

# ENVIRONMENTAL IMPLEMENTATION REPORT

**PROPOSED RESIDENTIAL DEVELOPMENT  
2147925 ONTARIO INC.  
LOCATED IN GLEN WILLIAMS  
(MCMASTER STREET AND MEAGAN DRIVE)**

*prepared for*

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environmental research associates

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**updated DECEMBER 2010**

**LGL PROJECT TA4886**



] = new

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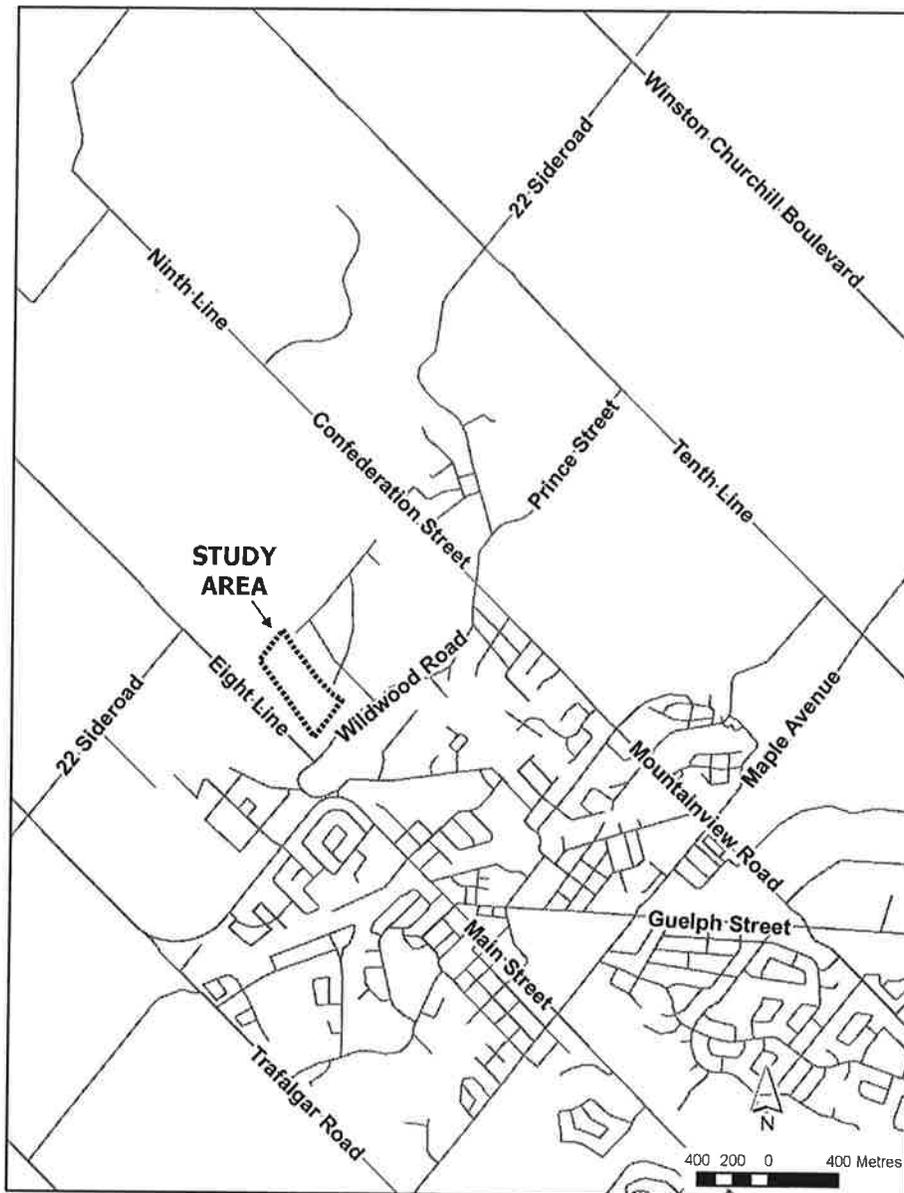
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## 1.0 INTRODUCTION

### 1.1 STUDY SITE LOCATION

The Hamlet of Glen Williams is situated along the banks of the Credit River, in the Town of Halton Hills, within the Region of Halton. The 2147925 Ontario Inc. property (the “Draft Plan of Subdivision”) is located at the westerly limit of the hamlet, at Eighth Line. This property consists of a field, bordered by trees and residential properties to the west, south and east. Lands to the north of the subject site consist of a rural/agricultural property. The study area is approximately 6.88 ha in size. **Figure 1** presents the location of the study area in a regional context.



**Figure 1. Key Plan of the Study Area**

## 1.2 PURPOSE

LGL Limited has undertaken an investigation and review of environmental constraints for the draft plan approval of the Draft Plan of Subdivision; a residential development in the Hamlet of Glen Williams. The study area, west half of Lot 21, Concession 9, is owned by 2147925 Ontario Inc.

The Town of Halton Hills Official Plan (HHOP) designates the community of Glen Williams as a “Hamlet Area” and has prepared Official Plan Amendment No. 113 “The Hamlet of Glen Williams Secondary Plan” (GWSP 2005). Within this framework, Glen Williams is designated as a “Hamlet” within the Rural System of the Region of Halton, and the GWSP provides criteria that guides for “growth that maintains the hamlet character of the community.”

The GWSP (2005) identifies one environmental area, a “Hamlet Buffer” along the north-western boundary of the study area. Land Use Policies (Section 5.3c) of the GWSP specify that prior to draft plan approval, plans of subdivision within the Hamlet Residential designation must be supported by an Environmental Implementation Report (EIR). This EIR must implement the Glen Williams Integrated Planning Project Scoped Subwatershed Plan (Dillon 2003) at the tributary level for the study area, and must also include a Stormwater Management Plan. The GWSP also states: *The Scoped Subwatershed Plan should be used as a reference when interpreting Plan policies particularly as they apply to lands designated as Greenlands* (Page 1, GWSP 2005).

A summary of issues related to functional servicing and storm water management are provided in this report. For a more complete discussion of this topic the reader is referred to the following report:

- Condeland Engineering Ltd. May 2009. Functional Servicing Report for Proposed Residential Development 2147925 Ontario Inc.

## 2.0 APPROACH AND METHODS

As provided by the GWSP, the required EIR has been undertaken by LGL Limited with a detailed review of environmental constraints for the Draft Plan of Subdivision. The EIR has been triggered by the submission of a proposed draft plan of subdivision, and is intended to provide guidance that will minimize environmental impacts both on and on lands adjacent to the study area. As a part of the EIR, the following tasks have been undertaken:

- an evaluation of the impacts of stormwater flows to fish and fish habitat on lands adjacent to the study area (Silver Creek);
- a review of the Glen Williams Integrated Planning Project Scoped Subwatershed Plan (Dillon 2003);
- an evaluation of the requirements for a Hamlet Buffer along the north-western boundary of the study area; and
- a survey of the plant and wildlife resources on the study area.

### 2.1 AGENCY CONSULTATION

Preliminary investigations and a review of pertinent background information were completed. This review within the Hamlet included information from the Credit Valley Conservation Authority (CVC), Town of Halton Hills (ToHH), Regional Municipality of Halton (RMOH), and the Ministry of Natural Resources (MNR) in order to gain a clear understanding of the natural features on site.

As mentioned above, the Glen Williams Integrated Planning Project Scoped Subwatershed Plan (Dillon 2003) and the GWSP (2005) were also reviewed to ensure that the Draft Plan of Subdivision conforms to the concerns and constraints outlined within those reports.

## **2.2 FIELD STUDIES**

Field studies were carried out on July 6, July 8 and September 2, 2010 to complete plant and animal surveys, and a tree survey on the study area. The limit of development for the Draft Plan of Subdivision, in which field work was carried out, is presented in **Figure 2**.

## **2.3 EVALUATION AND IMPACT ANALYSIS**

Potential impacts to the natural features on the study area and their functions are documented in **Section 6.0** based on the proposed development concept, including a consideration of the impact from servicing and stormwater management. A review of the overall impacts include both short and projected long-term impacts from construction and the ultimate changes that will occur in the post development state as a result of the change in land use altering the site.

## **3.0 EXISTING CONDITIONS**

### **3.1 LANDFORM**

The Niagara Escarpment cuts diagonally across Halton Region from the southwest corner in the City of Burlington to the northeast corner at the Hamlet of Glen Williams. The escarpment presents an abrupt and major change in landscape. Below the escarpment and toward Lake Ontario, the topography is dominated by a broad till plain which has been dissected by numerous streams producing a strongly rolling landscape (Chapman and Putnam 1984). Above the escarpment, the topography is strongly bedrock controlled with numerous exposures of the Amabel/Lockport dolostone.

The study area is within the Credit River watershed which drains into Lake Ontario east of the Halton Region. The Credit River has a drainage area of 850 square km and a total length of 93 km from northeast of Orangeville to Port Credit, travelling through hilly areas which include moraines and gravel terraces (Chapman and Putman 1984). The study area is located over 1 km west of the Credit River, and is outside of the Limit of the Regulatory Flood Area (GWSP 2005). The main valley of the Credit River and some of its major tributaries north of Georgetown contain glacial outwash sand and gravels underlying the Halton Till. Modern alluvium including silt, muck, and sands and gravels also occur within the floodplain and terraces of the Credit River in the Glen Williams area.

There are no significant landform features on the study area. This site is located on relatively flat lands that are lined with trees along the north-western, north-eastern, south-eastern, and to a lesser extent along the south-western border of the site.





40 20 0 40 Metres



LEGEND  
 Development Limit



DEVELOPMENT  
LIMIT

Project: TA4886	Figure: 2
Date: April 2010	Prepared By: MWF
Scale: 1 : 2200	Checked By: NMF



## 3.2 REGIONAL CONTEXT

The Hamlet of Glen Williams is located in the Middle Watershed Unit of the Credit River Basin, which extends from the community of Norval to the south, to Inglewood to the north. Within this unit, the Hamlet boundaries lie within Subwatershed 11 and 12 as noted in the Scoped Subwatershed Plan (Dillon 2003). These subwatersheds include land within the Town of Halton Hills, the Town of Caledon and the Town of Erin. Subwatershed 11 and 12 contain several natural features including the Niagara Escarpment, the Credit River Valley, a number of wetlands, Environmentally Sensitive Areas (ESAs), and Areas of Natural or Scientific Interest (ANSIs) (Dillon 2003). The study area lies immediately west and outside of Subwatershed 12, within Subwatershed 11. The study area neither contains nor is in close proximity to Provincially Significant Wetlands, or designated ANSI or ESAs.

Silver Creek is located over 265 m to the southwest of the study area, the Credit River is over 1 km to the east, and a small creek identified as "Tributary E" is almost 650 m to the east. The lands surrounding this property range in use from rural/agricultural to residential.

## 3.3 EXISTING LAND USE

The study area contains a field surrounded by hedgerows and/or treed vegetation, some of which lies within the rear of existing lots, adjacent to the study area. The lands that border the property on the southwest, southeast, and northeast sides are within the Glen Williams Secondary Plan area and contain single residential dwelling units. The residential dwellings on the southwest side of the property front onto Eighth Line. West of the study area, Silver Creek runs in a north-south direction parallel to Eighth Line. The lands northwest of the study area are outside of the Glen Williams Secondary Plan, and contain agricultural structures and associated activities. This agricultural property has an access to Eighth Line. There is a row of trees along the property line located between the subject site and the agricultural property to the north. Currently, the study area is cleared of any shrubs or trees, except along the property's perimeter, and is being used as pasture by the farmer to the north.

## 3.4 VEGETATION

The spatial extent, composition, structure and function of the vegetation communities were identified through air photo interpretation and a field investigation. Air photos were interpreted to determine the limits and characteristics of the vegetation communities identified. Follow-up field work was carried out to confirm vegetation boundaries and to complete the classification of vegetation types following the Ecological Land Classification for Southern Ontario (Lee *et al.* 1998). A field investigation on the subject property was conducted in the summer and fall on July 8 and September 2, 2010. The main focus of these inventories was to accurately map plant communities and to provide an inventory of plant species within each classified community type, and to complete a tree survey.

### 3.4.1 Vegetation Communities

Lands on and adjacent to the subject property have been cleared of original forest cover to accommodate existing agricultural, residential and infrastructure (former railway) land use. The subject property is predominantly used for agriculture which makes up at least 90% of the site. A small cultural meadow measuring less than 0.5 ha is located in the northwest corner of the property. This vegetation community is considered widespread and common in Ontario and secure globally. This vegetation community is delineated on **Figure 3** and described in **Table 1**. No other vegetation community was identified; however, there are several hedgerows along the perimeter of the property. Some of the trees within the hedgerows are located at the rear boundary of adjacent residential lots. The majority of the hedgerows along the north-western and south-eastern boundaries are located on private property; therefore an inventory of these trees was not carried out. The trees located along the north-eastern boundary occur





**LEGEND**

- Development Limit
- Vegetation Communities**
- Vegetation Community Boundary
- Dry-Moist Old Field Meadow Type
- Hedgerow



**NATURAL HERITAGE FEATURES**

Project: TA4886	Figure: 3
Date: December 2010	Prepared By: MWV
Scale: 1 : 2200	Checked By: NMF

Data Sources: LGL Limited field surveys.



within the study area and are a result of naturalization associated with the old railway line. These trees are scattered throughout the slope leading to the old railway bed.

**TABLE 1.**  
**SUMMARY OF ECOLOGICAL LAND CLASSIFICATION COMMUNITIES**

ELC Code	Vegetation Type	Species Association	Community Characteristics
<b>TERRESTRIAL – CULTURAL</b>			
<b>CUM1</b>	<b>Cultural Meadow</b>		
CUM1-1	Dry-Moist Old Field Meadow	<b>Ground Cover:</b> quackgrass ( <i>Dactylis glomerata</i> ), awnless brome, ( <i>Bromus inermis ssp. inermis</i> ), Canada blue grass ( <i>Poa compressa</i> ), red-top ( <i>Agrostis gigantea</i> ), wild carrot ( <i>Daucus carota</i> ) white sweet clover ( <i>Melilotus alba</i> ), Canada thistle ( <i>Cirsium arvense</i> ) and Canada goldenrod ( <i>Solidago canadensis</i> ).	Tree cover and shrub cover < 25 % (CUM).  This community can occur on a wide range of soil moisture regimes (Dry-Moist) (1-1).  Grass and forb dominant (a).  Community resulting from, or maintained by, anthropogenic-based influences.

### 3.4.1 Plant Species

A total of 107 vascular plant taxa have been identified within the study area. Fifty-six taxa (53%) of the recorded flora are considered introduced and non-native to Ontario. Introduced species were mainly found within the cultural meadow and northerly hedgerow communities. Plant species typically found within cultural meadows are generally disturbance tolerant, and regular disturbance pressures on the natural environment are typically related to an increased diversity of non-native plant species due to increased dispersal of these plants and the maintenance of suitable habitat conditions (i.e., increased light conditions, etc.).

No plant species that are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act* were encountered during the field investigation. No species with local significance were encountered during the field investigation. A vascular plant list is presented in **Appendix B**.

### 3.5 TREE SURVEY

There are several hedgerows along the perimeter of the subject property. An inventory of the tree resources within the study area was conducted on September 2, 2010. Tree information gathered during this field investigation included species, diameter at breast height (DBH), and tree condition. Tree condition was determined using standardized methods of assessing tree form, and trunk and twig condition. No trees were tagged during the assessment however their general location were marked on a map and transferred to GIS for mapping. All living trees were surveyed that had a diameter at breast height greater than 10 cm and were located within the subject property. A list of the trees found within the study area is included in **Appendix C** and their location within the study area is presented on **Figure 4**. The property line along the north-western boundary was difficult to assess, consequently, some of the trees identified may actually be located on adjacent property. The fence was located adjacent to the agricultural field, which did not appear to be the property line.





40 20 0



**LEGEND**

Development Limit

Tree Survey ID

Vegetation Communities

Vegetation Community Boundary  
 Dry-Moist Old Field Meadow Type  
 Hedgerow



**TREE SURVEY**

Project: TA4886	Figure: 4
Date: December 2010	Prepared By: MWV
Scale: 1 : 2200	Checked By: NMIF

Data Sources: LGL Limited field surveys.



Surveyed trees were screened for rare species listed in the Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) which includes classifications of Endangered, Threatened, and Special Concern both at the provincial and federal levels.

### 3.5.1 Trees

A total of 53 trees consisting of nine species were examined within and adjacent to the subject property. The majority of these trees are located within the hedgerow located along the north-eastern property boundary. A barbed wire fence separates this hedgerow from the agricultural field. The trees found within this hedgerow include apple (*Malus pumila*), basswood (*Tilia americana*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), eastern white cedar (*Thuja occidentalis*), Manitoba maple (*Acer negundo*), red ash (*Fraxinus pennsylvanica*), white elm (*Ulmus americana*), and white pine (*Pinus strobus*). Trees ranged in size from 10 cm to 57 cm diameter at breast height (DBH), and the average size is 17 cm. Most of these trees are in good condition with the exception of a few that are in poor to fair condition.

\* None of the trees within the hedgerows along the north-western and south-eastern property boundaries are within the study area. These hedgerows are located on lands adjacent to the study area, within the farm and residential properties, respectively. The north-western hedgerow contains scattered hawthorn trees with occasional small red ash and apple trees. The south-eastern hedgerow contains a greater diversity and size of trees. Tree species include white pine, basswood, bur oak (*Quercus macrocarpa*), Norway maple (*Acer platanoides*), red ash, and Manitoba maple. These trees which form a naturalized area within the rear yards have canopies that extend approximately up to 12 m into the agricultural fields. X

None of the trees identified within the study area are regulated under the Ontario *Endangered Species Act*, the Canada *Species at Risk Act*, or are of local significance. A vascular plant list is presented in **Appendix B**.

## 3.6 FAUNA

### 3.6.1 Fisheries

No fish inventories were carried out as there is no direct fish habitat on the study area. However, the proposed development could indirectly impact fish habitat within Silver Creek, a large tributary of the Credit River, through issues related to discharge of stormwater, and possibly, groundwater recharge. Currently, most of the drainage from the study area is conveyed to Silver Creek via ditches along Wildwood Road (Condeland Engineering 2009); this drainage outlets where Wildwood Road crosses Silver Creek. The distance along this path of existing ditches and the existing storm water system along Wildwood Road and Eighth Line, from the south-western corner of the study area to Silver Creek, is approximately 390 m.

### 3.6.2 Fish Species

According to CVC mapping (MNR and CVC 2002), the study area is located in Subwatershed 11 (Silver Creek) in the Middle Zone of the Credit River watershed. Silver Creek contains a mixed coldwater/coolwater fish community and is managed for mixed coldwater/coolwater species. Brown Trout (*Salmo trutta*) and Rainbow Trout (*Onchorynchus mykiss*) are the primary indicators of the health of this community type (MNR and CVC 2002). Coldwater fish habitat is generally more sensitive to outside disturbances than other fish community/habitat types.

One species at risk, Redside Dace (*Clinostomus elongatus*), is known to inhabit Silver Creek in the location of the Wildwood Road crossing where stormwater from the study area is discharged. Redside

Dace is regulated as 'Endangered' under the Ontario *Endangered Species Act*, 2007. Federally, Redside Dace is designated as 'Endangered' by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), but is regulated as 'Special Concern' (Schedule 3) under the federal *Species at Risk Act*, 2002.

Redside Dace have a specialized set of habitat requirements which includes: a dominantly herbaceous riparian community; overhanging riparian vegetation; a coolwater temperature regime; riffle and pool morphology; clear water conditions; and a coarse substrate such as sand and gravel. Redside Dace are sensitive to thermal and water quality impacts resulting from urban development and other human disturbance (e.g., agriculture, industry, urbanization, etc.). The feeding strategy of Redside Dace is unique as it is based on sight predation and their prey includes predominantly terrestrial insects. Redside Dace are particularly known for their leaping ability and large mouth used to capture terrestrial flying insects which hover above the water surface and within overhanging riparian, herbaceous vegetation. Riffles are used in late spring to early summer for spawning, where Redside Dace is known to use the nests of Creek Chub (*Semotilus atromaculatus*) and Common Shiner (*Luxilus cornutus*). Consequently, management of both aquatic and riparian habitat is required to ensure that Redside Dace populations remain healthy.

### 3.6.3 Fish Habitat

On-site Stormwater Management methods will be implemented to mitigate potential downstream impacts by implementing a Level 1 or Enhanced Protection stormwater management and diverting backyard drainage to infiltration trenches and existing overland drainage (swales). Level 1 treatment of stormwater has been recommended in the Scoped Subwatershed Plan (Dillon 2003) when the receiving watercourse contains species at risk. In addition, an alternative strategy for minimizing water quality impacts is suggested in Section 6.1.

## 3.7 WILDLIFE AND WILDLIFE HABITAT

Field investigations within the study area were conducted on July 6, 2010 to document wildlife and wildlife habitat and to characterize the nature, extent and significance of animal usage. Direct observations, calls, tracks, scat and runways (trails) were used to record wildlife present within the study area. Weather conditions during field investigations were 20°C with partly clouded skies.

### 3.7.1 Wildlife Habitat

Much of the study area is composed of highly disturbed habitat that consists primarily of agricultural lands with some small areas of cultural meadow habitat. The study area is surrounded by residential development and additional agricultural lands to the northwest. Much of the study area is bordered by hedgerow habitat.

Aquatic habitats found within the study area were limited to accumulated precipitation in tractor tracks and a small narrow ditch that drains the agricultural field in a north-eastern direction towards a reed canary grass meadow within the farm property to the north, and outside of the study area.

Wildlife and wildlife habitat was found to be distributed across the entire study area. In terms of wildlife, the study area supports an assemblage of common species that are typical of agricultural landscapes and urban fringe areas. Lands within and directly adjacent to the study areas are best characterized as low quality and highly disturbed.

### 3.7.2 Fauna

Twenty-eight species of wildlife were verified in the study area based on field observations. The majority of these recordings came from mammalian signs, the presence of resident birds, or visual identification of herpetofauna species.

Twenty-one species of birds were observed in the study area during field investigations. Field observations and habitat analysis within the study area indicates that species abundance and diversity is highest within/adjacent to the cultural meadow and hedgerow habitat. A number of priority species for conservation such as Savannah Sparrow (*Passerculus sandwichensis*), American Goldfinch (*Carduelis tristis*) and Barn Swallow (*Hirundo rustica*) were documented in the study area during field investigations (Couturier 1999).

Within the study area, a total of six mammal species were directly observed or observed based on evidence of presence such as tracks or scat. All mammal species documented represent an assemblage that readily utilizes human influenced landscapes.

Green Frog (*Rana clamitans*) adults and tadpoles were observed in the study area during field investigations. Accumulated precipitation in tractor track ruts at the north end of the study area provided breeding habitat for Green Frog individuals. The length of time the accumulated water is sustained within these ruts is unknown, therefore, the success of Green Frog reproduction is not clear. The reed canary grass meadow habitat on the farm property adjacent and north of the study area could also provide amphibian breeding habitat for Green Frogs, and could be the source of frogs breeding in tire ruts within the study area.

A comparison of the natural heritage features found in the study area was carried out with secondary source information that describes wildlife previously recorded within the region. As a result of this comparison, the potential number of wildlife for the area increases to 48 species (**Table 2**). This increase in potential wildlife presence is comprised of an additional 12 bird species, five mammalian species, and four species of herpetofauna. However, overall wildlife abundance and distribution has likely been diminished throughout the study area due to the magnitude of habitat fragmentation and degradation (e.g., regularly grazed by cattle, etc.).

A summary of wildlife documented in the study area during field investigations and through secondary source information is presented in **Table 2**.

### 3.7.3 Species at Risk

Background information indicated that of the 48 wildlife species recorded within the study area. None of these wildlife species are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act*. Twenty-four species of bird recorded are regulated under the *Migratory Birds Convention Act* (MBCA) while two species are regulated under the *Fish and Wildlife Conservation Act* (FWCA). Seven bird species found within the study area are recommended by Bird Studies Canada as priority species for conservation. Eight of 11 species of mammal recorded are regulated under the FWCA.

**TABLE 2.**  
**WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA**

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others
<b>Herpetofauna</b>	<i>Bufo Americanus</i>	American Toad					*
	<i>Rana clamitans</i>	Green Frog					
	<i>Thamnophis sirtalis</i>	Eastern Garter Snake					*
	<i>Storeria dekayi</i>	Dekay's Brownsnake					*
<b>Birds</b>	<i>Branta canadensis</i>	Canada Goose				MBCA	*
	<i>Anas platyrhynchos</i>	Mallard				MBCA	*
	<i>Circus cyaneus</i>	Northern Harrier				FWCA(P)	
	<i>Charadrius vociferus</i>	Killdeer				MBCA	
	<i>Actitis macularia</i>	Spotted Sandpiper			BSC	MBCA	*
	<i>Larus delawarensis</i>	Ring-billed Gull				MBCA	*
	<i>Columba livia</i>	Rock Pigeon					*
	<i>Zenaida macroura</i>	Mourning Dove				MBCA	
	<i>Picoides pubescens</i>	Downy Woodpecker				MBCA	*
	<i>Picoides villosus</i>	Hairy Woodpecker				MBCA	*
	<i>Colaptes auratus</i>	Northern Flicker				MBCA	
	<i>Vireo olivaceus</i>	Red-eyed Vireo				MBCA	
	<i>Cyanocitta cristata</i>	Blue Jay				FWCA(P)	
	<i>Corvus brachyrhynchos</i>	American Crow					
	<i>Hirundo rustica</i>	Barn Swallow			BSC	MBCA	
	<i>Poecile atricapilla</i>	Black-capped Chickadee			BSC	MBCA	
	<i>Sitta canadensis</i>	Red-breasted Nuthatch			BSC	MBCA	*
	<i>Sitta carolinensis</i>	White-breasted Nuthatch				MBCA	*
	<i>Troglodytes aedon</i>	House Wren				MBCA	
	<i>Turdus migratorius</i>	American Robin				MBCA	
<i>Sturnus vulgaris</i>	European Starling						
<i>Bombcilla cedrorum</i>	Cedar Waxwing				MBCA		
<i>Spizella passerina</i>	Chipping Sparrow				MBCA	*	
<i>Spizella pusilla</i>	Field Sparrow			BSC	MBCA	*	

**TABLE 2.**  
**WILDLIFE SPECIES DOCUMENTED WITHIN THE STUDY AREA**

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others
<b>Birds (cont'd)</b>	<i>Passerculus sandwichensis</i>	Savannah Sparrow			BSC	MBCA	
	<i>Melospiza melodia</i>	Song Sparrow				MBCA	
	<i>Cardinalis cardinalis</i>	Northern Cardinal				MBCA	
	<i>Passerina cyanea</i>	Indigo Bunting				MBCA	
	<i>Agelaius phoeniceus</i>	Red-winged Blackbird					*
	<i>Quiscalus quiscula</i>	Common Grackle					
	<i>Molothrus ater</i>	Brown-headed Cowbird					
	<i>Passer domesticus</i>	House Sparrow					
	<i>Carduelis tristis</i>	American Goldfinch			BSC	MBCA	
	<i>Didelphis virginiana</i>	Virginia Opossum				FWCA(F)	*
	<i>Sylvilagus floridanus</i>	Eastern Cottontail				FWCA(G)	
	<i>Sciurus carolinensis</i>	Gray Squirrel				FWCA(G)	
	<i>Tamiasciurus hudsonicus</i>	Red Squirrel				FWCA(F)	
	<i>Peromyscus leucopus</i>	White-footed Mouse					*
<i>Peromyscus maniculatus</i>	Deer Mouse					*	
<i>Microtus pennsylvanicus</i>	Meadow Vole						
<i>Canis latrans</i>	Coyote						
<i>Vulpes vulpes</i>	Red Fox						
<i>Procyon lotor</i>	Raccoon						
<i>Mephitis mephitis</i>	Striped Skunk						

\* Species recorded based on habitat analysis and secondary source data.

Legal Status:

MBCA - Migratory Birds Convention Act  
 ESA - Endangered Species Act  
 SARA - Species at Risk Act

COSEWIC - Committee on the Status of Endangered Wildlife in Canada:  
 END - Endangered  
 THR - Threatened

FWCA - Fish and Wildlife Conservation Act  
 (P) Protected Species  
 (G) Game species  
 (F) Furbearing mammals

OMNR - Ontario Ministry of Natural Resources  
 END - Endangered  
 THR - Threatened  
 SC - Special Concern

## 4.0 EXISTING REGULATORY POLICIES

### 4.1 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS 2005) provides direction on matters of provincial interest in municipal land use planning, and is issued under section 3 of the *Planning Act*. The *Planning Act* requires that planning authorities “shall be consistent with” the PPS in planning matters so that natural features will be protected from incompatible development.

There are two categories of natural heritage areas specified in the PPS for protection. Areas where no development or site alteration is permitted, including: Provincially Significant Wetlands; and significant habitats of endangered and threatened species. The second category of natural heritage areas specified in the PPS are areas where development and site alteration *may* be permitted if it can be demonstrated that no negative impacts will occur on the natural features or their ecological functions. These areas include: fish habitat; wetlands, significant valley lands; significant wildlife habitat; Provincially Significant Areas of Natural and Scientific Interest (ANSIs); and Significant Woodlands.

There are no Provincially Significant Wetlands, ANSIs, or Woodlands on or within 120 m of the study area. There are also no Environmentally Significant Areas (ESAs) on or on lands adjacent to the study area.

### 4.2 GREENBELT PLAN

The Halton Hills Official Plan policies are intended to implement the Greenbelt Plan which came into effect on February 28, 2005. Within the Town of Halton Hills, areas located within the Greenbelt Plan are designated “Protected Countryside” (see Schedule A1, HHOP 2006), and within the Protected Countryside there are areas the Greenbelt Plan defines as Natural Heritage System (NHS). The NHS includes areas with the highest concentration of the most sensitive and/or significant natural features and functions and these areas are to be managed as a connected and integrated NHS.

The study area is located outside of the Greenbelt Plan area. The Greenbelt Plan boundary is located northwest of the study area at the northerly limit of the Draft Plan of Subdivision. The lands within the Plan area are designated as “Protected Countryside” and are not part of the Greenbelt Plan Natural Heritage System.

### 4.3 REGIONAL MUNICIPALITY OF HALTON

The Regional Municipality of Halton (RMOH) specifies that local official plans for each Municipality are extensions of The Regional Official Plan (ROP 2006). These local official plans are intended to guide development to meet local needs and issues. The Plan also requires that “Secondary Plans be prepared by Local Municipalities for new communities, Nodes, Corridors and Hamlets in accordance with the ROP” (RMOH 2006). Secondary Plans shall conform to Regional and Local Official Plans and be incorporated as amendments to the Local Official Plan (Section 49, ROP 2006). The Glen Williams Secondary Plan (GWSP, 2005) conforms to the ROP and provides a guide to development within the Hamlet of Glen Williams and was reviewed to ensure conformity of the proposed Draft Plan of Subdivision with the policies of the secondary plan.

Within the ROP [Section 51(3)], the Greenlands System, a system of connected natural areas and open spaces, are denoted to preserve the more sensitive parts of the natural environment which are also intended to provide recreational opportunities. The designations are as follows:

- Escarpment Natural Area;
- Greenlands A;
- Greenlands B; and
- Regional Waterfront Parks.

The GWSP identifies Core Greenlands and Supportive Greenlands as areas designated as having environmental importance. Environmentally Sensitive Areas (ESA) are part of the Greenlands System (Greenland B) as shown on Map 1 of the ROP (2006). There are no Escarpment Natural Areas, Greenlands, or ESA designated lands within the study area.

#### 4.4 THE HAMLET OF GLEN WILLIAMS SECONDARY PLAN (GWSP)

The Hamlet of Glen Williams Secondary Plan (GWSP 2005), Official Plan Amendment 113 to the Town of Halton Hills Official Plan, is the guiding document for planning within the study area. Schedule A of the GWSP (**Figure 5**) has designated the site as “Hamlet Residential”. Schedule A also shows a “Hamlet Buffer” which is located along the limit of the Secondary Plan boundary (the Hamlet).

The GWSP (2005) designates two categories of Greenlands as follows:

- **Core Greenlands** (Greenlands A) which are areas that have the natural heritage components that include regulatory floodplains; fish habitat; woodlands within or adjacent to the main valley system of the Credit River; riparian corridors linked to watercourses with fish habitat; and provincially significant wetlands; and,
- **Supportive Greenlands** (Greenlands B) which are areas that have natural heritage features that may not have specific provincial policy to regulate development. Such areas include woodlots; unevaluated wetlands, steep slopes and minor tributaries of the Credit River.

There are no areas within or adjacent to the subject site with Core or Supportive Greenlands designations. The Glen Williams Integrated Planning Project Scoped Subwatershed Plan (Dillon Consulting 2003) was prepared and the GWSP (2005) indicates that this document should be used as a reference when interpreting Plan policies particularly as they apply to lands designated as Greenlands. No Greenlands are identified within or on lands adjacent to the study area. The Subwatershed Plan was used as a reference for the fisheries analysis (**Sections 3.6.1 to 3.6.3**).

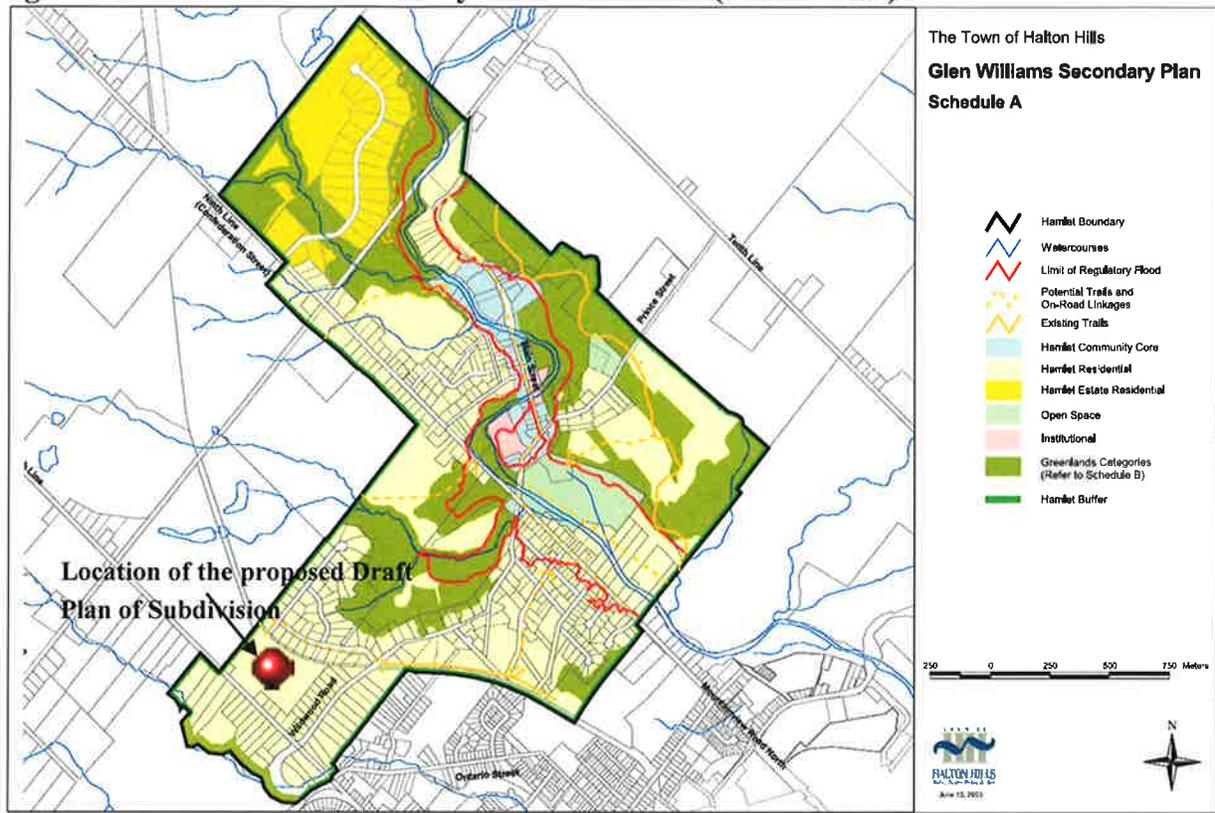
The north-western border of the study area forms part of the Hamlet boundary and this area is identified as part of the **Hamlet Buffer**. The boundaries of the Hamlet shown on both **Schedules A and B** have been determined to permit growth but maintain the Hamlet’s scale and character (**Section 3.8**; GWSP 2005) (**Figures 5 and 6**). Towards preserving the hamlet character, the GWSP (2005) directs new development to include a general lot line setback of 20 m from the hamlet boundary. However, lesser widths may be approved where it can be shown to the Town of Halton Hills, that this objective has been achieved. Lands within this setback will be allowed to regenerate as private natural areas or be used for public park purposes such as trail systems.

#### 4.5 CREDIT VALLEY CONSERVATION AUTHORITY

The CVC implements policies to ensure the protection of people and property from environmental hazards such as flooding and steep slopes and the agency also protects the environmental integrity of the Credit River watershed. Credit Valley Conservation policies identify standards that can be used to determine the location and setbacks from features such as watercourses, valleys and ravines, wetlands, woodlands, fish habitat and other significant environmental features.

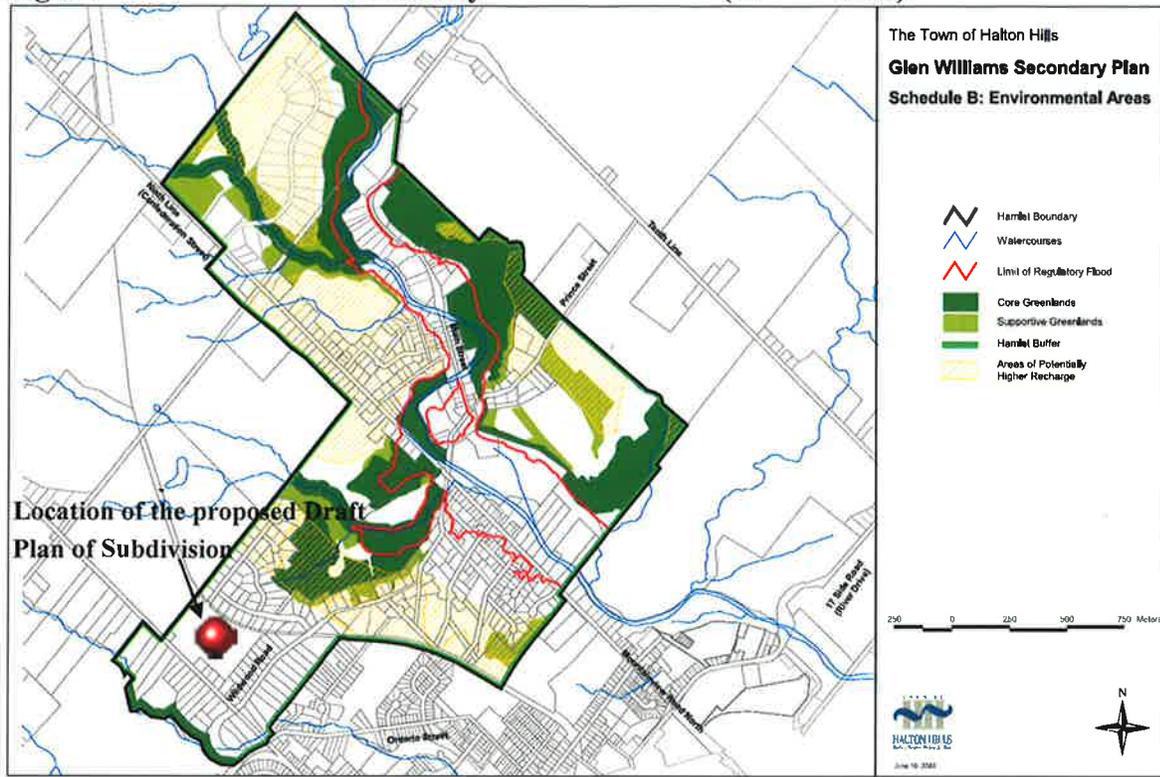


**Figure 5. Glen Williams Secondary Plan Schedule A (GWSP 2005).**





**Figure 6. Glen Williams Secondary Plan Schedule B (GWSP 2005).**





## 5.0 DESCRIPTION OF PROPOSED DEVELOPMENT

### 5.1 DESCRIPTION OF SUBDIVISION

The proposed Draft Plan of Subdivision consists of 32 single detached residential units over an area of approximately 5.43 ha. The lot sizes range between 0.12 ha to 0.34 ha (**Figure 7**). Access to the Draft Plan of Subdivision will be along both McMaster Street and Meagan Drive, along the north-eastern side of the study area. The road makes up 1.02 ha of the development which includes a 20 m right-of-way. The proposed development includes a stormwater management facility (Block 33) that is approximately 0.43 ha. Overall, the Draft Plan of Subdivision covers a total area of approximately 6.89 ha. The Subdivision is for residential lots only; no commercial development creating extensive hard surfaces for customer parking are planned.

### 5.2 FUNCTIONAL SERVICING CONCEPT

The sanitary sewage conveyance and treatment, water supply and distribution, grading, Stormwater Management design, and erosion control measures for the proposed Draft Plan of Subdivision will follow the criteria established in the Functional Servicing Report for the Proposed Residential Development 2147925 Ontario Inc. Located in the Hamlet of Glen Williams, McMaster Street & Meagan Drive, Town of Halton Hills (Georgetown) prepared by Condeland Engineering (2009).

#### 5.2.1 Existing Drainage

The elevation at the northern portion of the study area is at 275 m and the lands decrease in elevation to 271 m along the southern portion of the study area with an average 1.0% slope (Condeland 2009). Currently, the site drains primarily toward the west, to Eighth Line. Ultimately, runoff is conveyed along swales, catchment basins, and culverts to Silver Creek (Condeland 2009).

#### 5.2.2 Sanitary Sewage

A gravity sanitary sewer system is proposed to service all 32 lots on the study area. The proposed outlet for this sewer will be to the southeast, the future sanitary sewer which will service the Eden Oak Glen Williams Subdivision sanitary system via an external sanitary conveyance sewer which is proposed to be constructed along the former railway corridor (currently a public walkway); and further south along the connection from the Glen Williams Subdivision through the connection with the Georgetown Investments Phase 2 subdivision, and eventually to the John Street Sewage Pump Station located outside the limits of the Hamlet of Glen Williams. Treatment will be carried out at the Georgetown Wastewater Treatment Plant (Condeland 2009).

Specifications for the Sanitary Sewer Design are detailed in the Functional Servicing Report (Condeland 2009).

#### 5.2.3 Water Supply and Distribution

Currently, the subject site is within an area that is serviced by an integrated water supply system that is fed by several ground water wells including the Cedervale Well field, the Princess Anne Well field, and the Lindsay Court Well. The Georgetown water Purification Plant treats ground water pumped from the Cedervale Well field. Future and additional water supplies are currently being investigated by the Region of Halton (Condeland 2009).





**LEGEND**

-  Development Limit
-  Hamlet Buffer



**PROPOSED DEVELOPMENT  
AND HAMLET BUFFER**

Project: TA4886	Figure: 7
Date: December 2010	Prepared By: MWF
Scale: 1 : 2200	Checked By: NMF

Data Sources: Glen Williams Secondary Plan  
Schedule A and B.



Water servicing distribution for the study area will be provided by the proposed installation of a 250 mm diameter watermain along Street A that will connect to the existing 250 mm diameter watermain stubs on both McMaster Street and Meagan Drive (Condeland 2009). A proposed interconnection to the existing 200 mm / 300 mm diameter watermain on Eighth Line is proposed via an existing 10 m wide Regional Servicing Easement between the existing residential properties (Condeland 2009).

#### 5.2.4 Grading

Street A, proposed in the study area, is a crescent type road which will be graded to approximately meet the existing grades of McMaster Street and Meagan Drive, at the northeast side of the study area. The proposed road grades are designed to direct major storm overland flow away from McMaster Street and Meagan Drive in a south-westerly direction to an overall low point adjacent to the proposed Stormwater Management (SWM) Pond (Block 33) (**Figure 7**), and to mitigate any external drainage from the existing municipal right-of-ways into the study area. Due to downstream storm outlet constraints, the proposed SWM Pond will be elevated to the extent possible. To achieve this, Street A has been designed with flatter grades with low-points designed to ensure effective drainage while still providing major overland flow. Overall, Street A will be slightly elevated as compared to the site perimeter where existing grades must be matched. Consequently, front lot grades will be slightly higher than the rear lot grades. To accommodate this grading condition, a split-lot drainage style is proposed for all of the residential lots. Overall, the grade differential between the front and rear of lots is minimal. Also, the majority of the proposed lots back onto the existing rear of residential units. Rear yard drainage will be intercepted by rear lot swales to allow for infiltration. Additional flows will be captured by rear lot catchbasins to direct storm drainage to the proposed storm sewer system.

#### 5.2.5 Stormwater Management

Condeland Engineering (2009) proposes to maintain the flows as these currently exist on the study area. Drainage has been divided into three sub-catchments. The majority of drainage from the study area will discharge via roads, driveways, homes and front yards to catchbasins along the proposed subdivision road, and directed into the SWM Pond (Condeland 2009).

Flows from the north and west portions of the study area will be directed towards Eighth Line into the existing stormwater system. For these sub-catchments, given the soil types, infiltration trenches along the rear lot lines will be feasible. Details of the SWM Pond design and control structure will be provided at the Detailed Engineering Design Stage (Condeland 2009).

Water Quality control will be addressed by storage and extended storage within the proposed SWM Pond. Quality control within the Stormwater Management Pond will be based on Level 1 or Enhanced Protection in accordance with Table 3.2 of the Storm Water Planning and Design Manual (March 2003) (Condeland 2009).

Details of the SWM Pond design and control structure will be provided at the Detailed Engineering Design Stage. More detailed information is available in the Functional Servicing Report (Condeland 2009), available under separate cover.

## 6.0 ANALYSIS OF NATURAL FEATURES, POTENTIAL IMPACTS FROM DEVELOPMENT AND PROPOSED MITIGATION

A fisheries investigation was undertaken for Silver Creek, south of the study area to evaluate potential indirect impacts to fish habitat. Additional analysis of natural features including vegetation, tree retention, and wildlife will be completed at a later stage.

Below is a discussion of the fisheries issues related to the proposed development of the Draft Plan of Subdivision identifying appropriate protection measures based on the PPS (2005), the GWSP (2005) and the Scoped Subwatershed Plan completed by Dillon (2003), where appropriate.

Potential impacts that are addressed in this section include impacts to natural features associated with development, short-term impacts associated with construction, and long-term direct and indirect impacts associated with the change in land use from the proposed Draft Plan of Subdivision.

### 6.1 FISH HABITAT

#### 6.1.1 Impacts and Mitigation

Potential changes to recharge and discharge as a result of the proposed development are expected, but the influence on water quality will be addressed by storage and extended storage, as well as with the implementation of a Level 1 or Enhanced Protection stormwater management.

##### *Infiltration*

While at a site level the local recharge function may seem insignificant, the cumulative effect of the loss of such recharge throughout the watershed could have an impact on baseflow rates and surface flow volumes in the receiving watercourses, as well as to the recharge of deeper aquifers. Therefore, it is important to maintain the quantity and quality of recharge over the subject site, to the extent feasible. In this case, it is particularly important to maximize infiltration as the receiving watercourse downstream is a mixed coldwater/coolwater system supporting a sensitive endangered species. As such, mitigation for the increase in impervious areas proposed should include measures to encourage infiltration (e.g., rear yard swales, soak-away pits, 'French drains', large pervious areas, etc.). The increase in impervious surface areas from the proposed development will likely result in an increase in runoff (to the stormwater management facility), and an associated decrease in infiltration. This could negatively impact the local aquifer and groundwater discharge to the receiving watercourse, Silver Creek. As discussed in **Section 3.6**, Silver Creek is managed as a mixed cool/coldwater fish community which is likely dependent, at least in part, on groundwater discharge and requires a high level of protection. Therefore, all on-site measures should maintain or enhance the local infiltration function to mitigate any negative impacts. Maintenance of stormwater infiltration has also been recommended in the Scoped Subwatershed Plan (Dillon 2003).

##### *Stormwater Management*

An enhanced level of storm water control, Level 1 or Enhanced Protection, will be implemented in the stormwater management facility to provide water quality control of water stored, and subsequently discharged from the stormwater facility. This level of protection is in accordance with Table 3.2 of the Storm Water Planning and Design Manual, March 2003 (Condeland 2009) and the Scoped Subwatershed Plan (Dillon 2003). As a result, effects from the proposed development on the downstream receiving watercourses and direct fish habitat are expected to be minimal.

The treatment of stormwater produced by the proposed development should be provided at an enhanced level to protect the receiving watercourses, Silver Creek, from impacts related to water quantity and quality. Stormwater at all events should be released at a rate which does not negatively impact the receiving watercourse. Specifically, this should address erosion thresholds and fluvial geomorphological considerations related to increased discharge to Silver Creek. Although the volume of stormwater produced from the subject site is expected to be low and impacts to the receiving watercourses will likely be small, cumulatively, stormwater inputs from multiple sources can negatively affect the receiving watercourses. According to the Silver Creek Subwatershed Study, Phase I (Halton Hills and CVC 2002), the reach of Silver Creek downstream of the Wildwood Road crossing (Reach 7) has been negatively impacted, in part, by increased stormwater discharge from upstream areas. There is a high level of protection placed on Silver Creek due to the sensitive nature of the fish community. As mentioned above, measures to mitigate water quality include Level 1 or Enhanced Protection stormwater management with extended volume storage and extended drawdown. Means to reduce runoff and encourage infiltration should also be implemented where possible.

Redside Dace and other fish within Silver Creek depend upon cold or coolwater conditions, thus the moderation of water temperatures within the stormwater management facility should be addressed further. One way to moderate temperatures is to plant shrub and tree species along the berm surrounding the SWM Pond to provide shade to the standing water. Plantings should take place as soon as possible post construction. A possible alternative is to construct the stormwater management facility as a constructed wetland in which all open water is contained within the vegetated areas. The need and implementation of this alternative or whether the preferred enhanced level of stormwater control (Level 1 or Enhanced Protection), are adequate, would require further investigation. It is also important to give consideration to reducing the amount of water that reaches any stormwater facility through infiltration trenches and bio-retention, etc. Several Low Impact Development practices for stormwater management are presented in the Scoped Subwatershed Plan (see Dillon 2003), as well as in the Low Impact Development Stormwater Management Manual (CVC and TRCA 2009). The regulation of thermal effects on downstream receiving watercourses is recommended in Dillon (2003).

## 6.2 TREE RETENTION

### 6.2.1 Impacts and Mitigation

Trees within the study area are all considered common species and are not locally significant or considered species of concern. None of the trees found within the study area are of significant size or quality to require special concern. The trees along the south-eastern boundary, which are located on the adjacent property, are of significant size and quality, and provide a visual barrier/screen, and should be retained in their present health and condition. Grading to the fence/property line would impact the root system of some of these significant trees. It is recommended that tree protection fencing be installed 1 m past the dripline in order to protect the integrity of these trees.

## 6.3 WILDLIFE AND WILDLIFE HABITAT

### 6.3.1 Impacts and Mitigation

Seven bird species found within the study area are listed by Bird Studies Canada as priority species of conservation concern for the Region of Peel. Bird species, such as the Savannah Sparrow (*Passerculus sandwichensis*), which was documented during the field investigations, is considered to be area sensitive; this may be indicative of significant natural heritage features within or within lands surrounding the study area. Disruption or removal of natural areas may displace this or other bird species from the study area.

Twenty-four bird species documented (through field observation and secondary source data) within the project limits are listed under the *Migratory Birds Convention Act* (MBCA). The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or damaging, destroying, removing or disturbing of nests. Migratory insectivorous and non-game birds are protected year-round and migratory game birds are protected from March 10 to September 1. No permits are issued for the destruction of migratory birds or their nests incidental to some other undertaking or activity and project works or activities are not specifically prohibited under the Act. To meet the requirements of the MBCA, no vegetation removals should occur during the nesting season. With several exceptions, this includes the period from April 1 to July 31. If vegetation clearing is required during this period, a bird nest survey should be carried out by a qualified avian biologist prior to construction. If active nests are found, a site-specific mitigation plan should be prepared in consultation with the Canadian Wildlife Service.

Mammal species diversity and abundance documented within the study area was typical of an agricultural/urban landscape. All mammal species recorded within the subject lands are tolerant of anthropogenic influences and would likely thrive in any human-related changes within the area, especially if it provides easier food sources.

Habitat degradation and fragmentation are limiting factors to herpetofauna presence and abundance. Based on existing habitat and field observations, herpetofauna presence within the study area is relatively low and limited to ruts created by tractors. Creation of a stormwater pond at the southern limit of the study area may provide breeding habitat for amphibians.

Overall, the proposed development is not anticipated to significantly change the composition of wildlife currently found to be utilizing the study area. However, a number of habitat sensitive species documented during field investigations and through secondary sources may be adversely affected or even removed from the subject lands due to habitat loss. The subject property will be cleared for the purposes of development, however, there are opportunities to create habitat such as creating wetland habitat around the stormwater pond, planting boulevard trees along the proposed road, and minimizing impacts to the existing hedgerows, to the extent possible.

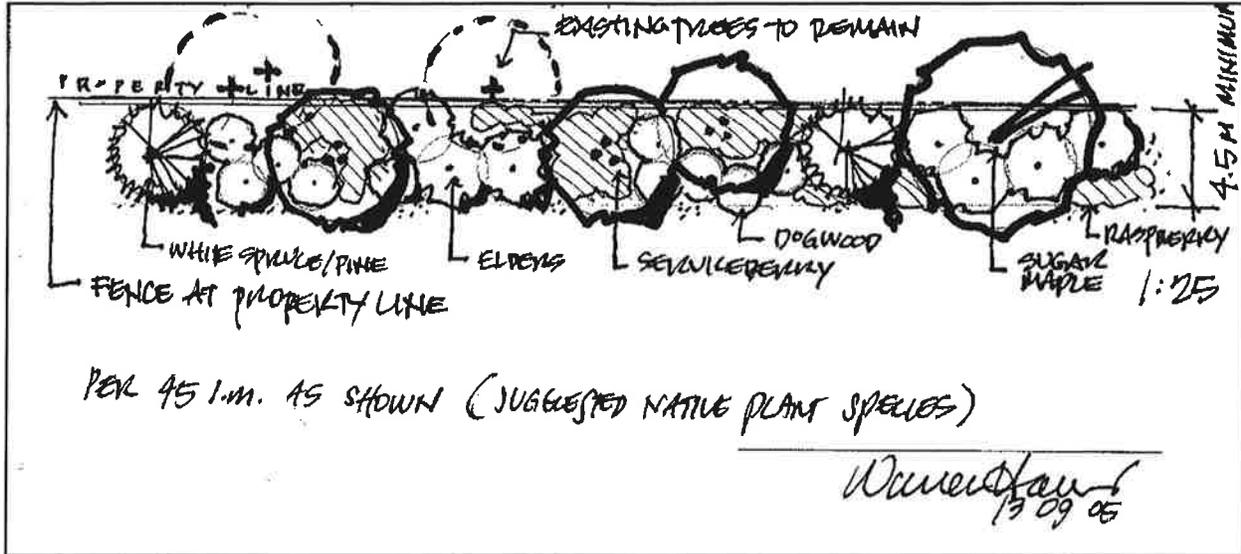
## **6.4 HAMLET BUFFER**

An area designated as Hamlet Buffer (**Figures 5 and 6**) is located along the north-western perimeter of the study area. The Hamlet Buffer serves to maintain the Hamlet's scale and character, and provides a natural screen along the perimeter of the Hamlet of Glen Williams that serves to define the boundaries of the Hamlet as noted in **Section 4.4**. The rear of Lots 16 to 21 occur along the area designated as Hamlet Buffer. There is an existing hedgerow along the north-western perimeter of the study area.

### **6.4.1 Impacts and Mitigation**

The Town of Halton Hills has approved an enhanced buffer measuring 4.5 m in depth that will be retained in private ownership (Appendix A: Fax from Warren Harris, Recreation and Parks, September 13, 2005). Any additional plantings should consist only of plant species that are native to Ontario. The schematic provided by Mr. Harris is presented in **Figure 8**.

Figure 8. Schematic of Enhanced Buffer (Town of Halton Hills 2005)



## 6.5 POTENTIAL SHORT-TERM CONSTRUCTION-RELATED IMPACTS

The main impacts to be addressed in this section include:

- disturbances from construction traffic and activity (access roads, and stockpiling of materials); and
- impacts associated with the potential removal of additional vegetation and increased disturbance to vegetation.

### 6.5.1 General Disturbance of Vegetation Communities from Construction

Short-term impacts from construction may be associated with equipment operations.

#### Mitigation

- natural features on adjacent property that require protection should be clearly identified (including individual trees where applicable) and fenced (1 m outside of the drip line of trees) to ensure no construction traffic, or equipment or materials storage intrude on these areas;
- stockpiling of soil should be done away from protected natural areas and silt fencing used to prevent sediment transport;
- where possible fill removed in the process of grading on the study area (i.e., cutting) should be used again on the property as fill where appropriate;
- for those areas designated for development, soil disturbance and disturbance of the existing vegetation on site should be limited to those areas requiring grading or excavation;
- development limits should be fenced with page wire fencing to delineate areas for protection and non-disturbance. Filter cloth should also be placed on the development side of the fencing, toe-in with earth; and
- disturbed soils should be stabilized to prevent water and wind erosion.

### 6.5.2 Erosion and Siltation

Prior to the building construction program, the installation of a silt control fence will be completed surrounding the proposed disturbance areas of the subject site with allowance for construction access. This will control the quality of runoff and localize the areas of intense erosion and sedimentation. The perimeter properties will be protected using a siltation control fence. Regular maintenance and all necessary repairs shall be performed regularly, including the safe disposal of all sediment material (Condeland 2009).

An approved sediment control plan should be in place prior to the start of construction. The proposed erosion control measures should be implemented prior to the commencement of construction activities, they should be inspected regularly (more frequently prior to periods of rainfall), and they should be repaired or replaced where damaged by construction activities or where they have become ineffective due to silt build-up.

#### Mitigation

- development should follow an approved erosion and sediment plan;
- prior to commencement of any construction activities (area grading, road construction, vegetation removal, *etc.*), appropriate temporary, followed by permanent storm water management facilities should be installed to mitigate sedimentation from surface water runoff;
- perimeter silt fencing of a size and type capable of containing runoff should be installed down slope of all construction areas to retard and filter surface water runoff;
- the timing of construction should avoid periods of high rainfall in the spring and fall;
- exposed soils should be re-vegetated as soon as possible and re-vegetation should be completed prior to the onset of winter; and
- site drainage should be designed to prevent direct concentrated or channelized surface runoff from flowing directly over slopes, and onto adjacent properties;

### 6.5.3 Soil and Water Contamination

Soil and water contamination can arise from fuel storage or re-fuelling of vehicles on site.

#### Mitigation

- fuel storage on site should only use approved (preferably double-wall containment) fuel storage tanks;
- vehicle re-fuelling should be carried out using appropriate precautions to prevent spillage and in designated refuelling zones; and
- Spill kits should be on-site and located at the refuelling zones.

## 6.6 POTENTIAL LONG-TERM IMPACTS

### 6.6.1 Invasive Non-native Plants and Animals

Non-native invasive plants and animals can establish in natural areas displacing native plants and animals. Efforts to control non-native species that have become established, as well as prevent the establishment of new non-native plants and animals are important to maintain the health and diversity of natural ecological systems.

### **Mitigation**

- restore disturbed areas to native vegetation communities, such as the berm surrounding the SWM Pond using appropriate native species of local stock;
- do not use invasive, non-native ornamentals plants for landscaping (e.g., Norway maple, purple loosestrife, Japanese knotweed, Japanese honeysuckle, etc.); and
- do not allow cats and dogs to roam freely within natural areas.

### **6.6.2 Impacts on Water Quality and Fisheries**

The proposed Draft Plan of Subdivision has the potential for local impacts on Silver Creek due to reduced infiltration of water into the ground and changes in the amount, quality and timing of surface and sub-surface water flows to Silver Creek (Dillon 2003).

### **Mitigation**

- best management practices be utilized to ensure the maintenance of both water quality and quantity as a part of the stormwater management facilities proposed;
- infiltration of surface water should be facilitated as much as possible to mitigate surface water flows to the stormwater management facility (and downstream fish habitat) and to enhance groundwater recharge;
- alternatives to standard stormwater management facility design should be explored (e.g., constructed wetland, plantings, etc.) to further mitigate water quality (especially water temperature) and quantity; and
- residents should avoid using chemicals (e.g., pesticides, herbicides, cleaning products, etc.) that may contaminate surface water and no deleterious substances (e.g., paint, oil, soapy water, etc.) should be dumped into storm sewers.

## **7.0 MONITORING**

### **7.1 SHORT-TERM (CONSTRUCTION) MONITORING**

Regular inspection and monitoring of environmental protection measures identified in this report are recommended. Construction activities should be monitored to ensure that there are no impacts to environmental features or properties adjacent to the study area, and special attention should be paid when there are periods of unusually high rainfall or rapid snowmelt. When serious environmental impacts are discovered there should be immediate notification to the following persons to remedy the problem: the contractor responsible for activities on the site, the developer for the site, and the appropriate contacts at the Town of Halton Hills and the CVC.

The recommended monitoring tasks may include:

1. In consultation with contractors identify in the field the location of areas for protection and ensure the installation of appropriate fencing for the protection of these areas.
2. Verify the placement and construction of sediment and erosion control measures as identified in sediment and erosion control plans.
3. Site inspections should consider the need to vegetate areas of exposed soil that may be prone to wind and/or water erosion.
4. Undertake regular site inspections to monitor the efficacy of all erosion and sediment control measures.

5. Monitoring to ensure the appropriate de-watering and erosion control measures are taken to avoid impacts to water quality within Silver Creek. Additional erosion control mats may be needed to mitigate impacts associated with unforeseen circumstances that may arise when soils are exposed and rainfall events occur.
6. Site inspections should be conducted to monitor for any toxic spills. Particular attention should be given to the maintenance practices for construction equipment, diesel and gasoline filling tanks/pumps (if present on site) and any other toxic materials that may be brought on site as a part of site development.
7. Verify that all construction activities, including the movement of heavy equipment, parking of vehicles and placement of construction materials takes place outside of designated protection zones.
8. Large garbage containers used on site should have covers to minimize the amount of garbage blown around both on and off the site, during the construction of homes. Verify that garbage is disposed of responsibly on site, and garbage carried off by the wind should be collected and disposed of properly. This is an ongoing issue at many construction sites and should be carefully monitored.
9. Verify the completion of planting plans for the stormwater management facility, or verify the completion of planting plans for the proposed constructed wetland in place of the SWM pond.

## 7.2 LONG-TERM MONITORING

The environment is dynamic and changes will occur over time. Due to the change in surrounding land use, some changes in the environment may be considered negative and appropriate steps may be taken to prevent further impact and/or reverse the existing change. Some of the long-term monitoring required to ensure the health of protected open space include the following:

- inspection of SWM facilities to determine their continued functioning as intended, to look for erosion at outlets and to determine the need to remove accumulated silt;
- field surveys may look for invasive species requiring removal; and
- restoration areas may be examined to determine if follow up stewardship measures are required.

The CVC has a long-term environmental monitoring program that examines ecological integrity at landscape, community and species scales. CVC should be contacted to determine what appropriate long-term monitoring protocols would complement existing monitoring in the Credit River watershed that could be implemented within the Draft Plan of Subdivision.

## 8.0 CONCLUSION AND RECOMMENDATIONS

Development within Credit River Subwatershed requires careful planning to minimize the overall impact to the immediate and surrounding natural areas. The protection of fisheries habitat, the provision of a Hamlet Buffer, and plantings along sloped areas (SWM Pond) post grading that are recommended in this report, are based on the objective to maintain and improve the essential natural features.

The Draft Plan of Subdivision addresses these protection issues while also accommodating an area of development.

This study has identified the following environmental features and recommended protection measures as follows:

1. There is no fish habitat on the study area, however, fish habitat within Silver Creek southwest of the study area, could be impacted indirectly as a result of the proposed Draft Plan of Subdivision. Issues are related to the potential changes to recharge and discharge. However, an enhanced level of stormwater control, Level 1 or Enhanced Protection, will be implemented in the Stormwater Management facility to mitigate water quality of water stored, and subsequently discharged from the stormwater pond. This level of protection is in accordance with Table 3.2 of the Storm Water Planning and Design Manual, March 2003 (Condeland 2009). In addition, an alternative to the proposed SWM Pond (see **Section 6.1**) could additionally reduce impacts to the mixed coldwater/coolwater system within Silver Creek that supports a sensitive and endangered species, Redside Dace. To this end, it is critical that all on-site measures should maintain or enhance the local infiltration functions on the subject site, to the extent possible.
2. The subject property is predominantly used for agriculture which makes up at least 90% of the site. A small cultural meadow (CUM1-1) measuring less than 0.5 ha is located in the northwest corner of the property. This vegetation community is considered widespread and common in Ontario and secure globally. Of the 107 vascular plants identified within the study area, 56 species (53%) are considered introduced and non-native to Ontario. Introduced species were mainly found within the cultural meadow and northerly hedgerow communities. Plant species typically found within cultural meadows are generally disturbance tolerant. No other vegetation community was identified; however, there are several hedgerows along the perimeter of the property. No plant species identified on the subject property are regulated under the Ontario *Endangered Species Act* or the Canada *Species at Risk Act*. No species with local significance were encountered during the field investigation. Consequently, development on the subject site is not expected to have an adverse impact on plant species or vegetation communities in Ontario.
3. A tree survey was completed on the subject site, and these trees are located within the hedgerow along the north-eastern boundary of the subject lands. Trees surveyed ranged in size from 10 cm to 57 cm diameter at breast height (DBH), and the average size was 17 cm. Most of these trees are in good condition with the exception of a few that are in poor to fair condition. None of the trees identified within the study area are regulated under the Ontario *Endangered Species Act*, the Canada *Species at Risk Act*, or are of local significance. It is possible that several of these trees will need to be removed from the study area due to issues of grading. Any tree replacement that might be necessary should include only native tree species.

It is important to note that none of the trees within the hedgerows along the north-western and south-eastern property boundaries are within the study area. These hedgerows are located on lands adjacent to the study area, within the farm and residential properties, respectively. The north-western hedgerow contains scattered hawthorn trees with occasional small red ash and

apple trees. However, the south-eastern hedgerow contains a greater diversity and size of trees and these trees need to be appropriately protected during construction.

4. Redside Dace is regulated as 'Endangered' under the Ontario *Endangered Species Act*, 2007, and Federally it is designated as 'Endangered' by COSEWIC but is regulated as 'Special Concern' (Schedule 3) under the federal *Species at Risk Act*, 2002. This fish species is known to inhabit Silver Creek in the location of the Wildwood Road crossing where stormwater from the study area is discharged. Management of both aquatic and riparian habitat is required to ensure that Redside Dace populations remain healthy; this includes the regulation of thermal effects on downstream receiving watercourses. To this end, on-site Stormwater Management methods will be implemented as recommended in the Scoped Subwatershed Plan (Dillon 2003) when the receiving watercourse contains species at risk. This includes implementing a Level 1 or Enhanced Protection stormwater management with extended volume storage and extended drawdown. Backyard drainage should be diverted to infiltration trenches and existing overland drainage (swales). Additional measures to mitigate for an increase in impervious areas due to the proposed development should include measures to encourage infiltration (e.g., rear yard swales, soak-away pits, 'French drains', large pervious areas, etc.).
5. Seven bird species found within the study area are listed by Bird Studies Canada as priority species of conservation concern for the Region of Peel. Twenty-four bird species documented (through field observation and secondary source data review) within the project limits are listed under the *Migratory Birds Convention Act* (MBCA); this protection prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or damaging, destroying, removing or disturbing of nests. Migratory insectivorous and non-game birds are protected year-round and migratory game birds are protected from March 10 to September 1. To meet the requirements of the MBCA, no vegetation removals should occur during the nesting season. With several exceptions, this includes the period from April 1 to July 31. If vegetation clearing is required during this period, a bird nest survey should be carried out by a qualified avian biologist prior to construction. If active nests are found, a site-specific mitigation plan should be prepared in consultation with the Canadian Wildlife Service.

A total of six mammal species were directly observed or observed based on evidence of presence such as tracks or scat. All mammal species documented represent an assemblage that readily utilizes human influenced landscapes. Mammal species diversity and abundance documented within the study area are typical of agricultural/urban landscapes.

Green Frog adults and tadpoles were observed in tractor track ruts at the north end of the study area where precipitation had accumulated. The reed canary grass meadow habitat on the farm property adjacent and north of the study area likely provides the source of frogs breeding in tire ruts.

The proposed development is not anticipated to significantly change the composition of wildlife currently found to be utilizing the study area. Overall, wildlife abundance and distribution has likely diminished throughout the study area due to the magnitude of habitat fragmentation and degradation (e.g., land clearing, regularly grazed by cattle, etc.). Mitigation opportunities for the loss of habitat should include the creation of wetland habitat around the stormwater pond, planting boulevard trees along the proposed road, and minimizing impacts to the existing hedgerows, to the extent possible.

6. There is an existing hedgerow located along the north-western perimeter of the proposed Draft Plan of Subdivision where the Hamlet Buffer is located, as identified by the GWSP (2005) (see **Figures 5 and 6**). A 4.5 m enhanced buffer has been approved by the Town of Halton Hills as shown on **Figure 8** (see **Appendix A**). Enhanced plantings should consist only of plant species native to Ontario.

## 9.0 REFERENCES

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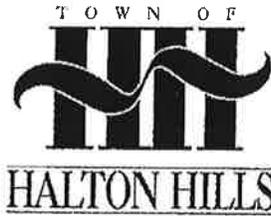
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**APPENDIX A  
FAX FROM THE TOWN OF HALTON HILLS  
REGARDING THE HAMLET BUFFER**





Recreation and Parks Department  
 (905) 873-2601 extension 2274  
 FAX (905) 873 1587  
 warrenh@haltonhills.ca

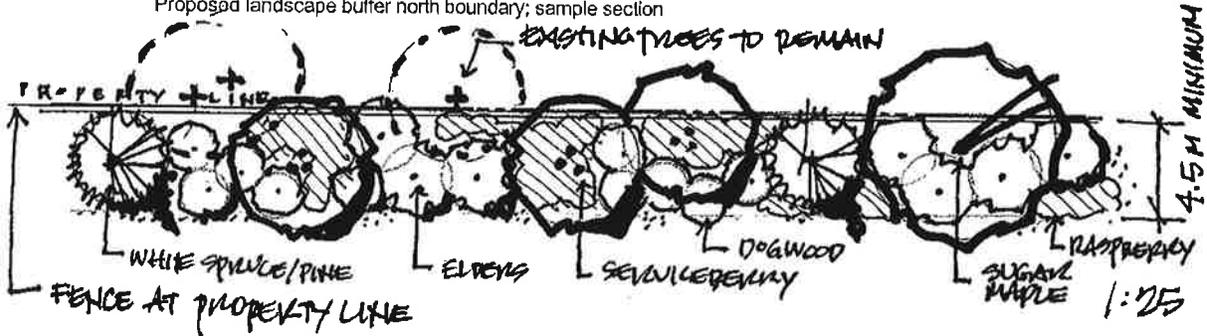
# Fax

To: <b>Glenn J. Wellings</b> Wellings Planning Consultants Inc	From: Warren Harris, Recreation and Parks
Fax: 905 681 8741	Pages: 1
Phone: 905 681 1769	Date: September 13, 2005
Re: <b>D12 Devlins Subdivision</b> <b>Hamlet Buffer</b>	CC: Andrew Marshall, CVC 905 670 2210 Steve Burke, Planning

Urgent   
  For Review   
  Please Comment   
  Please Reply   
  Please Recycle

**Comments:**

Proposed landscape buffer north boundary; sample section



PER 45 I.M. AS SHOWN (SUGGESTED NATIVE PLANT SPECIES)

*Warren Harris*  
13 09 05



**APPENDIX B**  
**VASCULAR PLANT LIST**



**APPENDIX B**  
**VASCULAR PLANT LIST**

Scientific Name	Common Name	GRank	SRank	Halton (NAI)	Ag	H	CUMI-1
<b>EQUISETACEAE</b>	<b>HORSETAIL FAMILY</b>						
<i>Equisetum arvense</i>	field horsetail	G5	S5			x	
<b>PINACEAE</b>	<b>PINE FAMILY</b>						
<i>Abies balsamea</i>	balsam fir	G5	S5			x	
* <i>Picea abies</i>	Norway spruce	G?	SE3			x	
<i>Picea glauca</i>	white spruce	G5	S5			x	
* <i>Pinus nigra</i>	Austrian pine	G?	SE2			x	
<i>Pinus strobus</i>	eastern white pine	G5	S5			x	
<b>CUPRESSACEAE</b>	<b>CEDAR FAMILY</b>						
<i>Thuja occidentalis</i>	eastern white cedar	G5	S5			x	
<b>RANUNCULACEAE</b>	<b>BUTTERCUP FAMILY</b>						
* <i>Ranunculus acris</i>	tall buttercup	G5	SE5			x	x
<b>ULMACEAE</b>	<b>ELM FAMILY</b>						
<i>Ulmus americana</i>	white elm	G5?	S5			x	
<b>JUGLANDACEAE</b>	<b>WALNUT FAMILY</b>						
<i>Juglans nigra</i>	black walnut	G5	S4			x	
<b>FAGACEAE</b>	<b>BEECH FAMILY</b>						
<i>Quercus macrocarpa</i>	bur oak	G5	S5			x	
<b>CHENOPODIACEAE</b>	<b>GOOSEFOOT FAMILY</b>						
* <i>Chenopodium album var. album</i>	lamb's quarters	G5T5	SE5				x
<b>AMARANTHACEAE</b>	<b>AMARANTH FAMILY</b>						
* <i>Amaranthus albus</i>	white tumbleweed	G5	SE5				x
<b>CARYOPHYLLACEAE</b>	<b>PINK FAMILY</b>						
* <i>Dianthus armeria</i>	deptford pink	G?	SE5			x	x
<b>POLYGONACEAE</b>	<b>SMARTWEED FAMILY</b>						
* <i>Rumex crispus</i>	curly-leaf dock	G?	SE5				x
<b>GUTTIFERAE</b>	<b>ST. JOHN'S-WORT FAMILY</b>						
* <i>Hypericum perforatum</i>	common St. John's-wort	G?	SE5			x	
<b>TILIACEAE</b>	<b>LINDEN FAMILY</b>						
<i>Tilia americana</i>	basswood	G5	S5			x	
<b>SALICACEAE</b>	<b>WILLOW FAMILY</b>						
<i>Populus deltoides</i>	cottonwood						x
* <i>Salix X sepulcralis</i>	hybrid willow	HYB	SE2			x	

**APPENDIX B**  
**VASCULAR PLANT LIST**

Scientific Name	Common Name	GRank	SRank	Halton (NAI)	Ag	H	CUMI-1
<b>BRASSICACEAE</b>	<b>MUSTARD FAMILY</b>						
* <i>Alliaria petiolata</i>	garlic mustard	G5	SE5			x	
* <i>Barbarea vulgaris</i>	yellow rocket	G?	SE5				x
<b>ROSACEAE</b>	<b>ROSE FAMILY</b>						
<i>Crataegus mollis</i>	downy thorn	G5	S5			x	
<i>Crataegus punctata</i>	large-fruited thorn	G5	S5			x	
<i>Fragaria vesca ssp. americana</i>	woodland strawberry	G5T?	S5			x	
<i>Geum aleppicum</i>	yellow avens	G5	S5			x	
<i>Geum canadense</i>	white avens	G5	S5			x	
* <i>Malus pumila</i>	common apple	G5	SE5			x	
* <i>Potentilla recta</i>	rough-fruited cinquefoil	G?	SE5			x	
* <i>Prunus domestica ssp. domestica</i>	damson plum	G?T?	SE2			x	
<i>Prunus serotina</i>	black cherry	G5	S5			x	
<i>Prunus virginiana var. virginiana</i>	choke cherry	G5T?	S5			x	
<i>Rubus idaeus ssp. strigosus</i>	wild red raspberry	G5T	S5			x	
<i>Rubus occidentalis</i>	thimble-berry	G5	S5			x	
* <i>Sorbus aucuparia</i>	European mountain-ash	G5	SE4			x	
<b>FABACEAE</b>	<b>PEA FAMILY</b>						
* <i>Medicago sativa ssp. falcata</i>	alfalfa	G?T?	SE4				x
* <i>Melilotus alba</i>	white sweet-clover	G?	SE5				x
* <i>Trifolium hybridum ssp. elegans</i>	alsike clover		SE5				x
* <i>Trifolium pratense</i>	red clover	G?	SE5				x
* <i>Vicia cracca</i>	tufted vetch	G?	SE5			x	x
<b>LYTHRACEAE</b>	<b>LOOSESTRIFE FAMILY</b>						
* <i>Lythrum salicaria</i>	purple loosestrife	G5	SE5			x	
<b>ONAGRACEAE</b>	<b>EVENING-PRIMROSE FAMILY</b>						
<i>Oenothera biennis</i>	common evening-primrose	G5	S5			x	x
<b>CORNACEAE</b>	<b>DOGWOOD FAMILY</b>						
<i>Cornus alternifolia</i>	alternate-leaved dogwood	G5	S5			x	
<i>Cornus sericea ssp. sericea</i>	red-osier dogwood	G5	S5			x	
<b>RHAMNACEAE</b>	<b>BUCKTHORN FAMILY</b>						
* <i>Rhamnus cathartica</i>	common buckthorn	G?	SE5			x	
<b>VITACEAE</b>	<b>GRAPE FAMILY</b>						

**APPENDIX B**  
**VASCULAR PLANT LIST**

Scientific Name	Common Name	GRank	SRank	Halton (NAI)	Ag	H	CUMI-1
<i>Parthenocissus vitacea</i>	inserted Virginia-creeper	G5	S5			x	
<i>Vitis riparia</i>	riverbank grape	G5	S5			x	
<b>ACERACEAE</b>	<b>MAPLE FAMILY</b>						
<i>Acer negundo</i>	manitoba maple	G5	S5			x	x
* <i>Acer platanoides</i>	norway maple	G?	SE5			x	
<i>Acer saccharinum</i>	silver maple	G5	S5			x	
<i>Acer saccharum var. saccharum</i>	sugar maple	G5T?	S5			x	
<b>ANACARDIACEAE</b>	<b>SUMAC FAMILY</b>						
<i>Rhus hirta</i>	staghorn sumac	G5	S5			x	x
<b>GERANIACEAE</b>	<b>GERANIUM FAMILY</b>						
* <i>Geranium robertianum</i>	herb-robert	G5	SE5			x	
<b>APIACEAE</b>	<b>PARSLEY FAMILY</b>						
* <i>Aegopodium podagraria</i>	goutweed	G?	SE5			x	
* <i>Daucus carota</i>	wild carrot	G?	SE5			x	x
<b>APOCYNACEAE</b>	<b>DOGBANE FAMILY</b>						
* <i>Vinca minor</i>	periwinkle	G?	SE5			x	
<b>ASCLEPIADACEAE</b>	<b>MILKWEED FAMILY</b>						
<i>Asclepias syriaca</i>	common milkweed	G5	S5			x	
<b>SOLANACEAE</b>	<b>POTATO FAMILY</b>						
* <i>Solanum dulcamara</i>	bitter nightshade	G?	SE5				x
<b>LAMIACEAE</b>	<b>MINT FAMILY</b>						
* <i>Leonurus cardiaca ssp. cardiaca</i>	common motherwort	G?T?	SE5				x
* <i>Nepeta cataria</i>	catnip	G?	SE5			x	
<i>Prunella vulgaris ssp. lanceolata</i>	heal-all	G5T?	S5				x
<b>PLANTAGINACEAE</b>	<b>PLANTAIN FAMILY</b>						
* <i>Plantago lanceolata</i>	ribgrass	G5	SE5				x
* <i>Plantago major</i>	common plantain	G5	SE5				x
<b>OLEACEAE</b>	<b>OLIVE FAMILY</b>						
<i>Fraxinus americana</i>	white ash	G5	S5			x	
<i>Fraxinus pennsylvanica</i>	red ash	G5	S5			x	x
* <i>Syringa vulgaris</i>	common lilac	G?	SE5			x	
<b>SCROPHULARIACEAE</b>	<b>FIGWORT FAMILY</b>						
* <i>Verbascum thapsus</i>	common mullein	G?	SE5				x
<b>RUBIACEAE</b>	<b>MADDER FAMILY</b>						

**APPENDIX B**  
**VASCULAR PLANT LIST**

Scientific Name	Common Name	GRank	SRank	Halton (NAI)	Ag	H	CUMI-1
<i>Galium asprellum</i>	rough bedstraw	G5	S5			x	
<b>CAPRIFOLIACEAE</b>	<b>HONEYSUCKLE FAMILY</b>						
* <i>Lonicera tatarica</i>	tartarian honeysuckle	G?	SE5			x	
* <i>Viburnum opulus</i>	guelder rose	G5	SE4			x	
<b>DIPSACACEAE</b>	<b>TEASEL FAMILY</b>						
* <i>Dipsacus fullonum ssp. sylvestris</i>	wild teasel	G?T?	SE5			x	x
<b>ASTERACEAE</b>	<b>ASTER FAMILY</b>						
* <i>Achillea millefolium</i> var. <i>millefolium</i>	common yarrow	G5T?	SE?			x	
<i>Ambrosia artemisiifolia</i>	common ragweed	G5	S5				x
* <i>Arctium minus</i>	common burdock	G?T?	SE5				x
<i>Aster lanceolatus ssp. lanceolatus</i>	tall white aster	G5T?	S5			x	x
* <i>Cichorium intybus</i>	chicory	G?	SE5				x
* <i>Cirsium arvense</i>	Canada thistle	G?	SE5			x	x
* <i>Cirsium vulgare</i>	bull thistle	G5	SE5			x	x
<i>Conyza canadensis</i>	horseweed	G5	S5				x
<i>Erigeron annuus</i>	daisy fleabane	G5	S5				x
<i>Erigeron strigosus</i>	daisy fleabane	G5	S5				x
<i>Euthamia graminifolia</i>	flat-topped bushy goldenrod	G5	S5			x	
<i>Hieracium sp.</i>	hawkweed					x	
* <i>Leucanthemum vulgare</i>	ox-eye daisy	G?	SE5				x
* <i>Matricaria discoidea</i>	pineapple-weed	G5	SE5				x
<i>Rudbeckia hirta</i>	black-eyed Susan	G5	S5				x
<i>Solidago canadensis</i>	canada goldenrod	G5	S5			x	
<i>Solidago canadensis var. scabra</i>	tall goldenrod	G5	S5			x	
* <i>Sonchus arvensis ssp. arvensis</i>	field sow-thistle	G?T?	SE5			x	x
<i>Symphyotrichum novae-angliae</i>	New England aster	G5	S5			x	x
* <i>Taraxacum officinale</i>	common dandelion	G5	SE5			x	x
* <i>Tragopogon dubius</i>	doubtful goat's-beard	G?	SE5			x	x
<b>ALISMATACEAE</b>	<b>WATER-PLANTAIN FAMILY</b>						
<i>Alisma plantago-aquatica</i>	Common water-plantain	G5	S5		x		
<b>JUNCACEAE</b>	<b>RUSH FAMILY</b>						
<i>Juncus tenuis</i>	path rush	G5	S5			x	
<b>CYPERACEAE</b>	<b>SEDGE FAMILY</b>						

**APPENDIX B  
VASCULAR PLANT LIST**

Scientific Name	Common Name	GRank	SRank	Halton (NAI)	Ag	H	CUMI-1
<i>Carex vulpinoidea</i>	fox sedge	G5	S5				x
<b>POACEAE</b>	<b>GRASS FAMILY</b>						
* <i>Agrostis gigantea</i>	red-top	G4G5	SE5			x	
* <i>Agrostis stolonifera</i>	redtop	G5	S5				x
* <i>Bromus inermis ssp. inermis</i>	awnless brome	G4G5T?	SE5			x	x
* <i>Dactylis glomerata</i>	orchard grass	G?	SE5			x	
* <i>Echinochloa crusgalli</i>	common barnyard grass	G?	SE5		x		
* <i>Elymus repens</i>	quack grass	G?	SE5				x
<i>Phalaris arundinacea</i>	reed canary grass	G5	S5			x	x
* <i>Phleum pratense</i>	timothy	G?	SE5			x	x
<i>Poa compressa</i>	Canada blue grass	G?	S5			x	x
<b>TYPHACEAE</b>	<b>CATTAIL FAMILY</b>						
<i>Typha angustifolia</i>	narrow-leaved cattail	G5	S5			x	
<b>LILIACEAE</b>	<b>LILY FAMILY</b>						
* <i>Hemerocallis fulva</i>	orange day-lily	G?	SE5			x	
<b>ORCHIDACEAE</b>	<b>ORCHID FAMILY</b>						
* <i>Epipactis helleborine</i>	common helleborine	G?	SE5			x	

\*introduced



**APPENDIX C**  
**ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS**



## 1) G-Rank Global Rank

Global ranks are assigned by a consensus of the network of Conservation Data Centres, scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

- G1 = Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
- G2 = Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
- G3 = Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
  
- G4 = Common; usually more than 100 occurrences; usually not susceptible to immediate threats.
- G5 = Very common; demonstrably secure under present conditions.
- GH = Historic, no records in the past 20 years.
- GU = Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
  
- GX = Globally extinct. No recent records despite specific searches.
- ? = Denotes inexact numeric rank (i.e. G4?).
- G" " = A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
  
- G? = Unranked, or, if following a ranking, rank tentatively assigned (e.g. G3?).
- Q = Denotes that the taxonomic status of the species, subspecies, or variety is questionable.
- T = Denotes that the rank applies to a subspecies or variety.

## 2) S-Rank Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for the global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated list at least annually.

- S1 = Critically imperiled in Ontario because of extreme rarity (often 5 or fewer occurrences) or because of some factor (s) such as very steep declines making it especially vulnerable to extirpation.
- S2 = Imperiled in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.
- S3 = Vulnerable in Ontario due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 = Apparently secure - uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 = Secure - common, widespread, and abundant in Ontario.
- SX = Presumed Extirpated - specie or community is believed to be extirpated from Ontario.
- SNR = Unranked - conservation status in Ontario not yet assessed
- SU = Unrankable - currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

- SNA = Not applicable - a conservation status rank is not applicable because the species is not a suitable target for conservation activities.
- S#S# = Range rank - a numeric range rank (e.g. S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g. SU is used rather than S1S4).

### 3) COSEWIC Committee On The Status Of Endangered Wildlife in Canada

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.

- |                      |  |
|----------------------|--|
| Extinct (X)          | A wildlife species that no longer exists.  |
| Extirpated (XT)      | A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.  |
| Endangered (E)       | A wildlife species facing imminent extirpation or extinction.  |
| Threatened (T)       | A wildlife species likely to become endangered if limiting factors are not reversed.   |
| Special Concern (SC) | A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.  |
| Not at Risk (NAR)    | A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.  |
| Data Deficient (DD)  | A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction. |

### 4) COSSARO/OMNR Committee On The Status Of Species At Risk In Ontario/Ontario Ministry Of Natural Resources

The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources (OMNR) assess the provincial status of wild species that are considered to be at risk in Ontario.

- |                                |  |
|--------------------------------|--|
| Extinct (EXT)                  | A species that no longer exists anywhere.  |
| Extirpated (EXP)               | A species that no longer exist in the wild in Ontario but still occurs elsewhere.  |
| Endangered (Regulated) (END-R) | A species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario's <i>Endangered Species Act</i> .    |
| Endangered (END)               | A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act. |
| Threatened (THR)               | A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.  |
| Special Concern (SC)           | A species with characteristics that make it sensitive to human activities or natural events.   |
| Not at Risk (NAR)              | A species that has been evaluated and found to be not at risk.   |
| Data Deficient (DD)            | A species for which there is insufficient information for a provincial status recommendations.   |

### 5) Local Status – Halton Region

+ Species status within the **Halton Region** was used to determine local vascular plant status for the study area. Plant rarity is based on the number of occurrences within the physiographic region. The species status was taken from Halton Natural Areas Inventory 2006.

**APPENDIX D**  
**TREE INVENTORY**



Project: TA4886  
 Client: Eden Oaks Homes Date: September 2, 2010  
 Collectors: JCN Area: Georgetown



TAG#	SPECIES	DBH (cm)	CONDITION											COMMENTS	
			TI	CS	CV	CDB	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	DL(m)		
1	black walnut ( <i>Juglans nigra</i> )	16.0	G	G	F-G										Tree being overtaken with vines (riverbank grape and wild cucumber)
2	basswood ( <i>Tilia americana</i> )	57.0	F	G	G							x			Rot, long wound along trunk.
3	apple ( <i>Malus pumila</i> )	24.0	G	G	G										On slope of ditch/old railway
4	red ash ( <i>Fraxinus pennsylvanica</i> )	12.0	G	G	F-G										Covered in grape
5	black cherry ( <i>Prunus serotina</i> )	19,28	G	G	G										Multistem tree located other side of fence within agricultural field
6	black cherry ( <i>Prunus serotina</i> )	19,28	G	G	G										
7	apple ( <i>Malus pumila</i> )	16,22	G	G	G										
8	red ash ( <i>Fraxinus pennsylvanica</i> )	19.0	G	G	G										
9	red ash ( <i>Fraxinus pennsylvanica</i> )	10.0	G	G	G										
10	red ash ( <i>Fraxinus pennsylvanica</i> )	13.0	G	G	G										
11	red ash ( <i>Fraxinus pennsylvanica</i> )	21.0	G	G	G										Virginia creeper starting to climb trunk
12	red ash ( <i>Fraxinus pennsylvanica</i> )	20.0	G	G	G										
13	red ash ( <i>Fraxinus pennsylvanica</i> )	15.0	G	G	F-P										Virginia creeper climbing trunk.
14	red ash ( <i>Fraxinus pennsylvanica</i> )	10.0	D	D	D										
15	red ash ( <i>Fraxinus pennsylvanica</i> )	~20	G	G	G										tree size estimated due to access, barb fence 1 m height.
16	red ash ( <i>Fraxinus pennsylvanica</i> )	10.0	G	G	G										Covered in vine, starting to senesce.
17	red ash ( <i>Fraxinus pennsylvanica</i> )	16.0	F	G	G										Fence girdling one side, tree starting to senesce
18	apple ( <i>Malus pumila</i> )	12.0	G	G	G										
19	apple ( <i>Malus pumila</i> )	12,13	G	G	G										
20	apple ( <i>Malus pumila</i> )	11.0	G	G	G										
21	red ash ( <i>Fraxinus pennsylvanica</i> )	26,15	G	G	G										
22	red ash ( <i>Fraxinus pennsylvanica</i> )	23.0	G	G	G										
23	red ash ( <i>Fraxinus pennsylvanica</i> )	20.0	G	G	G										
24	white elm ( <i>Ulmus americana</i> )	26.0	G	G	G										
25	red ash ( <i>Fraxinus pennsylvanica</i> )	10.0	G	F	F	40									covered in vine.
26	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	G	G	G										
27	red ash ( <i>Fraxinus pennsylvanica</i> )	16.0	G	G	G										
28	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	G	G	G										
29	cherry ( <i>Prunus avium</i> )	10.0	G	G	G										
30	red ash ( <i>Fraxinus pennsylvanica</i> )	11,7,13	G	G	G										Starting to be covered in grape.
31	red ash ( <i>Fraxinus pennsylvanica</i> )	19.0	G	G	G-F										riverbank grape climbing trunk.
32	red ash ( <i>Fraxinus pennsylvanica</i> )	15.0	G	G	G										Houses.
33	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	G	G	G										In front of Rd.
34	red ash ( <i>Fraxinus pennsylvanica</i> )	20.0	G	G	G										In front of Rd.



Project: TA4886

Client: Eden Oaks Homes

Date: September 2, 2010

Collectors: JCN

Area: Georgetown



TAG#	SPECIES	DBH (cm)	CONDITION											COMMENTS	
			TI	CS	CV	CDB	Fungus	Insects	Cavity	Rot	Wound	Frost Crack	DL(m)		
35	cherry ( <i>Prunus avium</i> )	12.0	G	G	G										In front of Rd.
36	red ash ( <i>Fraxinus pennsylvanica</i> )	22.0	G	G	G										In front of Rd.
37	red ash ( <i>Fraxinus pennsylvanica</i> )	14.0	G	G	G										In front of Rd.
38	apple ( <i>Malus pumila</i> )	14.0	G	G	G										In front of Rd.
39	Eastern white cedar ( <i>Thuja occidentalis</i> )	10 to 12	G	G	G										6 trees
40	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	G	G	F-G										Covered in vine.
41	apple ( <i>Malus pumila</i> )	13.0	G	G	G										
42	red ash ( <i>Fraxinus pennsylvanica</i> )	14.0	G	F-P	P	70									Covered in grape. Major dieback
43	red ash ( <i>Fraxinus pennsylvanica</i> )	13.0	G	G	F-G	30									
44	red ash ( <i>Fraxinus pennsylvanica</i> )	11,14	G-F	F-P	P	60									
45	white pine ( <i>Pinus strobus</i> )	24.0	G	G	G										possibly on private property
46	white pine ( <i>Pinus strobus</i> )	14.0	G	G	G										Virginia creeper climbing trunk up to 5 m up tree, possibly on private property
47	Eastern white cedar ( <i>Thuja occidentalis</i> )	10 to 12	G	G	G										Behind shed possibly on private property
48	red ash ( <i>Fraxinus pennsylvanica</i> )	13.0	G	G	G										Next to fence/ AGRI could not get to it because of Virginia creeper
49	white pine ( <i>Pinus strobus</i> )	22.0	G	G	G										
50	white pine ( <i>Pinus strobus</i> )	26.0	G	G	G										
51	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	F	F-P	F										
52	Manitoba maple ( <i>Acer negundo</i> )	36.0	G	G	G										Girdled by fence.
53	red ash ( <i>Fraxinus pennsylvanica</i> )	11.0	G	P	F-P										Overtaken by Virginia creeper

**Definitions**

- DBH: Diameter at breast height
- TI: Trunk Integrity
- CS: Crown Structure
- CV: Crown vigour
- CDB: Crown Dieback
- DL(m): Dripline (metres)
- X: Present

*Condition rating:*

- G: good
- F: fair
- P: poor

