woodlands	
<i>Ammodramus savannarum</i>	Grasshopper Sparrow+	---	---	S4B, SZN	h		●			Prairie/Grasslands	
<i>Dumetella carolinensis</i>	Gray Catbird	---	---	S4B	---		●	●	●	Early Successional	Woodland
<i>Larus marinus</i>	Great Black-backed Gull*	---	---	S2B	H				●	---	
<i>Ardea herodias</i>	Great Blue Heron	---	---	S4	h		●			Treed/Shrubby Swamp	
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	---	---	S4B	---		●			Deciduous Woodlands	
<i>Bubo virginianus</i>	Great Horned Owl	---	---	S4	h		●			Deciduous Woodlands	
<i>Butorides virescens</i>	Green Heron	---	---	S4B	h		●			Treed/Shrubby Swamp	

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Picoides villosus</i>	Hairy Woodpecker	---	---	S5	h		●			Mixed Woodlands	
<i>Larus argentatus</i>	Herring Gull	---	---	S5B, S5N	---				●	Islands	
<i>Eremophila alpestris</i>	Horned Lark+	---	---	S5B, SZN	---		●			Agricultural	
<i>Carpodacus mexicanus</i>	House Finch	---	---	SNA	---		●	●		---	Residential/ Woodland
<i>Passer domesticus</i>	House Sparrow	---	---	SNA	---		●	●	●	---	Residential/ Woodland
<i>Troglodytes aedon</i>	House Wren	---	---	S5B	---		●			Early Successional	
<i>Passerina cyanea</i>	Indigo Bunting	---	---	S4B	---		●			Open Woodlands	
<i>Charadrius vociferus</i>	Killdeer	---	---	S5B, S5N	---		●			Agricultural	
<i>Empidonax minimus</i>	Least Flycatcher	---	---	S4B	h		●			Deciduous Woodlands	
<i>Clangula hyemalis</i>	Long-tailed Duck*	---	---	S3B	---				●	---	
<i>Anas platyrhynchos</i>	Mallard	---	---	S5	---		●			Marsh	
<i>Cistothorus palustris</i>	Marsh Wren+	---	---	S4B	h		●			Marsh	
<i>Zenaidura macroura</i>	Mourning Dove	---	---	S5	---		●	●	●	Early Successional	Woodland
<i>Cygnus olor</i>	Mute Swan	---	---	SNA	l		●			---	
<i>Vermivora ruficapilla</i>	Nashville Warbler								●	---	
<i>Cardinalis cardinalis</i>	Northern Cardinal	---	---	S5	---		●	●	●	Woodlands	Woodland

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Colaptes auratus</i>	Northern Flicker	---	---	S4B	---		●	●	●	Mixed Woodlands	Woodland
<i>Circus cyaneus</i>	Northern Harrier	---	---	S4B	H		●			Marsh	
<i>Mimus polyglottos</i>	Northern Mockingbird+	---	---	S4	h		●			Early Successional	
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow+	---	---	S4B	---		●	●	●	Lakes/Ponds/Rivers	Flying Over
<i>Icterus spurius</i>	Orchard Oriole	---	---	S4B	h		●			Open Woodlands	
<i>Seiurus aurocapillus</i>	Ovenbird+	---	---	S4B	---		●			Deciduous Woodlands	
<i>Dendroica pinus</i>	Pine Warbler	---	---	S5B					●	---	
<i>Protonotaria citrea</i>	Prothonotary Warbler	END	END	S1B	H		●			Treed Swamp	
<i>Progne subis</i>	Purple Martin+	---	---	S4B	h		●			Lakes/Ponds/Rivers	
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker+	---	---	S4	h		●			Deciduous Woodlands	
<i>Sitta canadensis</i>	Red-breasted Nuthatch+	---	---	S5	h		●			Coniferous Woodlands	
<i>Vireo olivaceus</i>	Red-eyed Vireo	---	---	S5B	---		●			Deciduous Woodlands	
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker*	THR	SC	S4B	H		●			Woodlands	
<i>Buteo jamaicensis</i>	Red-tailed Hawk	---	---	S5	---		●			Agricultural	
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	---	---	S4	---		●	●	●	Marsh	Woodland

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Larus delawarensis</i>	Ring-billed Gull	---	---	S5B, S4N	---		●	●	●	Islands	Flying Over/Lake
<i>Phasianus colchicus</i>	Ring-necked Pheasant	---	---	SNA	I		●			---	
<i>Columba livia</i>	Rock Dove	---	---	SNA	I		●			---	
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	---	---	S4B	---		●			Deciduous Woodlands	
<i>Regulus calendula</i>	Ruby-crowned Kinglet+	---	---	S4B	---				●	Coniferous Woodlands	
<i>Archilochus colubris</i>	Ruby-throated Hummingbird+	---	---	S5B	h		●			Woodlands	
<i>Passerculus sandwichensis</i>	Savannah Sparrow+	---	---	S4B	---		●			Agricultural	
<i>Piranga olivacea</i>	Scarlet Tanager+	---	---	S4B	h		●			Deciduous Woodlands	
<i>Cistothorus platensis</i>	Sedge Wren+	---	---	S4B	H		●			Meadows	
<i>Accipiter striatus</i>	Sharp-shinned Hawk+	---	---	S5B, SZN	H		●			Coniferous Woodlands	
<i>Asio flammeus</i>	Short-eared Owl*	SC	SC	S2N, S4B	H		●			Prairie/ Grasslands	
<i>Melospiza melodia</i>	Song Sparrow	---	---	S5B	---		●	●	●	Early Successional	Woodland/ Residential
<i>Porzana carolina</i>	Sora+	---	---	S4B, SZN	h		●			Marsh	
<i>Actitis macularia</i>	Spotted Sandpiper+	---	---	S5	---		●		●	Beaches	

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Melospiza georgiana</i>	Swamp Sparrow+	---	---	S5B	---		●			Marsh	
<i>Tachycineta bicolor</i>	Tree Swallow	---	---	S4B	---		●		●	Treed/Shrubby Swamp	
<i>Baeolophus bicolor</i>	Tufted Titmouse	---	---	S4	H		●			Deciduous Woodlands	
<i>Cathartes aura</i>	Turkey Vulture+	---	---	S5B	h		●			Cliffs	
<i>Bartramia longicauda</i>	Upland Sandpiper+	---	---	S4B	---		●			Agricultural	
<i>Catharus fuscenscens</i>	Veery+	---	---	S4B	---		●			Mixed Woodlands	
<i>Pooecetes gramineus</i>	Vesper Sparrow+	---	---	S4B	h		●			Agricultural	
<i>Rallus limicola</i>	Virginia Rail+	---	---	S5B	h		●			Marsh	
<i>Vireo gilvus</i>	Warbling Vireo	---	---	S5B	---		●	●	●	Open Woodlands	Woodland
<i>Dendroica palmarum</i>	Western Palm Warbler	---	---	S5B	---				●	Bogs	
<i>Sitta carolinensis</i>	White-breasted Nuthatch	---	---	S5	---		●			Deciduous Woodlands	
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	---	---	S4B	---				●	---	
<i>Zonotrichia albicollis</i>	White-throated Sparrow+	---	---	S5B	h				●	Early Successional	
<i>Melanitta fusca</i>	White-winged Scoter	---	---	S4B, S4N					●	---	
<i>Meleagris gallopavo</i>	Wild Turkey	---	---	S5	I		●			Deciduous Woodlands	

Scientific Name	Common Name	SARA ¹	ESA 2007 ²	Srank ³	Status in Hamilton ⁴	NHIC ⁵	OBBA ⁶	Observed During Breeding Period	Observed During Migratory Period	Primary Nesting Habitat ⁷	ELC Ecosite
<i>Empidonax traillii</i>	Willow Flycatcher	---	---	S5B, SZN	---		●			Shrubby Swamp	
<i>Troglodytes troglodytes</i>	Winter Wren+	---	---	S5B	h		●		●	Coniferous Woodlands	
<i>Aix sponsa</i>	Wood Duck+	---	---	S5	h		●			Marsh	
<i>Hylocichla mustelina</i>	Wood Thrush	---	---	S4B	---		●			Deciduous Woodlands	
<i>Dendroica petechia</i>	Yellow Warbler	---	---	S5B	---		●	●	●	Early Successional	Woodland
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker+	---	---	S5B	H				●	Mixed Woodlands	
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	---	---	S4B, SZN	H		●			Early Successional	
<i>Dendroica coronata</i>	Yellow-rumped Warbler+	---	---	S5B	H				●	Coniferous Woodlands	

* Denotes Species of Conservation Concern; + Denotes Area-Sensitive Species (Couturier, 1999)

1. Federal Species at Risk Act (Source: SARA Public Registry, 2007) Note: END – Endangered, THR – Threatened, SC- Special Concern
2. Provincial Endangered Species Act (Source: OMNR website, 2007) Note: END – Endangered, THR – Threatened, SC- Special Concern
3. Subnational (Provincial) Rank (Source: OMNR National Heritage Information Centre website, 2007)
- Srank - S5 = Very Common; S4= Common; S3 = Rare-Uncommon; S2 = Rare; S1 = Extremely Rare; SNA (SE) = conservation status ranking not applicable (exotic), ? -status uncertain
4. Status in Hamilton according to Hamilton Naturalist's Club (2003); H = Rare in Hamilton Region; h = uncommon in Hamilton Region; ex = extirpated from Hamilton; I = introduced
5. Natural Heritage Information Centre Database – Historical Occurrence Record
6. Ontario Breeding Bird Atlas Record (Square #17PH08)
7. Primary Nesting Habitat Obtained from Conservation Priorities for the Birds of Southern Ontario - Technical Appendices (Couturier, 1999)

4.6. INCIDENTAL WILDLIFE OBSERVATIONS

Incidental wildlife species observed on the study area are listed in **Table 6** below. The majority of species listed below are considered to have *Secure* (Srank of S5) populations in Ontario or are introduced species (SNA). The Monarch Butterfly (*Danaus plexippus*) is considered a Species of Conservation Concern and is discussed further in **Section 4.6**.

Table 6: Incidental Wildlife Species Documented

Scientific Name	Common Name	SARA ¹	ESA ²	SRank ³
<i>Canis latrans</i>	Coyote	---	---	S5
<i>Mustela vison</i>	Mink	---	---	S5
<i>Sciurus carolinensis</i>	Grey Squirrel	---	---	S5
<i>Sylvilagus floridanus</i>	Eastern Cottontail	---	---	S5
<i>Pieris rapae</i>	Cabbage White	---	---	SNA
<i>Danaus plexippus</i>	Monarch*	SC	SC	S2N,S4B
<i>Vanessa atalanta</i>	Red Admiral	---	---	S5
<i>Nymphalis antiopa</i>	Mourning Cloak	---	---	S5
<i>Colias philodice</i>	Clouded Sulphur	---	---	S5
---	Salmonid species	---	---	---

* Denotes a Species of Conservation Concern

1. Federal Species at Risk Act (Source: SARA Public Registry, 2007)
2. Provincial Endangered Species Act (Source: OMNR website, 2007)
3. Subnational (Provincial) Rank (Source: OMNR National Heritage Information Centre website, 2007)

4.7. SPECIES AT RISK AND SPECIES OF CONSERVATION CONCERN

A search of the MNR's NHIC database, the MNR list of species occurrences for the City of Hamilton and other secondary information sources identified the potential for 64 SAR/SCC species to occur in the general area of the study area, including 13 species with historic occurrences approximately 1 kilometre from the study area. A habitat screening for species identified through secondary source information is provided in **Table 7**, which includes the habitat requirements for SAR and provincially rare species (SCC). A determination on the potential habitat in the study area and a description of the rationale used to make this determination is also provided.

Monarch Butterfly (Species of Conservation Concern) and Barn Swallow (Species at Risk – designated as *Threatened*) were found to have marginal foraging habitat within the study area based on observational occurrences of foraging behaviour. There was also low potential, marginal nesting habitat for Barn Swallow that could not be confirmed due to site access restrictions.

Table 7: Occurrence Records and Habitat Screening for Species at Risk and Species of Conservation Concern

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
BIRDS									
<i>Empidonax vireescens</i>	Acadian Flycatcher	Endangered	S2	---	Yes	---	Mature, shady deciduous forests; heavily wooded ravines; creek bottoms or river swamps; needs at least 30 ha of forest	No	Mature, large, deciduous forest/ravine/swamps are not present in the study area. Woodlands present are < 30 ha in size and consist of primarily younger growth. Species was not observed during site investigation surveys.
<i>Haliaeetus leucocephalus</i>	Bald Eagle*	Special Concern	S4	---	Yes	---	Require large continuous areas of deciduous or mixed forest around large lakes, rivers; require area of 255 ha for nesting	No	Large continuous areas of deciduous/mixed forest around large lakes and rivers are not present in the study area. Species was not observed during site investigation surveys.
<i>Tyto alba</i>	Barn Owl	Endangered	S1	ex	Yes	---	Open areas such as fields, agricultural lands with scattered woodlots, buildings and/or orchards; grasslands, sedge meadows, marshes	No	Open areas with scattered woodlands, buildings and suitable grasslands/sedge meadows/ marshes are not present in the study area. Absence of grasslands, sedge meadows or marsh communities. The Barn Owl is considered to be extirpated from the Hamilton area and the study area does not include provincially Regulated Habitat. Species was not observed during site investigation surveys.
<i>Hirundo rustica</i>	Barn Swallow	Threatened	S4B, S4N	h	---	---	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water	Yes	Farmlands, cliffs and caves are not present within the study area. Buildings and man-made structures are present within the study area. Barn Swallows were observed aerial foraging within the study area and could be potentially nesting within built structures located on private lands.
<i>Chidonias niger</i>	Black Tern*	Special Concern	S3	ex	Yes	---	Wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers; must have shallow water (0.5 to 1m deep); requires marshes >20 ha in size	No	Wetlands are not present within the study area. The Black Tern is considered to be extirpated from the Hamilton area. Species was not observed during site investigation surveys.
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron*	---	S3	H	---	Yes	Deciduous woodland swamps, cattail marshes, and islands	No	Deciduous woodland swamps, marshes and islands are not present in the study area. Species was not observed during site investigation surveys.
<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	S4	---	Yes	---	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; prefers larger tracts of grassland (e.g., >30-50 ha)	No	The sizes of meadow areas in the study area are very small which indicates a habitat with low potential productivity for open country breeding birds. The area surrounding the meadows is a mix of urban land use types which results in a level of disturbance that deters breeding behaviour for area sensitive species. Species was not observed during site investigation surveys.

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
<i>Wilsonia canadensis</i>	Canada Warbler*	Special Concern	S4	h	Yes	---	Dense, mixed coniferous, deciduous forests with closed canopy; usually requires at least 30 ha	No	Dense, 30 ha or greater coniferous/deciduous forest is not present in the study area. Species was not observed during site investigation surveys.
<i>Sterna caspia</i>	Caspian Tern*	---	S3B	h	Yes	---	Open habitat near large lakes or rivers, beaches, shorelines, rocky or sandy beaches, offshore islands; negatively affected by elevated water levels during nesting season; feeds on fish; found in association with Ring-billed Gulls	No	Beach habitat located within study area is subject to regular changes in water levels and would not be suitable for nesting. Species was observed flying over Lake Ontario adjacent to the study area.
<i>Dendroica cerulea</i>	Cerulean Warbler	Threatened	S3	H	Yes	---	Mature, deciduous woodland of Great Lakes-St. Lawrence and Carolinian Forests; area sensitive needs extensive areas of forest (>100 ha)	No	Mature, large deciduous woodland is not present in the study area. Species was not observed during site investigation surveys.
<i>Chaetura pelagica</i>	Chimney Swift	Threatened	S4	h	Yes	---	Urban areas near buildings; nests in hollow trees; crevices of rock cliffs; chimneys (generally industrial sized and antiquated chimney designs); feeds over open water	No	Hollow trees, rock cliffs and crevices are not present in the study area. Buildings are present, but contain modern chimneys, which are not suitable for nesting. Species was not observed during site investigation surveys.
<i>Chordeiles minor</i>	Common Nighthawk*	Special Concern	S4	H	Yes	---	Open ground; clearings in dense forests; ploughed fields; open woodlands; flat gravel roofs	No	Dense forest and agricultural lands not present in the study area. Most buildings in the area have slanted roofs, which are unsuitable for nesting. Species was not observed during site investigation surveys.
<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	S4B	---	---	---	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size	No	Grassy meadows, farmland, pasture, hayfields, and orchards are not present in the study area. Meadow areas that are present are very small and unlikely to support breeding pairs of open country birds. Species was not observed during site investigation surveys.
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Endangered	SH	ex	Yes	---	Large, fallow, grassy area with ground mat of dead vegetation, dense herbaceous vegetation; requires a minimum of 40 ha but usually in area >100 ha	No	Grassy areas are routinely mown, maintained and not fallow. Meadow areas are very small, are not grassy or very dense and therefore do not provide a suitable habitat for this species. Henslow's sparrow is considered to be extirpated from the Hamilton area. Species was not observed during site investigation surveys.
<i>Wilsonia citrina</i>	Hooded Warbler*	Special Concern	S3	H	Yes	---	Favours mature deciduous forest (Carolinian)	No	Mature deciduous forest is not present in the study area. Species was not observed during site investigation surveys.
<i>Rallus elegans</i>	King Rail	Endangered	S2	h	Yes	---	Large, shallow, fresh water marshes, shrubby swamps	No	Marshes and swamps are not present in the study area. Species was not observed during site investigation surveys.
<i>Ixobrychus exilis</i>	Least Bittern	Threatened	S4	H	Yes	---	Deep marshes, swamps, bogs	No	Marshes, swamps and bogs are not present in the study area. Species was not observed during site investigation surveys.

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
<i>Seiurus motacilla</i>	Louisiana Waterthrush*	Special Concern	S3	H	Yes	---	Wooded ravines with running streams; woodland swamps; large tracts of mature deciduous or mixed forests	No	Wooded ravines, woodland swamps, and large forests are not present in the study area. Species was not observed during site investigation surveys.
<i>Falco peregrinus</i>	Peregrine Falcon*	Special Concern	S2	---	Yes	---	Rock cliffs, crags, situated near water; tall buildings	No	Rock cliffs and other preferred habitat features are not present in the study area. Species was not observed during site investigation surveys.
<i>Protonotaria citrea</i>	Prothonotary Warbler	Endangered	S1	H	Yes	---	Area sensitive preferring 100 ha of flooded swampy woodlands	No	Swamp woodlands are not present in the study area. Species was not observed during site investigation surveys.
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker*	Special Concern	S4	H	Yes	---	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps	No	Deciduous forest, fields or pasture lands and wooded swamps are not present in the study area. Species was not observed during site investigation surveys.
<i>Asio flammeus</i>	Short-eared Owl*	Special Concern	S2	H	Yes	---	Grasslands, open areas or meadows that are grassy or bushy; requires 75-100 ha of contiguous open habitat	No	Grasslands 75-100 ha in size not present in the study area. Meadow areas are mixed and are very small in size. Species was not observed during site investigation surveys.
<i>Icteria virens</i>	Yellow-breasted Chat	Endangered	S2	H	Yes	---	Dense thickets around wood edges, riparian areas and in overgrown clearings. Ontario population are dependent on successional habitats resulting from forest openings created by storms, fire or fallow fields	No	Dense thicket and suitable riparian areas are not present in the study area. Species was not observed during site investigation surveys.
AQUATIC - FISH									
<i>Anguilla rostrata</i>	American Eel	Endangered	S1	H	Yes	---	Continental-phase American eels are highly plastic in their habitat use. In streams, eels generally do not show consistent preferences for habitat type, cover, substrate, water temperature, and density of predators.	No	Study area does not contain watercourse features that would be suitable for American Eels as the turbid conditions and other water quality factors would be a deterrent to use.
<i>Esox americanus vermiculatus</i>	Grass Pickerel*	Special Concern	S3	H	Yes	---	Warm, slow-moving streams, ponds and shallow bays of larger lakes, with clear to tea-coloured water and abundant vegetation	No	Water features within the study area do not provide suitable habitat for this species due to siltation levels/high water turbidity, lack of aquatic vegetation and low water levels.
<i>Clinostomus elongatus</i>	Redside Dace	Endangered	S2	H	Yes	---	Pools and slow-flowing areas of small headwater streams with moderate to high gradient	No	Pools and slow-flowing areas of small headwater streams with moderate to high gradient are not present in the study area.

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
LEPIDOPTERA									
<i>Danaus plexippus</i>	Monarch Butterfly*	Special Concern	S2	---	Yes	---	Meadows and Open areas where milkweed grows	Yes	Common Milkweed (<i>Asclepias syriaca</i>) was observed sparsely within the meadow communities south of Cherry Beach Road. Monarch individuals were observed in very low abundances (e.g. max two individuals) during site investigation surveys in 2012 and 2013. Note that 2013 and recent years prior to the site investigation have had low abundances of Monarchs and other Lepidoptera in southern Ontario.
<i>Pieris virginiensis</i>	West Virginia White*	Special Concern	S3	---	Yes	---	Moist, deciduous woodlands	No	Moist deciduous woodlands are not present in the study area. Species was not observed during site investigation surveys.
MAMMALS									
<i>Taxidea taxus jacksoni</i>	American Badger	Endangered	S2	---	Yes	---	Open grasslands and oak savannahs	No	Open grasslands or oak savannahs are not present in the study area. Study area does not overlap regulated habitat for this species.
<i>Microtus pinetorum</i>	Woodland Vole*	Special Concern	S3	H	Yes	Yes	Mature deciduous forest in the Carolinian zone; with loose sandy soil and deep humus; grasslands, meadows and orchards with groundcover of duff or grass	No	Mature deciduous forest and suitable undisturbed meadows dominant with grassy species are not present in the study area. Species was not observed during site investigation surveys.
HERPTILES									
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	Threatened	S2	H	Yes	Yes	Damp, shady deciduous forest; swamps; moist pasture; lakeshores	No	Damp, shady deciduous forest/swamps and other preferred habitat are not present in the study area. Also, there are no occurrence records within last 5 years or no known regulated habitat within 1 km of the site.
<i>Emydonidea blandingii</i>	Blanding's Turtle	Threatened	S3	H	Yes	---	Shallow water marshes, bogs, ponds or swamps	No	Marshes, bogs, ponds and swamps are not present in the study area. Species was not observed during site investigation surveys.
<i>Sternotherus odoratus</i>	Eastern Musk Turtle	Threatened	S3	H	Yes	---	Aquatic, except when laying eggs; shallow slow moving water of lakes, streams, marshes and ponds; hibernate in underwater mud, in banks or in muskrat lodges; eggs are laid in debris or under stumps or fallen logs at waters edge; often share nest sites; sometimes congregate at hibernation sites; not readily observed	No	Shallow lakes, streams, marshes and ponds are present in the study area. Species was not observed during site investigation surveys.
<i>Heterodon platirhinos</i>	Eastern Hog-nosed Snake	Threatened	S3	---	Yes	---	Sandy upland fields, pastures, savannahs, sandy beaches; prefer forest areas >5 ha	No	Sandy fields, forest areas > 5 ha, pastures, savannahs, and beaches are not present in the study area. Species was not observed during site investigation surveys.
<i>Thamnophis sauritus</i>	Eastern Ribbonsnake*	Special Concern	S3	H	Yes	---	It is most frequently found along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	No	Shallow ponds, streams, marshes, swamps and bogs are not present in the study area. Species was not observed during site investigation surveys.

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
<i>Lampropeltis triangulum</i>	Eastern Milksnake*	Special Concern	S3	---	Yes	---	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods	Yes	Meadow and open woodland communities within the study area are marginal foraging habitat. Connectivity with woodlands, hedgerows, regenerating meadows and residential areas may support a large enough small mammal prey population to sustain Milksnakes and provide marginal cover. Rocky outcrops and old building foundations that could function as potential overwintering habitat were not observed in the study area. Species was not observed during site investigation surveys.
<i>Graptemys geographica</i>	Northern Map Turtle*	Special Concern	S3	H	Yes	---	Large bodies of water with soft bottoms and aquatic vegetation	No	The portion of Lake Ontario that extends into the study area contains a cobble/gravel bottom with an absence of aquatic vegetation. Species was not observed during site investigation surveys.
<i>Chelydra serpentina</i>	Snapping Turtle*	Special Concern	S4	Common	Yes	---	Permanent, semi-permanent fresh water; marshes; swamps or bogs; rivers and streams; prefers slow-moving water with a soft mud or sand substrate and abundant vegetation	No	Marshes, swamps, bogs, rivers and streams are not present within the study area. The portion of Lake Ontario that extends into the study area contains a cobble/gravel bottom with an absence of aquatic vegetation. Species was not observed during site investigation surveys.
<i>Apalone spinifera</i>	Spiny Softshell	Threatened	S3	H	Yes	---	Intolerant of pollution; large river systems, shallow lakes and ponds with muddy bottoms and aquatic vegetation; basks on sandbars, mud flats, grassy beaches, logs or rocks; eggs are laid near water on sandy beaches or gravel banks in areas with sun; requires acceptable feeding, nesting, habitat and natural, undisturbed corridors between these critical habitats	No	Large river systems, shallow lakes and ponds, sandbars, mud flats, and grassy beaches are not present in the study area. Species was not observed during site investigation surveys.
<i>Pantherophis spiloides pop. 2</i>	Gray Ratsnake (Carolinian)	Endangered	S1	---	---	Yes	Deciduous forest, fields, and rock outcrops	No	Deciduous forest is present in the study area; however potential hibernacula habitat (e.g. rock outcrops) was not present. No Regulated Habitat has been identified in the study area. Species was not observed during site investigation surveys.
<i>Crotalus horridus</i>	Timber Rattlesnake	Extirpated	SX	ex	---	Yes	Upland forested areas with associated rocky areas. This snake hibernates communally in rock slides and on ledges and outcrops, usually those that face south. Occupied sites range from mature forests to young forests (Ontario Nature, 2013).	No	Upland woodland habitats with rocky areas are not present in the study area. Timber Rattlesnake is considered to be Extirpated from Ontario. Species was not observed during site investigation surveys.
AQUATIC - MUSSELS									
<i>Vilosa iris</i>	Rainbow Mussel	Threatened	S2	---	Yes	---	Small to medium sized rivers	No	Rivers of any size are not present in the study area.
VASCULAR PLANTS & BRYOPHYTES									
<i>Castanea dentata</i>	American Chestnut	Endangered	S3	h	Yes	---	Moist to well drained forests on sand, occasionally heavy soils	No	Forests are not present in the study area. Woodlands are situated on top of silt-loam soils. Species was not

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
									observed during site investigation surveys.
<i>Frasera caroliniensis</i>	American Columbo	Endangered	S2	H	Yes	---	Woodlands on sandy and clay soils	No	Woodlands present in the study area are on top of silt-loam soils. Species was not observed during site investigation surveys.
<i>Panax quinquefolius</i>	American Ginseng	Endangered	S3	H	Yes	---	Deep leaf litter in rich, moist deciduous woods, especially on rocky, shaded cool slopes	No	Moist, rich, deciduous forests are not present in the study area. Species was not observed during site investigation surveys.
<i>Juglans cinerea</i>	Butternut	Endangered	S4	---	Yes	---	Moist, well-drained soil in deciduous forests	No	Deciduous forests are not present in the study area. Species was not observed during site investigation surveys.
<i>Phegopteris hexagonoptera</i>	Broad Beech Fern*	Special Concern	S3	H	Yes	---	Rich, moist soil in mature deciduous forests	No	Mature, deciduous forests are not present in the study area. Species was not observed during site investigation surveys.
<i>Cornus florida</i>	Eastern Flowering Dogwood	Endangered	S4	h	Yes	---	Mid-age to mature deciduous or mixed forests	No	Mature deciduous or mixed forests are not present in the study area. Species was not observed during site investigation surveys. There is no known regulated habitat in the study area.
<i>Trichophorum planifolium</i>	Few-Flowered Club-rush	Endangered	S1	---	Yes	---	Only found in two sites in Ontario, one being the Royal Botanical Gardens (RBG) in Hamilton	No	Study area is not located near the RBG lands (>12 km away) and Species was not observed during site investigation surveys.
<i>Arisaema dracontium</i>	Green Dragon*	Special Concern	S3	H	Yes	---	Wet bottomlands along rivers and creeks	No	Wet bottomland habitat is not present in the study area. Species was not observed during site investigation surveys.
<i>Morus rubra</i>	Red Mulberry	Endangered	S2	H	Yes	---	Moist woods and wooded river valleys	No	Moist woods or wooded river valleys are not present in the study area. Species was not observed during site investigation surveys.
<i>Chimaphila maculata</i>	Spotted Wintergreen	Endangered	S1	H	Yes	Yes	Dry, sandy woods	No	Dry-fresh woodlands are located in the study area but are on top of silt-loam soils. Species was not observed during site investigation surveys.
<i>Eurybia divaricata</i>	White Wood Aster	Threatened	S1	---	Yes	---	Mesic to dry deciduous woods	No	Deciduous woodlands located within the study area are disturbed whereas this species is found almost exclusively in unaltered habitats (CC of 10). Species was not observed during site investigation surveys.
<i>Ammophila breviligulata</i>	Beach Grass*	---	S3	H	Yes	---	Sandy shores	No	The majority of the shoreline of Lake Ontario within the study area has been altered for erosion control and is comprised of retaining walls. The more natural areas consist of cobble or gravel shores. Species not observed during site investigation surveys.
<i>Crataegus dissona</i>	Northern Hawthorn*	---	S3	H	Yes	---	Old fields, poorly managed pastures, fencelines and roadsides	No	Fencerows and roadsides in the study area are not associated with open country habitat (e.g., old field or poorly managed pasture). Species was not observed during site investigation surveys.
<i>Aplectrum hyemale</i>	Putty-root*	---	S2	H	---	Yes	Rich, Deciduous woods	No	Rich, deciduous woods are not present in the study area. Species was not observed during site investigation surveys.

Species		Status in Ontario	S-Rank ¹	Status in Hamilton ²	MNR Record for Hamilton	NHIC ³	Habitat Requirements ⁴	Potential Habitat in the study area	Rationale
Scientific Name	Common Name								
<i>Asclepias variegata</i>	White Milkweed*	---	SX	H	---	Yes	Upland savannahs, barren rocky bluffs, upland rocky woodlands, wooded hillsides, rocky banks of streams, and woodland edges along roadsides (Hilty, 2013).	No	Savannah, rocky bluff, rock woodlands, wooded hillsides, rocky stream banks and suitable woodland edges along roadsides are not present within the study area. Species is considered to be extirpated from Ontario.
<i>Bacidia trachona</i>	---	---	S1S2	---	---	Yes	Lichen species that grows on calcareous rocks, characteristically in shaded sites such as overhangs and river gorges. It is boreal to temperate (Thompson, 1997).	No	Overhangs and river gorges are not present in the study area. Closest occurrence for this species is at the Niagara Escarpment.
<i>Carex oligocarpa</i>	Eastern Few-fruited Sedge	---	S3	H	---	Yes	Dry woods and banks, alvar woodland	No	Dry woods and alvar woodland is not present in study area. Woodlands are disturbed whereas this species has a conservation coefficient (CC) of 9 indicating it is found areas with minor disturbance. The woodland in the study area is heavily disturbed because of regular maintenance as well as past and current urban land use.
<i>Diplotomma epipolium</i>	---	---	S1S2	---	---	Yes	Habitat requirements for this particular lichen cannot be sourced. Records for this lichen have it located on the Niagara Escarpment.	No	Study area is located outside of the Niagara Escarpment.
<i>Hieracium paniculatum</i>	Panicled Hawkweed*	---	S2	H	---	Yes	Dry open woods and sandy slopes	No	Deciduous woodlands located within the study area are disturbed whereas this species is found almost exclusively in unaltered habitats (CC of 10). Species was not observed during site investigation surveys.
<i>Nuphar advena</i>	Large Yellow Pond-lily*	---	S3	---	---	Yes	Open water, ponds	No	Ponds are not present in the study area. Open water associated with Lake Ontario is not sheltered and does not provide suitable conditions for floating vegetation such as pond-lilies.
<i>Onosmodium molle ssp. hispidissimum</i>	Soft-hairy False Gromwell*	---	S2	H	---	Yes	River banks and flats and dry rocky woods	No	Rivers/dry rocky woods are not present in the study area. Species was not observed during site investigation surveys.
<i>Sabatia angularis</i>	Square-stemmed Rose Pink*	---	SX	H	---	Yes	Wet sand of lakeshores and moist, grassy swales, usually associated with former lakeshore areas, including coastal plain marshes, intermittent wetlands, and even dune pannes (Penskar and Crispin, 2009)	No	Sandy lakeshores, grassy swales, marshes, intermittent wetlands and dunes are not present within the study area. Species not observed during site investigation surveys. Species considered to be extirpated from Ontario.

* Denotes a Species of Conservation Concern

1. Subnational (Provincial) Rank (Source: OMNR National Heritage Information Centre website, 2007)
2. Status in Hamilton according to Hamilton Naturalist's Club (2003); H = Rare in Hamilton Region; h = uncommon in Hamilton Region; ex = extirpated from Hamilton; I = introduced
3. OMNR National Heritage Information Centre website, 2007
4. OMNR Significant Wildlife Habitat Technical Guide, Appendix G (2000)

Eastern Milksnake (*Lampropeltis triangulum*) was not observed during field investigations. As this species is a habitat generalist, there is marginal foraging habitat in meadow and open woodland communities within the study area; however, given the small habitat size, lack of cover objects, absence of quality hibernacula, habitat fragmentation and proximity to roads and other anthropogenic disturbances, it is unlikely that this species occupies the study area.

In addition, review of DFO Conservation Ontario mapping and MNR data found no records of aquatic SAR within the study area.

4.8. AQUATIC HABITAT ASSESSMENT

Sections of the Lake Ontario shoreline within the study area showed signs of active erosion in areas without erosion protection measures. Shoreline associated with current and former residential properties are typically reinforced with scattered armour stone, scrap concrete and steel (see **Photo 7** in **Appendix B**). Recent developments, such as the private community of Bal Harbour, have extensively altered shorelines through the use of armour stone. The shoreline is receding where adequate protection against wave action has not been provided.

Generally, substrates within the study area were observed to be uniform, containing coarse sand with an abundance of finely crushed shells, believed to be Zebra Mussel (*Dreissena polymorpha*) or Quagga Mussel (*Dreissena rostriformis bugensis*) (**Photo 8** in **Appendix B**). The coarse sand substrate provides relatively uniform beach habitat and wave action deposits of this sandy substrate were observed along the study area's shoreline. Small amounts of cobble were also observed in both the west and east study area limits.

In the central portion of the study area, the riparian area is primarily a gradually sloping coarse sand beach containing erosion protection measures leading up to the grass and tree covered shore. In the eastern portion of the study area, similar habitat exists with slightly greater erosion protection from vertical armour stone block walls and constructed rock revetments. Further, the banks appeared more stable and more recently reinforced on the east side of the study area with the exception of a large erosion scar. The top of bank in this area is elevated higher above the water level in the east as compared to the central portion of the site. The eastern top of bank is on average about 3 metres above the lake level at the time of assessment. Coarse sand and shell substrate, with minor amounts of cobble was also observed in the eastern portion of the study area.

To the extent observed through visual assessment, there was a gradually sloping aquatic habitat extending from the shoreline into the lake. Minimal overhead bank and in-water cover was observed. Slight overhead bank cover is provided through short periods of afternoon shade by trees concentrated in the western portion of the study area. In-water cover from west to east was consistent and was comprised of displaced bank reinforcement materials (i.e. scrap concrete and armour stone) to a depth of approximately one metre. The nature of the surrounding habitat suggests that these sporadic in-

water features may provide cover and refuge for fish species. No aquatic vegetation was observed along the shoreline within the study area.

From west to east across the study area, the aquatic features on the property itself observed are as follows:

- Two Corrugated Steel Pipes (CSP) were observed at the end of Millen Road at the western boundary of the study area. Pipes convey storm-water and discharge into Lake Ontario and do not support fish populations (see **Photo 9** in **Appendix B**).
- A channel located in the fencerow that borders the Lake Trail Motel and Bal Harbour Community appears to act as storm-water drainage and does not function as fish habitat. The channel was dry at the time of surveys (see **Photo 10** in **Appendix B**).
- Drainage from an unknown source was observed on the western side of Lot 18. The underground concrete pipe approximately 0.7 m in outside diameter was observed to be discharging minor flow during the winter (**Photo 11** in **Appendix B**). This drainage feature conveys overland flow and does not function as fish habitat. At the time of 2013 surveys, the channel was dry (**Photo 12** in **Appendix B**).
- Along the banks of the #53 Cherry Beach Road property lies two steel cement mixers that have been put in place as a rudimentary erosion protection measure (**Photo 13** in **Appendix B**).
- A CSP approximately one meter in diameter, near the #59 Cherry Beach Road property was observed to convey flow (**Photo 14** in **Appendix B**). This pipe outlet conveys flow from an open drainage ditch south of Cherry Beach Road which does not provide fish habitat.
- Other features including two 15 cm weeping tile drains and two 5 cm steel water pipes were observed to be dry in the footprint of the large, actively erosion scar (**Photo 15** in **Appendix B**) which begins at the northern end of #2 Private Road and continues east along the shoreline for approximately 45 m.
- On the eastern study area boundary there is a channelized concrete drain, which at the time of winter assessment was discharging flow (see **Photo 16** in **Appendix B**). This altered drain may provide fish migration habitat during times of high flow.

The homogeneous nature of the aquatic habitat found along the Lake Ontario within the study area suggests that there are no critically limiting habitat features found within the project footprint. Further, with the exception of the eastern most drainage feature, the drainage features observed within the study area do not provide fish habitat or support fish populations due to insufficient and ephemeral flow and a lack of connectivity to Lake Ontario.. Overall, the Lake Ontario shoreline habitat observed appeared suitable for baitfish use (e.g. cyprinids), but also is likely foraging habitat for larger predatory species along the perimeter (e.g. salmonids). A salmonid species in post-spawn conditions (e.g. caudal area deterioration and lesions) was observed incidentally during a terrestrial site investigation surveys within Lake Ontario (see **Photo 17** in **Appendix B**).

Species at Risk screenings of DFO Conservation Ontario mapping and MNR data found no records of aquatic SAR within the study area. The screening process is described in detail in **Section 4.6**.

5.0 SIGNIFICANT NATURAL FEATURES

This section discusses the significance of natural features identified in the study area. Evaluation of significance for natural features was completed using provincial and municipal criteria and standards. Candidate significant features identified within the study area include woodland and wildlife habitat. Wetlands, valleylands, ANSI's, and protected habitat for *Endangered* or *Threatened* species (see **Section 4.6**) were not observed within the study area.

Woodlands

Significant Woodlands have been defined within the UHOP (2013) as an area which is ecologically important in terms of:

- a) Features such as species composition, age of trees, stand history;
- b) Functionally important due to its contribution to the broader landscape because of its location, size, or due to the amount of forest cover in the planning area; and,
- c) Economically important due to site quality, species composition or past management history.

Within the City of Hamilton, Significant Woodlands must meet two or more of the following criteria as outlined below in **Table 8**.

Table 8: City of Hamilton Significant Woodland Criteria

Criterion	Description	Meets Criteria?												
Size	All woodlands that meet the minimum size criteria (below) are significant. <table border="1" data-bbox="495 409 1101 653"> <thead> <tr> <th>Forest Cover (by planning unit)</th> <th>Minimum patch size for significance</th> </tr> </thead> <tbody> <tr> <td>< 5%</td> <td>1 ha</td> </tr> <tr> <td>5 – 10%</td> <td>2 ha</td> </tr> <tr> <td>11 – 15%</td> <td>4 ha</td> </tr> <tr> <td>16 – 20%</td> <td>10 ha</td> </tr> <tr> <td>21 – 30%</td> <td>15 ha</td> </tr> </tbody> </table> Woodlands shall meet a minimum average width of 40 metres.	Forest Cover (by planning unit)	Minimum patch size for significance	< 5%	1 ha	5 – 10%	2 ha	11 – 15%	4 ha	16 – 20%	10 ha	21 – 30%	15 ha	No, less than 2 ha (i.e., 1.95 ha).
Forest Cover (by planning unit)	Minimum patch size for significance													
< 5%	1 ha													
5 – 10%	2 ha													
11 – 15%	4 ha													
16 – 20%	10 ha													
21 – 30%	15 ha													
Interior Forest	Woodlands that contain interior forest. Interior forest habitat is defined as 100 metres from the edge.	No												
Proximity/Connectivity	Woodlands that are located within 50 metres of a significant natural area (defined as wetlands 0.5 hectares or greater in size, ESAs, PSWs, and Life Science ANSIs).	No												
Proximity to Water	Woodlands where any portion is within 30 metres of any hydrological feature, including all streams, headwater areas, wetlands and lakes.	Yes												
Age	Woodlands with 10 or more native trees/ha greater than 100 years old.	No												
Rare Species	Any woodland containing threatened, endangered, special concern, provincially or locally rare species.	No												

The woodland in the study area is located in the Stoney Creek Planning Unit which contains 6-8% forest cover (City of Hamilton Planning and Development Department 2005), and therefore requires a minimum patch size of 2 ha to be considered significant based on the *Size* criterion. The woodland that is located within the study area is < 2 ha (i.e., 1.95 ha). The woodland meets the *Proximity to Water* criteria as it is located within 30 m of hydrological features (i.e., Lake Ontario and unnamed streams). However, the woodland is not significant as it does not meet other criterion (e.g. age, interior forest habitat, proximity/connectivity and rare species) established under the UHOP (2013).

Wildlife Habitat

As discussed in **Section 2.2**, an evaluation for provincially significant wildlife habitat was carried out according to the SWHTG and associated Ecoregion 7E Criteria Schedules. Candidate Significant Wildlife Habitats were identified and evaluated in **Table 9** below. None of the habitats identified as candidate were evaluated to be provincially significant.

Table 9: Evaluation of Wildlife Habitat Significance¹

Wildlife Habitat	Wildlife Species	Attributes of Habitat	Relevant <u>Candidate</u> SWH Criteria to be Considered (from SWHTG)	Relevant <u>Confirmed</u> SWH Criteria to be Considered (from SWHTG)	Comment on Significance (if determinable)
Seasonal Concentration Areas of Animals					
Shorebird Stopover Area Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Migratory Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH,	Studies confirming: <ul style="list-style-type: none"> • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100 m radius area 	Open shoreline of Lake Ontario was identified as candidate habitat. Candidate habitat is not significant as the shoreline did not have the presence of 3 or more listed species and > 1000 shorebird use days during migratory surveys in the spring and fall.

1. OMNR Significant Wildlife Habitat Eco-regional Criteria Schedule for Ecoregion 7E

While the woodland area did not meet the size criteria (>5 ha) for consideration as a provincially Significant Wildlife Habitat Landbird Migratory Stopover Area; a moderate diversity of migratory bird species were observed using the study area during surveys in the spring and fall of 2013 (see **Section 4.5**).

Although there is a lack of fundamental research on species-specific migratory routes, location of critical habitat and how the distribution and abundance of migratory habitat is changing as a result of development and land conversion (Woodrey *et al* 2005), some migrant landbirds are showing long-term populations declines (Moore 2000), which can be partially attributed to the loss or alteration of *en route* (stopover) habitat (Moore and Aborn 2000). Further, the importance of preserving *en route* (stopover) habitat is well documented (Petit 2000). Preserving habitats in proximity to major water bodies is of particular importance, as these habitats provide refuge, shelter against predators and adverse weather, and foraging sites for migrants as they undertake long distance flights, all of which act to increase fitness and reduce mortality. Coastal woodland habitats along geographic barriers such as Lake Ontario are also important stopover sites for migrants as they often represent the last stopover prior to a lake crossing to the north in the spring and the first landfall for southern oriented migratory birds after a lake crossing in the fall.

As the above indicates, woodland migratory *en route* stopover areas in the urban boundary within 1 km of Lake Ontario are in short supply. It has been determined that the woodland migratory landbird stopover site in the study area is used by migratory birds as shelter, refuge and foraging habitat, and represent approximately 1.4% of the potential habitat in the Stoney Creek Planning Unit within 1 km of Lake Ontario. Through examination of the research on the subject of migratory bird habitat, it has also been determined that sites such as Cherry Beach facilitate movement to larger stopover areas in the natural heritage system (e.g., Core Areas, ESAs, Niagara Escarpment, etc.) and likely support cross-lake migratory flights. In this context, the woodland within the Cherry Beach study area could be considered a locally important migratory stopover area for landbirds.

As a locally important migratory bird *en route* stopover area, the study area functions as a refuge and foraging site for migratory passerines as they migrate between larger migratory stopover habitats along the Lake Ontario shoreline and inland. These larger migratory stopover habitats include the Niagara Escarpment, Confederation Park, Fifty Point Conservation Area and the Community Beach Ponds ESA/Core Area, among others. Stopover sites such as the type observed in the study area are beneficial in that they provide ecological connectivity to significant migratory bird stopover sites within the broader natural heritage system.

6.0 SUMMARY

Dillon Consulting Limited (Dillon) was retained by the City of Hamilton (City) to complete the Conceptual Design and Class Environmental Assessment (EA) for the Cherry Beach Shoreline Protection Project. The foregoing summarizes the findings of the biophysical inventory, which consisted of a secondary source background review and site investigations.

A review of relevant background information identified designated natural features in the study area, including Key Hydrological Features related to Lake Ontario, woodland habitat and occurrence records for several potential SAR and SCC.

The site investigation included migratory and breeding bird surveys, vegetation surveys, ELC, an aquatic assessment and incidental wildlife observations. Field studies identified woodland, open shoreline, and meadow vegetation communities as well as degraded drainage features with little potential fish habitat in the study area. The study area was identified as marginal foraging habitat for the provincially *Threatened* Barn Swallow. Marginal foraging habitat was present within meadow communities for the *Special Concern* (SCC) Monarch Butterfly. Further, marginal woodland/meadow foraging habitat was also present for the *Special Concern* (SCC) Eastern Milksnake; however, this species was not observed during the field investigation, and the absence of other features essential to Milksnake life processes (e.g., hibernacula), as well as the level of human disturbance, likely precludes this species from occupying the study area.

There is no critically limiting aquatic habitat features found within the project footprint; although, the shoreline habitat observed appeared suitable for baitfish use and potentially as foraging habitat for larger predatory fish species. Also, the substrate along the shoreline indicates that Quagga and Zebra Mussels have had a substantial influence on the local aquatic environment.

The woodland within the study area has not been formally assessed for significance by the City. A significance evaluation using criteria outlined in the City of Hamilton Urban Official Plan determined that the woodland is not significant. Wildlife habitat was evaluated using provincial protocols and it was determined that the study area does not contain significant wildlife habitat; however it does function as a local *en route* woodland migratory bird stopover area, connecting migrant birds using near shore woodland habitat to the greater natural heritage system. As a result, the preservation of woodland habitat should be a priority in the selection of the preferred shoreline restoration design alternative, mitigation strategies, and ecological restoration and enhancement options.

7.0 REFERENCES

- Brown, L. 1979. Grasses: An Identification Guide. Houghton Mifflin Company, New York. pp.161
- Cadman, M., Sutherland, D., Beck, G., Lepage, D., Couturier, A. 2005. Atlas of the Breeding Birds of Ontario: Second Atlas (2001-2005). Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. <http://www.birdsontario.org/atlas/index.jsp>
- City of Hamilton. Environmental Impact Statement Guidelines. 2004. Pp. 11.
- City of Hamilton Official Plan. Ministry Approved Urban Hamilton Official Plan. Volume 1. 2011. <http://www.hamilton.ca/NR/rdonlyres/0500E959-E55A-4CDE-9B0D-18F9892B2F60/0/SSSPUrbanOPModVol1.pdf>
- City of Hamilton Planning and Development Department. 2005. Discussion Paper #4a: Review of Significant Woodland Criteria. January 2005.
- Cornell University. 2011. All About Birds: Seven Important Plant Groups. <http://www.allaboutbirds.org/page.aspx?pid=1190>
- Dillon Consulting Limited. 2014a. Environmental Impact Statement : City of Hamilton – Confederation Park Area G, Part A: Environmental Impact Study (Stoney Creek Pond Trail). [DRAFT]. pp. 60
- Dillon Consulting Limited. 2014b. Linkage Assessment: City of Hamilton – Trillium Gardens [DRAFT]. pp. 80
- Hamilton Naturalists Club. 2003. Nature Counts Project- Hamilton Natural Areas Inventory. Pp. 508.
- Hamilton Naturalists Club. 2003. Nature Counts Project- Hamilton Natural Areas Inventory. Species Checklists.
- Environment Canada. Species at Risk Public Registry. <http://www.sararegistry.gc.ca>. Accessed October 2013.
- Fisheries and Oceans Canada. 2013. Distribution of Fish and Mussel Species at Risk Mapping for Hamilton Conservation Authority.
- Greater Golden Horseshoe Area Conservation Authorities. 2008. Erosion and Sediment Control Inspection Guide. Pp. 49.
- Hamilton Conservation Authority. 2006. Ontario Regulation 161/06.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario

- Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Moore, Frank R. 2000. Stopover Ecology of Nearctic-Neotropical Landbird Migrants: Habitat Relations and Conservation Implications. Studies in Avian Biology No. 20. Cooper Ornithological Society.
- Moore, F. and D. Aborn. 2000. Mechanisms of *En Route* Habitat Selection: How Do Migrants Make Habitat Decisions During Stopover?. Stopover Ecology of Nearctic-neotropical Landbird Migrants: Habitat Relations and Conservation Implications. Studies in Avian Biology No. 20: 34-42. Cooper Ornithological Society.
- Newmaster, S.G., A. Lehela, M.J. Oldham, P.W.C. Uhlig and S. McMurray. 1998. Ontario Plant List. Ontario Forest Research Institute, Sault Ste. Marie, Ontario, Forest Research Information Paper No. 123. 650 pp. + appendices.
- Ontario Breeding Bird Atlas. 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists, Don Mills.
- Ontario Ministry of Municipal Affairs and Housing. 2014. Provincial Policy Statement. Pp. 22.
- Ontario Ministry of Natural Resources. 2000. Fish and Wildlife Branch. Significant Wildlife Habitat Technical Guide. Pp 139.
- Ontario Ministry of Natural Resources. 2000. Fish and Wildlife Branch. Significant Wildlife Habitat Technical Guide. Appendix G. Pp 262.
- Ontario Ministry of Natural Resources. 2012. Fish and Wildlife Branch. Significant Wildlife Habitat Ecoregional Criteria Schedules. Ecoregion 7E. Pp. 37.
- Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248pp.
- Ontario Ministry of Natural Resources. Land Information Ontario.
<http://www.mnr.gov.on.ca/en/Business/LIO/index.html>. Accessed October 2013.
- Ontario Ministry of Natural Resources. Natural Heritage Information Centre Database.
<http://nhic.mnr.gov.on.ca/>. Accessed October 2013.
- Ontario Ministry of Natural Resources. The Species at Risk in Ontario (SARO) List. http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080230_e.htm. Accessed October 2013.
- Penskar, M.R. and Crispin, S.R. 2009. Special Plant Abstract for *Sabatia angularis* (rose-pink). Michigan Natural Features Inventory. Lansing, MI. 3 pp.
- Petit. D. 2000. Habitat Use by Landbirds Along Nearctic-Neotropical Migration Routes: Implications for Conservation of Stopover Habitats. Stopover Ecology of Nearctic-neotropical Landbird Migrants:

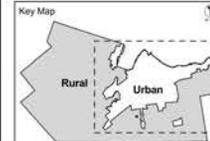
Habitat Relations and Conservation Implications. Studies in Avian Biology No. 20: 15-33. Cooper Ornithological Society.

Thompson, J. 1997. American Arctic Lichens: The Microlichens.
<http://lichenportal.org/portal/taxa/index.php?taxon=53157>

Toronto and Region Conservation Authority (TRCA). 2007. Setting terrestrial natural system targets. Toronto and Region Conservation Authority, Toronto, ON.

Woodrey, M., D. Demarest and E. Inzunza. 2005. Addressing Conservation Needs of Birds during the Migratory Period: Problems and Approaches. USDA Forest Service Gen. Tech. Rep. PSW-GTR-191: 653-655

APPENDIX A
CITY OF HAMILTON OFFICIAL PLAN MAPPING



Note: For Rural Natural Heritage Features refer to Schedule B of the Rural Hamilton Official Plan.

APPEAL

The southern urban boundary that generally extends from Upper Centennial Parkway and Mud Street East in the east, following the hydro corridor and encompassing the Red Hill Business Park, the Mount Hope area, and the Airport Business Park, and following Twenty Road and Garner Road to Fiddlers Green Road in the west remains under appeal – see illustration on Schedules E and E-1, Volume 1

★ Lands Under Appeal

- 305 Stone Church Road West
 - 313 Stone Church Road East & lands bounded by Stone Church Road East, Upper Wellington Street, Lincoln M Alexander Parkway and Upper Wentworth Street

Legend

- Core Areas
- Area Specific Policy - USC-1 and USC-2 in Volume 3
- Linkages
- Parks & General Open Space (Excluding Parkettes)
- Streams
- Other Features**
- Rural Area
- John C. Munro Hamilton International Airport
- Niagara Escarpment
- Urban Boundary
- Municipal Boundary

Council Adoption: July 9, 2009
 Ministerial Approval: March 16, 2011
 Effective Date: August 16, 2013

**Urban Hamilton Official Plan
 Schedule B
 Natural Heritage System**



Date: Oct. 30, 2013
 PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT
 © Crown and Intellectual Property Rights Reserved. 2013. All Rights Reserved. No reproduction or reuse without permission. THIS IS NOT A PLAN OF SURVEY.



Note: For Rural Detailed Natural Heritage Features refer to Schedule B-1 of the Rural Hamilton Official Plan.

APPEAL

The southern urban boundary that generally extends from Upper Centennial Parkway and Mud Street East in the east, following the hydro corridor and encompassing the Red Hill Business Park, the Mount Hope area, and the Airport Business Park, and following Twenty Road and Garner Road to Fiddlers Green Road in the west remains under appeal – see illustration on Schedules E and E-1, Volume 1

Legend

- Key Natural Heritage Feature Life Science ANSI
- Other Features**
- Rural Area
- John C. Munro Hamilton International Airport
- Niagara Escarpment
- Urban Boundary
- Municipal Boundary

Council Adopted: July 9, 2009
 Ministerial Approval: March 16, 2011
 Effective Date: August 16, 2013

**Urban Hamilton Official Plan
 Schedule B-1
 Detailed Natural Heritage Features
 Key Natural Heritage Feature
 Life Science ANSI**



PLANNING & ECONOMIC DEVELOPMENT DEPARTMENT
 © Trimeter Land Information Services Inc. and its licensors. (2009)
 May Not Be Reproduced without Permission. THIS IS NOT A PLAN OF SURVEY



Note: For Rural Detailed Natural Heritage Features refer to Schedule B-2 of the Rural Hamilton Official Plan.

APPEAL

The southern urban boundary that generally extends from Upper Centennial Parkway and Mud Street East in the east, following the hydro corridor and encompassing the Red Hill Business Park, the Mount Hope area, and the Airport Business Park, and following Twenty Road and Garner Road to Fiddlers Green Road in the west remains under appeal – see illustration on Schedules E and E-1, Volume 1

★ Lands Under Appeal

- 305 Stone Church Road W
- 313 Stone Church Road E & lands bounded by Stone Church Road East, Upper Wellington Street, Lincoln M Alexander Parkway and Upper Wentworth Street

Legend

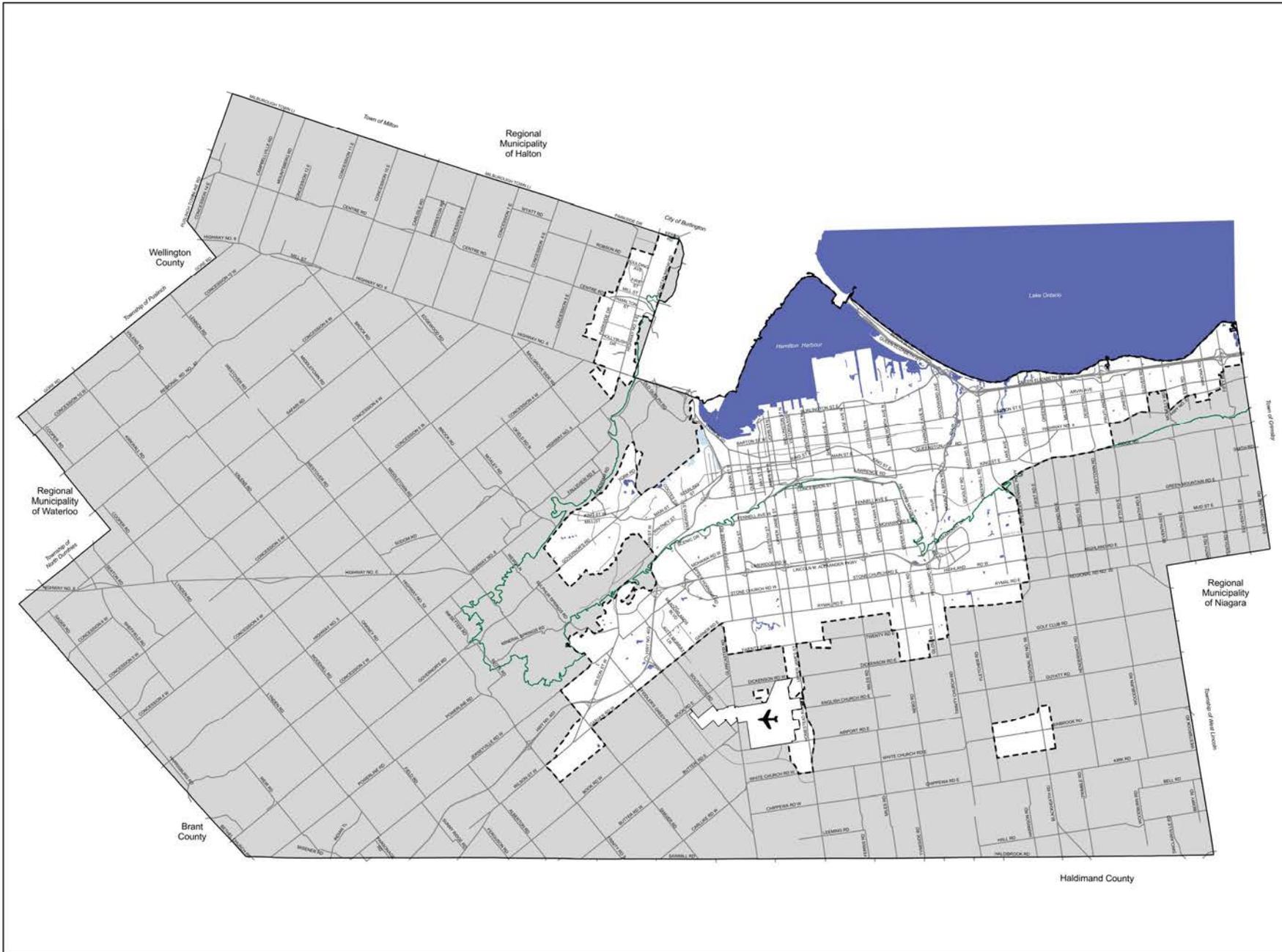
- Key Natural Heritage Feature Significant Woodlands
- Rural Area
- John C. Munro Hamilton International Airport
- Niagara Escarpment
- Urban Boundary
- Municipal Boundary

Council Adopted: July 9, 2009
 Ministerial Approval: March 16, 2011
 Effective Date: August 16, 2013

Urban Hamilton Official Plan Schedule B-2
 Detailed Natural Heritage Features
 Key Natural Heritage Feature
 Significant Woodlands



© Traneer Land Information Services Inc. and its licensors. (2009) May Not be Reproduced without Permission. THIS IS NOT A PLAN OF SURVEY.



Note: For Rural Detailed Natural Heritage Features refer to Schedule B-5 of the Rural Hamilton Official Plan.

APPEAL

The southern urban boundary that generally extends from Upper Centennial Parkway and Mud Street East in the east, following the hydro corridor and encompassing the Red Hill Business Park, the Mount Hope area, and the Airport Business Park, and following Twenty Road and Garner Road to Fiddlers Green Road in the west remains under appeal – see illustration on Schedules E and E-1, Volume 1

Legend

- Key Hydrologic Feature Lakes and Littoral Zones
- Other Features**
- Rural Area
- John C. Munro Hamilton International Airport
- Niagara Escarpment
- Urban Boundary
- Municipal Boundary

Council Adopted: July 9, 2009
 Ministerial Approval: March 16, 2011
 Effective Date: August 16, 2013

**Urban Hamilton Official Plan
 Schedule B-5
 Detailed Natural Heritage Features
 Key Hydrologic Feature
 Lakes and Littoral Zones**



© Trimeter Land Information Services Inc. and its licensors. (2009)
 May Not be Reproduced without Permission. THIS IS NOT A PLAN OF SURVEY



Note: For Rural Detailed Natural Heritage Features refer to Schedule B-6 of the Rural Hamilton Official Plan.

APPEAL

The southern urban boundary that generally extends from Upper Centennial Parkway and Mud Street East in the east, following the hydro corridor and encompassing the Red Hill Business Park, the Mount Hope area, and the Airport Business Park, and following Twenty Road and Garner Road to Fiddlers Green Road in the west remains under appeal – see illustration on Schedules E and E-1, Volume 1

- Legend**
- Local Natural Area Environmentally Significant Area
 - Rural Area
 - John C. Munro Hamilton International Airport
 - Niagara Escarpment
 - Urban Boundary
 - Municipal Boundary

Council Adopted: July 9, 2009
 Ministerial Approval: March 16, 2011
 Effective Date: August 16, 2013

**Urban Hamilton Official Plan
 Schedule B-6
 Detailed Natural Heritage Features
 Local Natural Area
 Environmentally Significant Areas**

Not To Scale
 Date: Oct. 30, 2013

PLANNING & ECONOMIC DEVELOPMENT DEPARTMENT
 © Terrestrial Land Information Services Inc. and its licensors. (2009)
 May Not be Reproduced without Permission. THIS IS NOT A PLAN OF SURVEY.

APPENDIX **B**
PHOTOS OF ELC COMMUNITIES

Photo 1

September 03, 2013

MEMM3: Dry-Fresh
Mixed Meadow

Photo taken from
intersection of Given
Road, 1 Private Road
and Cherry Beach
Road, looking
northwest



Photo 2

September 03, 2013

WODM4: Dry-Fresh
Deciduous Woodland

Photo taken from
Cherry Beach Road
between 1 Private
Road and 2 Private
Road, looking north
(towards Lake
Ontario)



Photo 3

May 13, 2013

OAO: Open Aquatic
(Lake Ontario); right
side of photo

SHO: Open Shoreline;
centre of photo

Mown Grass; left side
of photo

Photo taken from
edge of Lake Ontario
between 2 Private
Road and 3 Private
Road, looking west



Photo 4

July 17, 2012

SHO:
Open Shoreline
Community Series

Photo showing a large
erosion scar. Taken a
bit further east than

Photo 3



Photo 5

February 28, 2012

CVR_3: Single Family Residential

Housing located east of the study area.

Photo taken from northeast corner of the study area, where channelized drain spills into Lake Ontario. Looking east along shoreline.



Photo 6

September 03, 2013

CVC_1: Business Sector

Lake Trail Motel – Photo taken from intersection of Given Road and Cherry Beach Road, looking southwest



Photo 7

February 28, 2012

Looking east at a representative shoreline section with armour stone, scrap concrete, and scrap steel acting as shoreline erosion protection.



Photo 8

February 28, 2012

A typical sample of beach substrates containing coarse sand and crushed shells (white).



Photo 9

July 17, 2013

CSP's at the end of Millen Road that convey storm-water and discharge into Lake Ontario

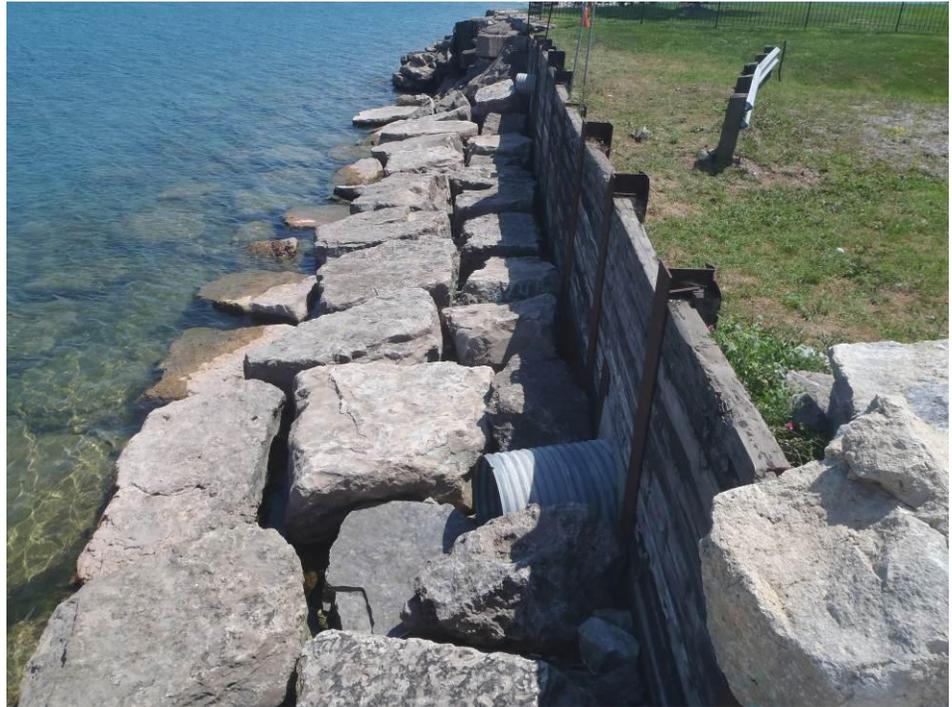


Photo 10

July 17, 2013

Drainage feature located in fencerow that separates Bal Harbour from Lake Trail Motel. Feature was dry at the time of 2013 survey



Photo 11

February 28, 2012

Looking south at an underground concrete culvert exposed underneath a riparian tree. Minor discharge observed flowing from the exterior of the CSP.



Photo 12

July 17, 2013

Perched culvert under Cherry Beach Road. Drainage feature that flows towards Lake Ontario was dry at the time of surveys



Photo 13

February 28, 2012

Looking west at a discarded steel mixer type machinery acting as simple erosion protection.



Photo 14

February 28, 2012

Looking south at an underground CSP discharging moderate flow volumes.



Photo 15

February 28, 2012

Looking east at a large erosion scar which was actively collapsing during the site assessment.



Photo 16

February 28, 2012

Looking south (upstream) at the channelized drain outside the proposed eastern limits of the study area.



Photo 17

May 17, 2013

Post-spawn salmonid
species observed in
Lake Ontario



