

# ENVIRONMENTAL IMPACT STATEMENT



6776 Rothbourne Road, Ottawa, ON

Project No.: OCP-17-0381

Prepared for:

Metro Towing  
2759 Lancaster Road  
Ottawa, ON  
K1B 4V8

Prepared by:

McIntosh Perry Consulting Engineers Ltd.  
115 Walgreen Road, R.R.3  
Carp, Ontario  
K0A 1L0

McINTOSH PERRY

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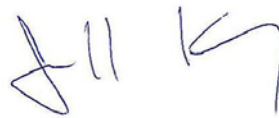
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**Version 002**  
**January 10, 2020**



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## TABLE OF CONTENTS

<b>1.0</b>	<b>PROPERTY INFORMATION AND INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>METHODOLOGY .....</b>	<b>3</b>
<b>3.0</b>	<b>DESCRIPTION OF THE SITE AND THE NATURAL ENVIRONMENT .....</b>	<b>5</b>
3.1	<i>Existing Land Use .....</i>	5
3.2	<i>Natural Heritage System Components.....</i>	5
3.3	<i>Landforms, Soils and Geology.....</i>	9
3.4	<i>Surface Water, Groundwater and Fish Habitat .....</i>	9
3.5	<i>Vegetation Cover.....</i>	10
3.5.1	Vegetation Community 1: Mineral Cultural Meadow (CUW1) .....	10
3.5.2	Vegetation Community 2: Mineral Meadow Marsh (MAM2).....	10
3.5.3	Vegetation Community 3: Mineral Cultural Thicket (CUT1) .....	10
3.5.4	Vegetation Community 4: Mineral Cultural Savannah (CUS1) .....	11
3.5.5	Vegetation Community 5: Fresh-Moist Poplar-Deciduous Forest (FOD8-1).....	11
3.5.6	Vegetation Community 6: Fresh-Moist White Cedar-Sugar Maple Mixed Forest (FOM7-1) .....	11
3.5.7	Vegetation Community 7: Dry-Fresh White Pine-Sugar Maple Mixed Forest (FOM2-2).....	11
3.5.8	Vegetation Community 8: Willow Mineral Thicket Swamp (SWT2-2) .....	11
3.5.9	Vegetation Community 9: Cattail Mineral Shallow Marsh (MAS2-1) .....	11
3.6	<i>Habitat for Species at Risk &amp; Significant Wildlife Habitat.....</i>	16
3.7	<i>Wildlife &amp; Significant Wildlife Habitat .....</i>	22
<b>4.0</b>	<b>DESCRIPTION OF THE PROPOSED PROJECT .....</b>	<b>25</b>
<b>5.0</b>	<b>IMPACT ASSESSMENT &amp; RECOMMENDATIONS.....</b>	<b>28</b>
5.1	<i>Natural Heritage System Components, Surface Water, Groundwater and Fish Habitat.....</i>	28
5.1.1	Wetland Compensation Design.....	28
5.1.2	Fish Habitat .....	29
5.2	<i>Vegetation Cover.....</i>	31
5.2.1	Tree Conservation .....	31
5.2.2	SAR Vegetation.....	31
5.3	<i>Habitat for Species at Risk &amp; Significant Wildlife Habitat.....</i>	34
5.4	<i>Wildlife &amp; Significant Wildlife Habitat .....</i>	35

5.5	Wildland Fire Risk Assessment .....	35
<b>6.0</b>	<b>RECOMMENDED MITIGATION .....</b>	<b>37</b>
<b>7.0</b>	<b>SUMMARY.....</b>	<b>39</b>
<b>8.0</b>	<b>LIMITATIONS .....</b>	<b>40</b>
<b>9.0</b>	<b>REFERENCES .....</b>	<b>41</b>

## Tables

Table 1: Summary of Field Investigation Activities .....	3
Table 2: Vegetation Species observed within the Study Area .....	14
Table 3: Species at Risk Potentially or Confirmed to be Present within the Study Area .....	16
Table 4: Wildlife Species Observed within the Study Area .....	22

## Figures

Figure 1: Study Area Key Map.....	2
Figure 2: Natural Heritage Features of the Study Area.....	7
Figure 3: Wetland Mapping of the Study Area .....	8
Figure 4: Vegetation Communities of the Study Area .....	13
Figure 5: Blanding’s Turtle Habitat .....	21
Figure 6: Proposed Site Plan .....	27
Figure 7: PSW Compensation Plan.....	30
Figure 8: Butternut Location Map.....	33

## Appendices

- Appendix A – Site Photographs
- Appendix B – Regulatory Agency Correspondence
- Appendix C – Clean Equipment Protocol

## 1.0 PROPERTY INFORMATION AND INTRODUCTION

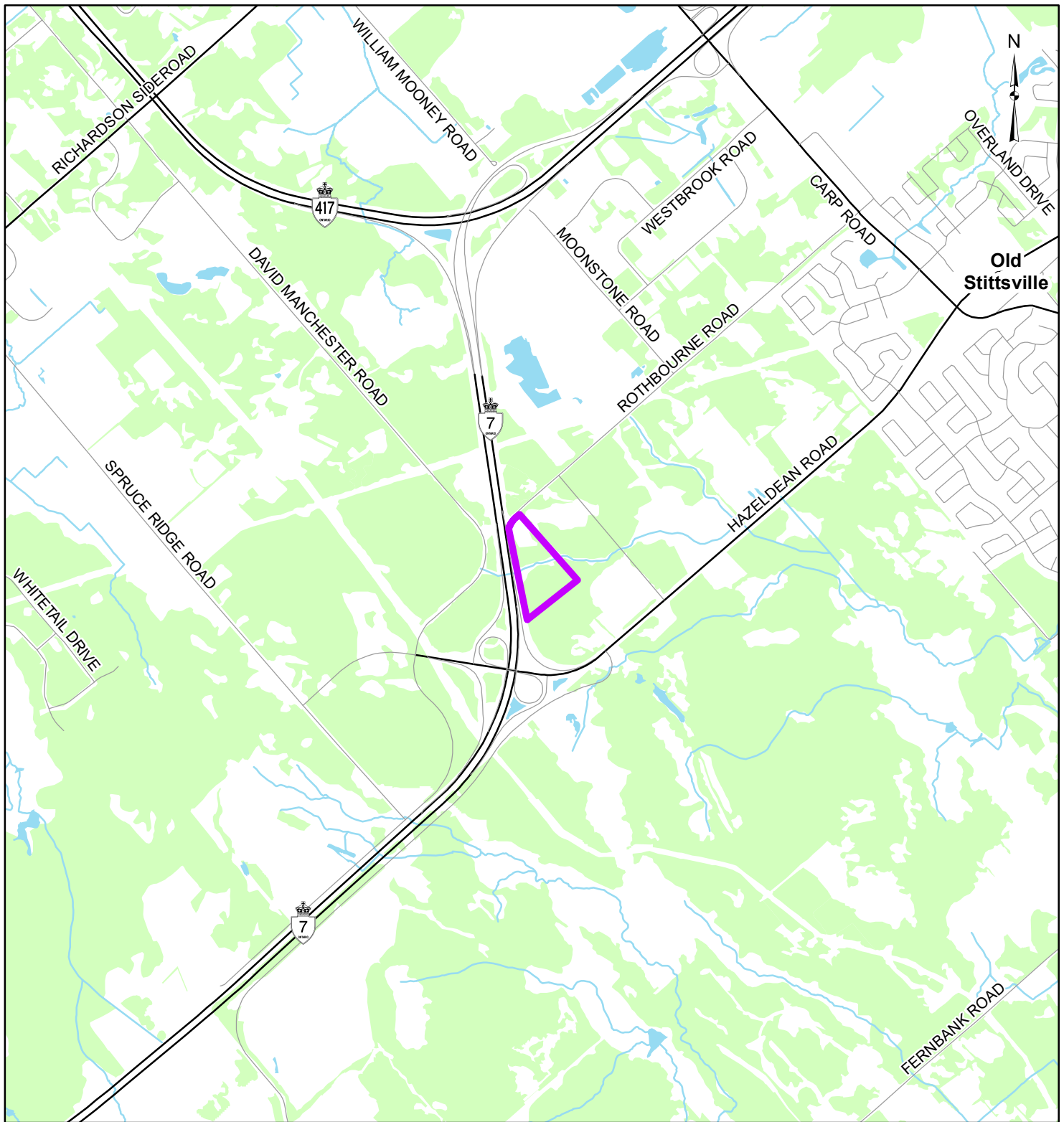
The subject property for this Environmental Impact Statement (EIS) is a 7.45 hectare (ha) parcel of land located at 6776 Rothbourne Road, Property Identification Number 045360357, and is legally known as Part Lot 18 Concession 12, Geographic Township of Goulbourn, City of Ottawa. The subject property is located within the west end of the City of Ottawa, with 330 metres (m) of frontage on the east side of Highway 7, directly south of the western end of Rothbourne Road (**Figure 1**).

The subject property is designated as General Rural Area in the north and south with an Environmental Protection Zone (EP3) spanning the middle portion of the property under the City of Ottawa Zoning By-law No. 2008-250.

The subject property is located within the jurisdiction of the Ministry of Natural Resources and Forestry's (MNRF) - Kemptville District and the Ministry of Environment, Conservation and Parks (MECP) – Ottawa District. This EIS focuses on the undeveloped parcels of land south of the existing tow yard within the subject property. The existing tow yard will not be included as part of the study area and will be considered adjacent lands.

There is confirmed Provincially Significant Wetland (PSW) present within the subject property. As such, the City of Ottawa requires an EIS be carried out for the subject property due to the presence of a PSW, as outlined in the *Environmental Impact Statement Guidelines* (City of Ottawa, 2015). This EIS report assesses the potential impacts that the development of a gravel lot for vehicle storage and warehouse building may have upon the existing woodlands, natural heritage features, including Significant Woodlands and Wetlands and species at risk (SAR), and their habitat.

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by Metro Towing to carry out an EIS to assess the existing natural heritage features. This EIS summarizes the findings of the surveys, outlines potential impacts as a result of the proposed development, and provides recommendations in order to mitigate anticipated impacts on natural heritage features. The information contained in this report represents surveys undertaken in the summers of 2017 and 2018, and spring of 2019 and does not represent year-round data.

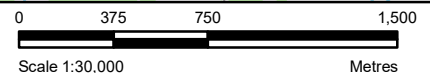


#### LEGEND

- Site Location
- Watercourse
- Local Road
- Waterbody
- Major Road
- Wooded Area

#### REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.  
Note: Property and severance boundaries are approximate.



CLIENT:		METRO TOWING	
PROJECT:		6776 ROTHBORNE ROAD	
TITLE:		KEY MAP	
<b>McINTOSH PERRY</b> <small>115 Walgreen Road, RR3, Carp, ON K0A1L0  Tel: 613-836-2184 Fax: 613-836-3742  www.mcintoshperry.com</small>		PROJECT NO: CP-17-0381	FIGURE:
		Date	Nov., 30, 2018
		GIS	LC
		Checked By	HL
		1	



## 2.0 METHODOLOGY

In order to acquire information on habitat present within and adjacent to the area of the proposed development, field investigations were carried out on September 12, 2017 and September 13, 2018 by H. Lunn as well as May 23, 2019 by E. Pohanka of McIntosh Perry (**Table 1**). Wetland mapping was also carried out on September 21, 2017 by J. King of McIntosh Perry and N. Stow of the City of Ottawa. The field investigation was carried out on the subject property (6776 Rothbourne Road), within the undeveloped area of the subject property. The area surveyed will be hereafter referred to in this report as the “study area.” The field investigation was conducted to provide an inventory and assessment of the natural heritage features of the study area. The field investigation included the identification of the following features within the study area:

- Existing vegetation communities;
- Significant woody vegetation;
- Areas of critical or significant habitat (i.e., Significant Valleylands, Significant Woodlands, Significant Wildlife Habitat, PSW's, etc.);
- Soil types;
- Areas of groundwater recharge and discharge, drainage patterns, watercourses, wetland habitat, other areas of surface water;
- SAR and their habitat, and
- Resident or migratory birds and other wildlife species.

**Table 1** outlines activities carried out within the study area during the field investigations.

Table 1: Summary of Field Investigation Activities				
Date	Personnel Involved	Time of Survey	Weather Conditions	Purpose of Visit
September 12, 2017	H. Lunn	9:00 a.m. to 10:30 a.m.	18 °C, clear, low wind	Existing environmental conditions survey (including identification of vegetation and wildlife species present and determining vegetation community boundaries) and species at risk habitat screening.
September 21, 2017	J. King and N. Stow	N/A	N/A	Provincially Significant Wetland boundary mapping.
September 13, 2018	H. Lunn	12:00 p.m. to 1:30 p.m.	26 °C, warm, moderate wind	Existing environmental conditions survey (including identification of vegetation and wildlife species present and determining vegetation community boundaries) and species at risk habitat screening.
May 13, 2019	E. Pohanka	10:00 a.m. to 11:15 a.m.	12°C, overcast, low wind	Existing environmental conditions survey (including identification of vegetation and wildlife species present and determining vegetation community boundaries) and species at risk habitat screening.
July 18, 2019	E. Pohanka	8:00 a.m. to 9:30 am	23 °C, sunny, low wind	Species at Risk Butternut location survey.

The vegetation communities observed within the study area were characterized using the Ecological Land Classification (ELC) protocol (Lee et al., 1998), and delineated on an aerial photograph. During the field investigations, observations of wildlife species were made through sight, sound, and physical evidence.

Photographs were taken during the field investigations depicting vegetation communities and natural heritage features observed within the study area. This photographic record can be found in **Appendix A** of this report (**Photos 1 – 14**).

Background information on wildlife and plant species, and other significant natural heritage features known to occur within or adjacent to the study area was obtained from the following sources:

- The MNRF – Kemptville District (received April 12, 2019 – **Appendix B**);
- The Natural Heritage Information Centre (NHIC) database accessed via the MNRF's Make a Map: Natural Heritage Areas ([http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR\\_NHLUPS\\_NaturalHeritage&viewer=NaturalHeritage&locale=en-US](http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US)). This search tool allows areas to be searched at up to 1 km<sup>2</sup> grid resolution and provides reports concerning rare species tracked by the NHIC. Information for each 1 km<sup>2</sup> square within the study area was reviewed for occurrences of rare species tracked by NHIC;
- The MNRF's Land Information Ontario (LIO) Metadata Management Tool, this tool contains information (e.g., location of PSW's, SAR element occurrences, etc.) licensed under the Open Government Licence for Ontario;
- Data from the Ontario Breeding Bird Atlas Database (OBBA) was accessed from the data summaries page of the Atlas of the Breeding Birds of Ontario website (<http://www.birdsontario.org/atlas/datasummaries.jsp?lang=eng>). Information for each 10 km<sup>2</sup> grid square was reviewed for the study area;
- Ontario Reptile and Amphibian Atlas was accessed for the data summaries (<https://ontarionature.org/oraa/maps/>). Information for each 10 km<sup>2</sup> grid square was reviewed for the study area;
- Information from the *Poole Creek: Macro Stream Assessment Report* by Mississippi Valley Conservation Authority (MVCA) (2009);
- Habitat in the study area was evaluated by use of aerial photography accessed through Google Earth aeriels and StreetView mapping (<https://www.google.ca/maps>), and
- Vascular Plants of the City of Ottawa, with the Identification of Significant Species (Brunton, 2005).

## 3.0 DESCRIPTION OF THE SITE AND THE NATURAL ENVIRONMENT

### 3.1 Existing Land Use

At the time of the field investigations, the study area was undeveloped (**Photos 1 - 14**). The study area consists of vegetated areas in a range of pioneer and successional stages.

Schedule L3 Natural Heritage System Overlay, of the *City of Ottawa's Official Plan* (2003), identifies the subject property as an area containing 'Natural Heritage System Features.' A 'Natural Heritage System' is defined by the *Provincial Policy Statement, 2014* (PPS) as "...a system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems." Land uses adjacent to the subject property included commercial property to the north (i.e. vehicle storage), commercial properties to the east and south (i.e. cleared vacant lots), and transportation infrastructure directly west of the study area.

### 3.2 Natural Heritage System Components

The following background information was collected from various sources (refer to Section 2.0 of this report):

- The MNRF - Kemptville District provided direction to utilize the NHIC mapping and other natural heritage resources;
- According to the NHIC mapping reviewed, the following natural features have been identified within the vicinity of the study area:
  - Goulbourn Wetland Complex, a Provincially Significant Wetland (PSW);
  - Rothbourne Road natural area;
- LIO data from the MNRF identified the following natural features have been identified within 2 km of the study area:
  - Goulbourn Wetland Complex (PSW);
  - Rothbourne Road (natural area);
  - Stittsville West (natural area), and
  - North Goulbourn (natural area).

The PPS defines Significant Wetlands as "...an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province..." (PPS, 2014). The *City of Ottawa's Official Plan* (2003), identifies wetlands as "...essential components of ecosystems that contribute to the high quality of the environment in Ottawa. Wetlands control and store surface water to assist in flood control, act as sediment traps to improve water quality, and provide habitat for a wide variety of plant and animal species and may serve as recharge areas for groundwater resources". The Goulbourn Wetland Complex was identified within the study area based on NHIC and LIO data. The boundaries of the wetland complex according to LIO data, shows the wetland occurring in a narrow tract of land along the west boundary of the study area (**Figure 2**). However, this data was determined to be historic (1999) and required updating. McIntosh Perry and City of Ottawa staff conducted a wetland evaluation to map the current boundaries of the PWS within the study area. **Figure 3** outlines the new boundaries of the Goulbourn Wetland Complex within the study area which occurs approximately in a

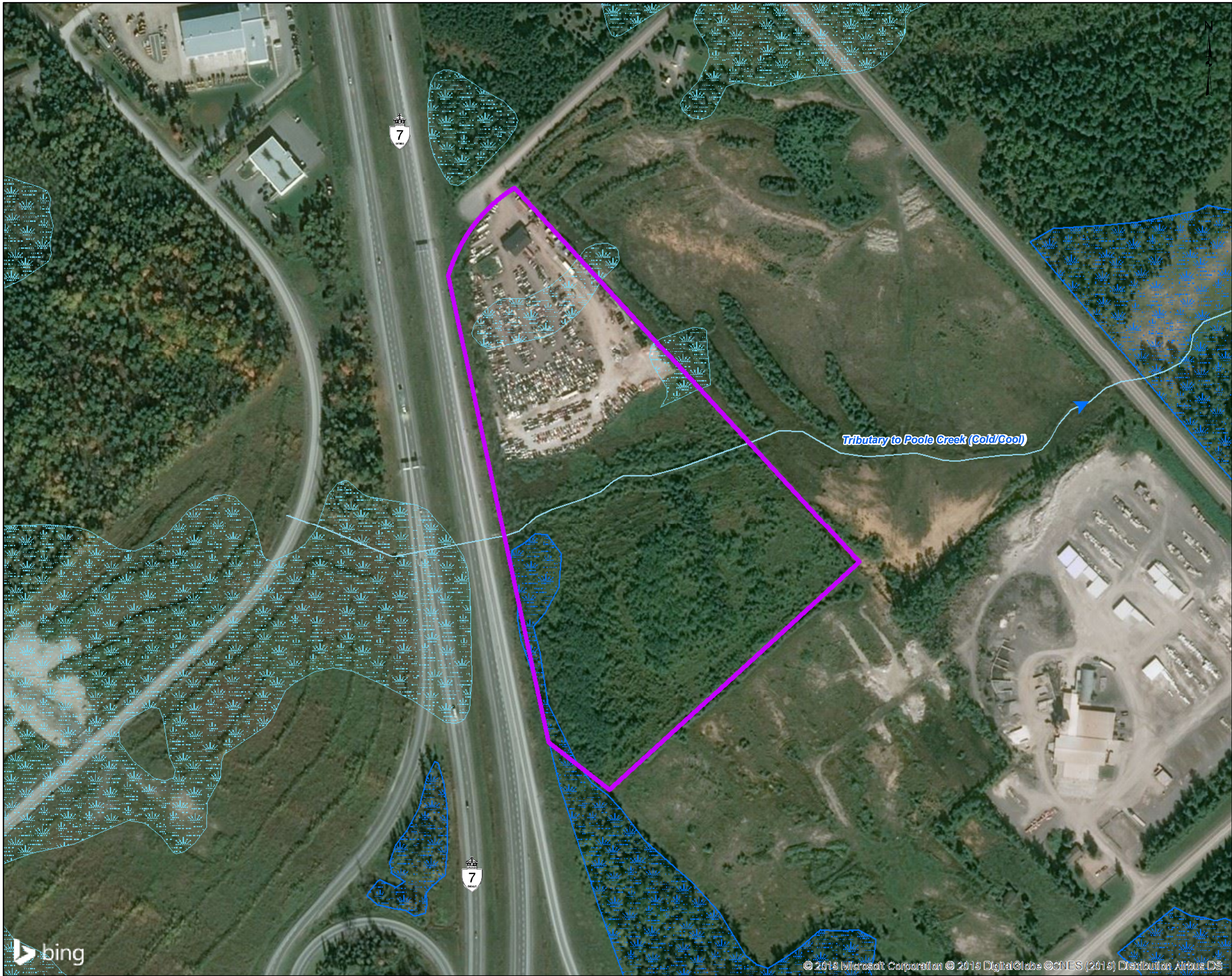
west-east orientation across the study area near the north end. The wetland is situated along a tributary of Poole Creek. The tributary drains into Poole Creek east of the study area which in turn, drains into the Carp River. The new boundaries of the wetland include narrow-leaved emergent marshes and tall shrub swamp.

The PPS defines a Significant Woodland as “...an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area...”. Section 2.4.2 (Natural Features and Functions in the *City of Ottawa’s Official Plan* (2003), defines Significant Woodlands “...as woodlands that combine all three features listed below in a contiguous (canopy appears unbroken on an aerial photograph), forested area:

- Mature stands of trees 80 years of age or older;
- Interior forest habitat located more than 100 m inside the edge of a forest patch, and
- Woodland adjacent to a surface water feature such as a river, stream, drain, pond, or wetland, or any groundwater feature including springs, seepage areas, or areas of groundwater upwelling”.

All wooded vegetation communities within the study area (refer to Section 3.5 of this report for information on vegetation communities present within the study area), were not considered to be Significant Woodland based on the *City of Ottawa Official Plan* (2015).



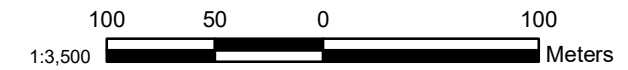


LEGEND

- Watercourse
- Site Location
- Goulbourn Wetland Complex (PSW Wetland)
- Unevaluated Wetland
- Waterbody

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources, 2015.



CLIENT:		METRO TOWING	
PROJECT:		6776 ROTHBORNE ROAD	
TITLE:		CONSTRAINTS AND OPPORTUNITIES	
<b>McINTOSH PERRY</b> <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>		PROJECT NO: CP-17-0381	FIGURE:
		Date	Nov 30, 2018
		GIS	LC
		Checked By	EP
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# 6776 Rothbourne Road 2017 Wetland Boundary Mapping

This figure illustrates the results of the wetland mapping carried out by the City of Ottawa and MacIntosh Perry at 6776 Rothbourne Road, on September 21, 2017.

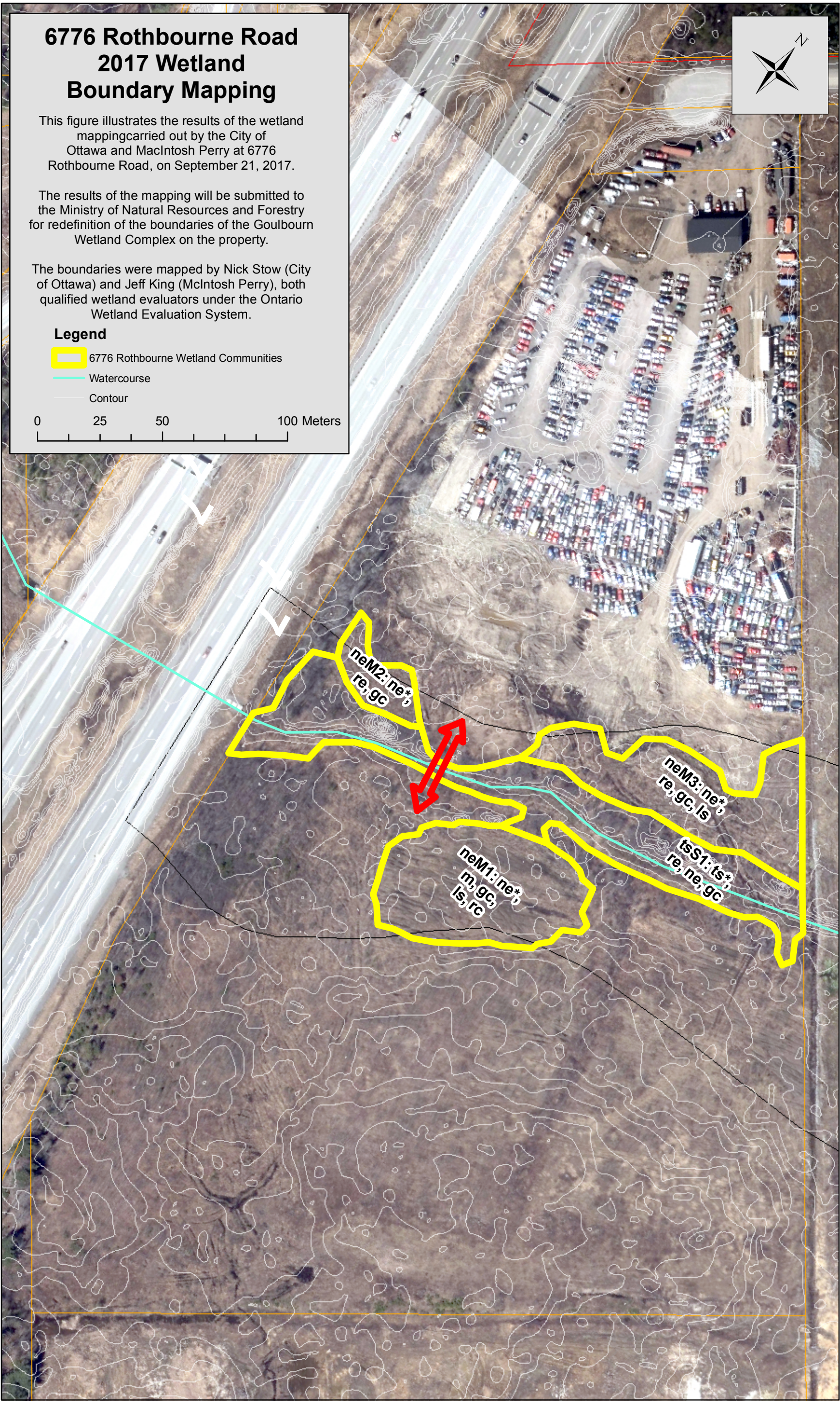
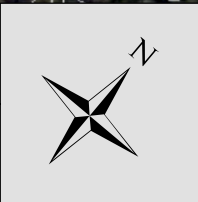
The results of the mapping will be submitted to the Ministry of Natural Resources and Forestry for redefinition of the boundaries of the Goulbourn Wetland Complex on the property.

The boundaries were mapped by Nick Stow (City of Ottawa) and Jeff King (McIntosh Perry), both qualified wetland evaluators under the Ontario Wetland Evaluation System.

### Legend

- 6776 Rothbourne Wetland Communities
- Watercourse
- Contour

0 25 50 100 Meters





### 3.3 Landforms, Soils and Geology

The physiography of the study area is within the glaciomarine deposit. The bedrock geology of the study area consists of limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and Shadow Lake Formation (Ontario Geological Survey, 2010). According to the *Soils of the Regional Municipality of Ottawa-Carleton* (Canada Department of Agriculture, 1987), soils present within the study area included neutral to medium acid fine sand or loamy sand, on nearly level slopes with good to poor drainage.

### 3.4 Surface Water, Groundwater and Fish Habitat

The property is located within the Poole Creek Subwatershed of the Mississippi Valley Watershed managed by the Mississippi Valley Conservation Authority (MVCA, 2009). A tributary of Poole Creek flows through the study area for approximately 240 m in an eastward direction, bisecting the subject property. The tributary drains into Poole Creek approximately 2 km downstream of the study area. This tributary is a headwater of the Goulbourn Wetland Complex situated on the west side of Highway 7 and the south side of Hazeldean Road. Poole Creek continues flowing north east through the Village of Stittsville where the watercourse becomes impacted by urban development. The tributary within the study area is considered a cold/cool water headwater of Poole Creek with lower impacts from development. Poole Creek and its tributaries are considered one of the few remaining cold water tributaries to the Carp River within the City of Ottawa. Alterations to Poole Creek including channelization have occurred in some downstream sections of the watercourse due to the spread of urban development in the Stittsville area (MVCA, 2009).

During the field investigations, the soils were observed to have moderately poor drainage as was evident with the wet soils and wetlands present in the study area. Standing water was present in many areas adjacent to the tributary (**Photos 2 - 14**). The tributary was flowing during the May 23, 2019 field investigation; however, the rate was low. Potential groundwater was observed within the tributary due to oil-like films on the water surface within the portions of the watercourse within the cattail wetland, however this may have been caused by runoff from Highway 7. The depth of the water varied from approximately 0.3 to 0.8 m deep. The substrate consisted of silt, clay, muck, and organic debris. The banks of the watercourse had very shallow slopes and contained tall shrub swamp conditions. Robust emergents, narrow-leaved emergents, and ground cover types of vegetation were also present within and adjacent to the watercourse. No fish were observed within the watercourse during the May 23, 2019 field investigation.

In 2017, it was identified that there were significant alterations on the adjacent property. It was observed at this time that there was no defined channel downstream and that there was a barrier to water flow and fish migration. It is not anticipated that fish can access this portion of the tributary. Flow and water levels leading to the eastern border of the study area was observed to be minimal during the 2019 field investigations. The following species of fish are known to occur within the tributary upstream of Hazeldean Road (east/downstream of the study area): Bluntnose Minnow (*Pimephales notatus*), Central Mudminnow (*Umbra limi*), Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*), Finescale Dace (*Chrosomus neogaeus*), Golden Shiner (*Notemigonus crysoleucas*), Iowa Darter (*Etheostoma exile*), Johnny Darter (*Etheostoma nigrum*), Mottled Sculpin (*Cottus bairdii*), Pumpkinseed (*Lepomis gibbosus*), Rock Bass (*Ambloplites rupestris*) and Western Blacknose Dace (*Rhinichthys obtusus*) (MVCA, 2012). The presence of Mottled Sculpin indicates that cold water habitat is present within the

tributary. It is not likely that fish are able to pass upstream into the study area and flows/water levels are not conducive to fish habitat. Based on the habitat observed, it is expected that oxygen levels within the watercourse within the subject property would not be sufficient to allow fish to survive if they were able to navigate to the site.

No well records were identified within the study area. A total of 15 wells are located within 500 m of the study area. The well depths range from 11 m to 200.9 m. The well uses range from domestic water supply (10), industrial water supply (1), commercial water supply (1), public water supply (1), and abandoned (2).

### 3.5 Vegetation Cover

A spring vegetation survey was completed on May 23, 2019. Habitat observed during the field investigation included several vegetation communities (**Photos 1 – 14**). The following section outlines the existing vegetation communities identified within the study area. For a detailed map of vegetation communities present within the study area, refer to **Figure 4**. Photographs of the vegetation communities can be found in **Appendix A**. A complete listing of vegetation species observed within the study area during the field investigations is found in **Table 2**. SAR vegetation was observed within the study area during the September 12, 2017 field investigation. One (1) Butternut (*Juglans cinerea*) sapling was identified in the south end of the study area. During the July 18, 2019 field investigation, ten (10) Butternuts were identified throughout the study area. No other nationally, provincially or regionally rare or endangered plant species were observed during the field investigation.

#### 3.5.1 Vegetation Community 1: Mineral Cultural Meadow (CUW1)

Vegetation Community 1 was classified through ELC as a Mineral Cultural Meadow (CUM1) (**Photo 1**). This community lacked significant woody vegetation. It was previously cleared and is considered a disturbed area with herbaceous growth regenerating the area. The dominant species included grass (*Poaceae* spp.), broad-leaved cattail (*Typha latifolia*), and coltsfoot (*Tussilago farfara*). This community was present along the north boundary of the study area stretching to the northeast corner.

#### 3.5.2 Vegetation Community 2: Mineral Meadow Marsh (MAM2)

Vegetation Community 2 was classified through ELC as a Mineral Meadow Marsh (MAM2) (**Photo 2**). A small area consisting of this community was present directly west of the Mineral Cultural Meadow along the northern boundary of the study area. The community consisted of wet soils and vegetation dominated by broad-leaved cattail.

#### 3.5.3 Vegetation Community 3: Mineral Cultural Thicket (CUT1)

Vegetation Community 3 was classified through ELC as a Mineral Cultural Thicket (CUT1) (**Photo 5**). This is the largest community of the study area. A small area of this community was located in the northwest corner. The majority of this community was situated directly south of the PSW and occupies the center of the study area. The canopy of this community was dominated by shrub willow (*Salix* spp.) and common buckthorn (*Rhamnus cathartica*). These species are indicative of regeneration of a previously disturbed site. The understory consisted of the same species at a lower height. Various herbaceous wildflowers and grass provided ground cover in this community.



### 3.5.4 Vegetation Community 4: Mineral Cultural Savannah (CUS1)

Vegetation Community 4 was classified through ELC as a Mineral Cultural Savannah (CUS1) (**Photo 4**). This community occupies a large area in the east and south ends of the study area. The canopy was sparse and intermittent in this community and dominated by young poplar species (*Populus* spp.). The presence of young poplar species is indicative of regeneration of a previously disturbed site. Ground cover consisting of herbaceous wildflowers and grass was present.

### 3.5.5 Vegetation Community 5: Fresh-Moist Poplar-Deciduous Forest (FOD8-1)

Vegetation Community 5 was classified through ELC as a Fresh-Moist Poplar-Deciduous Forest (FOD8-1) (**Photo 6**). This community was located in the southwest corner and continues in a narrow, northward direction. The canopy of the community was dominated by tall poplar species. The understory consisted of young sugar maple (*Acer saccharum*) and wild red raspberry (*Rubus strigosus*). Ground cover was sparse and consisted of moss (Bryophyta) and ostrich fern (*Matteuccia struthiopteris*).

### 3.5.6 Vegetation Community 6: Fresh-Moist White Cedar-Sugar Maple Mixed Forest (FOM7-1)

Vegetation Community 6 was classified through ELC as a Fresh-Moist White Cedar-Sugar Maple Mixed Forest (FOM7-1). This community was located along the west boundary of the study area. The canopy of this community consisted of a mix of mature eastern white-cedar (*Thuja occidentalis*), sugar maple, white birch (*Betula papyrifera*), and white spruce (*Picea glauca*). Understory species was dominated by common buckthorn. The narrow stand of mature trees contained in this community most likely represents mature forest that was previously present throughout the study area prior to clearing. Based on Google Earth (Maxar Technologies, 2019) satellite imagery, the majority of the study area appears to have been cleared between 2004 and 2008.

### 3.5.7 Vegetation Community 7: Dry-Fresh White Pine-Sugar Maple Mixed Forest (FOM2-2)

Vegetation Community 7 was classified through ELC as a Dry-Fresh White Pine-Sugar Maple Mixed Forest (FOM2-2) (**Photo 7**). This community was located along the west boundary of the study area near the southwest corner. The canopy of this community is dominated by mature eastern white pine (*Pinus strobus*) and a mix of mature sugar maple and poplars. Little to no understory was present in this community. Ground cover consisted of herbaceous wildflowers and grass. The narrow stand of mature trees contained in this community most likely represents mature forest that was previously present throughout the study area prior to clearing.

### 3.5.8 Vegetation Community 8: Willow Mineral Thicket Swamp (SWT2-2)

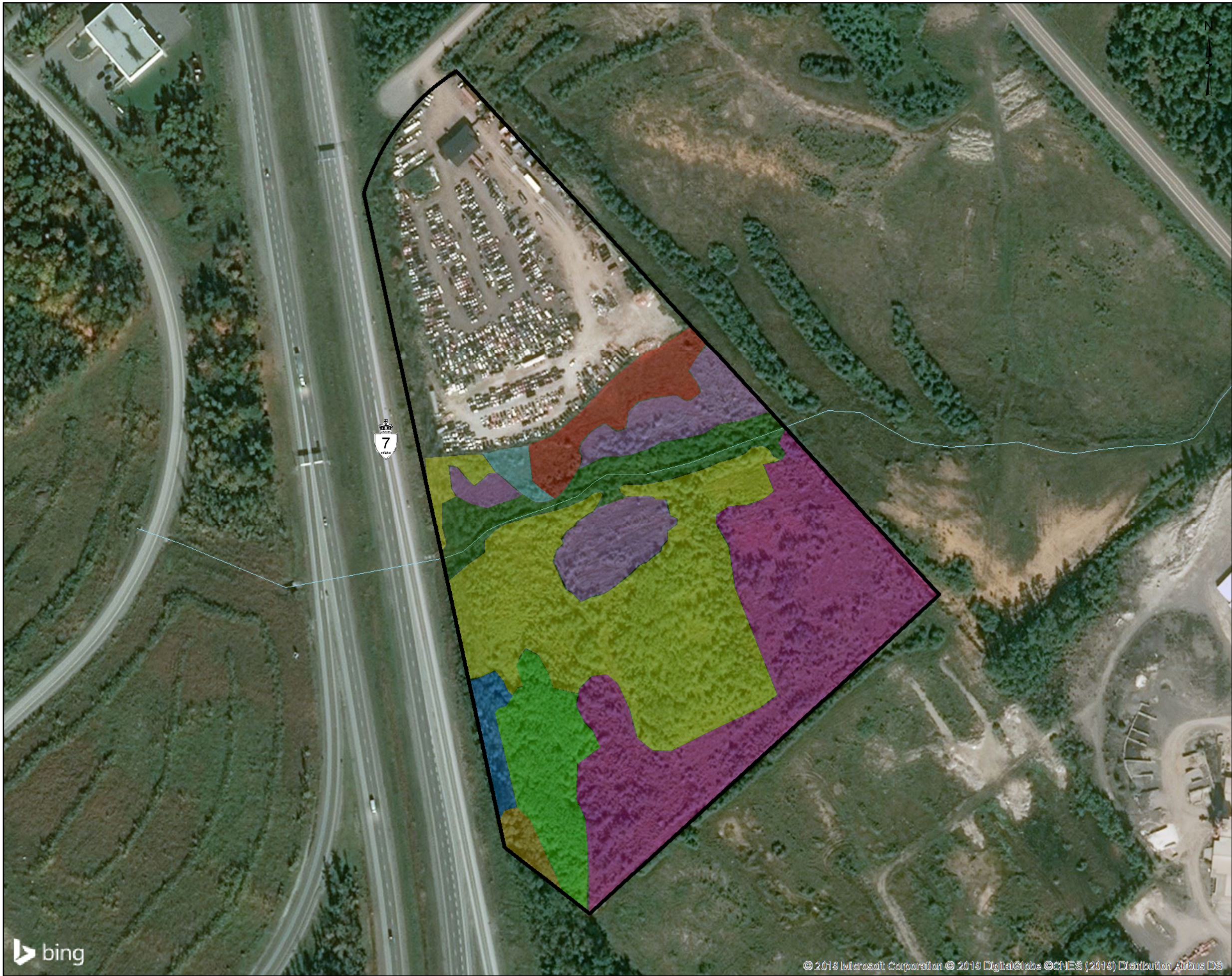
Vegetation Community 8 was classified through ELC as a Willow Mineral Thicket Swamp (SWT2-2) (**Photo 9**). This community was located along the tributary of Poole Creek within the reclassified boundaries of the PSW. The community consisted of shrub willows, phragmites (*Phragmites australis australis*), broad-leaved cattails, and herbaceous plants.

### 3.5.9 Vegetation Community 9: Cattail Mineral Shallow Marsh (MAS2-1)

Vegetation Community 9 was classified through ELC as a Cattail Mineral Shallow Marsh (MAS2-1) (**Photo 13**). This community is located on the north and south sides of Vegetation Community 8. These areas consisted of low-lying

wet areas dominated by broad-leaved cattails. Other herbaceous broad-leaved plants and some sparse shrubs were also present. Refer to **Table 2** for a complete listing of species observed within the study area.



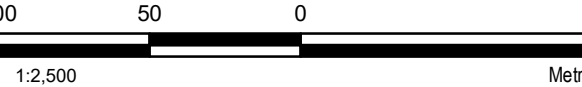


LEGEND

- Watercourse
- Site Location
- Dry-Fresh White Pine - Sugar Maple Mixed Forest (FOM2-2)
- Fresh-Moist Poplar Deciduous Forest (FOD8-1)
- Fresh-Moist White Cedar - Sugar Maple Mixed Forest (FOM7-1)
- Mineral Cultural Meadow (CUM1)
- Mineral Cultural Savannah (CUS1)
- Mineral Cultural Thicket (CUT1)
- Mineral Meadow Marsh (MAM2)
- Cattail Mineral Shallow Marsh (MAS2-1)
- Willow Mineral Thicket Swamp (SWT2-2)

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources, 2015.



CLIENT:	METRO TOWING		
PROJECT:	6776 ROTHBORNE ROAD		
TITLE:	VEGETATION COMMUNITIES		
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO:	CP-17-0381	FIGURE:
	Date	Nov 30, 2018	3
	GIS	LC	
	Checked By	EP	



Table 2: Vegetation Species observed within the Study Area					
Common Name	Scientific Name	Status According to Brunton (2005)	Common Name	Scientific Name	Status According to Brunton (2005)
Tree Species					
balsam fir	<i>Abies balsamea</i>	Common	red maple	<i>Acer rubrum</i>	Common
balsam poplar	<i>Populus balsamifera</i>	Common	sugar maple	<i>Acer saccharum</i>	Common
butternut	<i>Juglans cinerea</i>	Common	trembling aspen	<i>Populus tremuloides</i>	Common
eastern white pine	<i>Pinus strobus</i>	Common	white birch	<i>Betula papyrifera</i>	Common
green ash	<i>Fraxinus pennsylvanica</i>	Common	white elm	<i>Ulmus americana</i>	Common
largetooth aspen	<i>Populus grandidentata</i>	Common	white poplar	<i>Populus alba</i>	Common
Manitoba maple	<i>Acer negundo</i>	Common	white spruce	<i>Picea glauca</i>	Common
Shrub Species					
black elderberry	<i>Sambucus canadensis</i>	Uncommon	round-leaved dogwood	<i>Cornus rugosa</i>	Common
black raspberry	<i>Rubus occidentalis</i>	Uncommon	shrub willow	<i>Salix</i> spp.	N/A
common blackberry	<i>Rubus allegheniensis</i>	Common	speckled alder	<i>Alnus incana</i>	Common
glaucous honeysuckle	<i>Lonicera dioica</i>	Uncommon	staghorn sumac	<i>Rhus typhina</i>	Common
glossy buckthorn	<i>Rhamnus frangula</i>	Common (aggressive invasive)	Virginia creeper	<i>Parthenocissus quinquefolia</i>	Uncommon
ninebark	<i>Physocarpus opulifolius</i>	Uncommon	Virgin’s bower	<i>Clematis virginiana</i>	Common
purple-flowering raspberry	<i>Rubus odoratus</i>	Common	wester poison-ivy	<i>Toxicodendron rydbergii</i>	Common
red-osier dogwood	<i>Cornus sericea</i>	Common	wild black currant	<i>Ribes americanum</i>	Common
riverbank grape	<i>Vitis riparia</i>	Common	wild red raspberry	<i>Rubus strigosus</i>	Common
Herbaceous Species					
barren strawberry	<i>Woldsteinia fragarioides</i>	N/A	greater burdock	<i>Arctium minus</i>	Common
black medick	<i>Medicago lupulina</i>	Common	hawkweed	<i>Hieracium</i> spp.	N/A
boneset	<i>Eupatorium perfoliatum</i>	Common	large-leaved aster	<i>Eurybia macrophylla</i>	Common
bracken fern	<i>Pteridium aquilinum</i>	Common	marsh blue violet	<i>Viola cucullata</i>	Common
broad-leaved cattail	<i>Typha latifolia</i>	Common	marsh fern	<i>Thelypteris palustris</i>	Common
bull thistle	<i>Cirsium vulgare</i>	Common	meadow horsetail	<i>Equisetum pratense</i>	Uncommon
butter-and-eggs	<i>Linaria vulgaris</i>	Common	moss	Bryophyta	N/A
Canada anemone	<i>Anemone canadensis</i>	Common	mustard	Brassicaceae	N/A
Canada goldenrod	<i>Solidago canadensis</i>	Common	New England aster	<i>Symphotrichum novae-angliae</i>	Common
coltsfoot	<i>Tussilago farfara</i>	Uncommon (spreading common)	pearly everlasting	<i>Anaphalis margaritacea</i>	Common
common dandelion	<i>Taraxacum officinale</i>	Common	phragmites	<i>Phragmites australis australis</i>	Uncommon (locally abundant adventive)

Table 2: Vegetation Species observed within the Study Area					
Common Name	Scientific Name	Status According to Brunton (2005)	Common Name	Scientific Name	Status According to Brunton (2005)
common evening-primrose	<i>Oenothera biennis</i>	Common	purple loosestrife	<i>Lythrum salicaria</i>	Common (invasive)
common milkweed	<i>Asclepias syriaca</i>	Common	Queen Anne’s lace	<i>Daucus carota</i>	Common
common mullein	<i>Verbascum thapsus</i>	Common	red clover	<i>Trifolium pratense</i>	Common
common ragweed	<i>Ambrosia artemisiifolia</i>	Common	sedge	<i>Carex</i> spp.	N/A
common St. John’s-wort	<i>Hypericum perforatum</i>	Common	sensitive fern	<i>Onoclea sensibilis</i>	Common
cow vetch	<i>Vicia cracca</i>	Common	spikerush	<i>Eleocharis</i> spp.	N/A
creeping Charlie	<i>Glechoma hederacea</i>	Common	spreading dogbane	<i>Apocynum androsaemifolium</i>	Common
curled dock	<i>Rumex crispus</i>	Common	white sweet-clover	<i>Melilotus alba</i>	Common
foamflower	<i>Tiarella cordifolia</i>	Common	white trillium	<i>Trillium grandiflorum</i>	Common
fringed polygala	<i>Polygala paucifolia</i>	Uncommon	wild strawberry	<i>Fragaria virginiana</i>	Common
grass sp.	Poaceae	N/A	woolgrass	<i>Scirpus cyperinus</i>	Common
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	Common			

### 3.6 Habitat for Species at Risk & Significant Wildlife Habitat

Background information obtained from the sources listed in Section 2.0 of this report, indicated that SAR and their habitat were potentially present within the study area. These species have been listed in **Table 3**. Given habitat observed during the field investigation and direct observation of SAR, a determination was made as to whether these species had the potential to be or were present within the study area (**Table 3**).

Table 3: Species at Risk Potentially or Confirmed to be Present within the Study Area				
*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
<b>Plants</b>				
Butternut <sup>3, 6</sup>	<i>Juglans cinerea</i>	Endangered	Endangered	Confirmed present in the study area
Eastern Prairie Fringed Orchid <sup>3</sup>	<i>Platanthera leucophaea</i>	Endangered	Endangered	No habitat
<b>Insects</b>				
Gypsy Cuckoo Bumble Bee <sup>3</sup>	<i>Bombus bohemicus</i>	Endangered	Endangered	No habitat
Monarch <sup>3</sup>	<i>Danaus plexippus</i>	Special Concern	Special Concern	Potential/Unconfirmed
<b>Amphibians</b>				
Jefferson Salamander <sup>2</sup>	<i>Ambystoma jeffersonianum</i>	Endangered	Endangered	No habitat
Western Chorus Frog <sup>2</sup>	<i>Pseudacris triseriata</i>	No Status	Threatened	No habitat
<b>Turtles</b>				
Blanding's Turtle <sup>1, 2, 3, 5</sup>	<i>Emydoidea blandingii</i>	Threatened	Threatened	Potential Category 2/3 habitat
Common Snapping Turtle <sup>1, 2, 3, 5</sup>	<i>Chelydra serpentina</i>	Special Concern	Special Concern	Potential/Unconfirmed
<b>Snakes and Lizards</b>				
Eastern Milksnake <sup>2</sup>	<i>Lampropeltis triangulum triangulum</i>	No Status	Special Concern	Potential/Unconfirmed
<b>Birds</b>				
Bald Eagle <sup>3</sup>	<i>Haliaeetus leucocephalus</i>	Special Concern	N/A	No habitat
Bank Swallow <sup>3, 4</sup>	<i>Riparia riparia</i>	Threatened	Threatened	No habitat



Table 3: Species at Risk Potentially or Confirmed to be Present within the Study Area

*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
Barn Owl <sup>6</sup>	<i>Tyto alba</i>	Endangered	Endangered	No habitat
Barn Swallow <sup>3, 4</sup>	<i>Hirundo rustica</i>	Threatened	Threatened	Confirmed present in the study area; foraging habitat only
Black Tern <sup>6</sup>	<i>Chlidonias niger</i>	Special Concern	N/A	No habitat
Bobolink <sup>1, 2, 3</sup>	<i>Dolichonyx oryzivorus</i>	Threatened	Threatened	No habitat
Canada Warbler <sup>6</sup>	<i>Cardellina Canadensis</i>	Special Concern	Threatened	No habitat
Chimney Swift <sup>3</sup>	<i>Chaetura pelagica</i>	Threatened	Threatened	No habitat
Common Nighthawk <sup>3</sup>	<i>Chordeiles minor</i>	Special Concern	Threatened	Potential habitat adjacent to study area
Eastern Meadowlark <sup>1, 3, 4</sup>	<i>Sturnella magna</i>	Threatened	Threatened	No habitat
Eastern Whip-poor-will <sup>3, 4</sup>	<i>Antrostomus vociferous</i>	Threatened	Threatened	No habitat
Eastern Wood-pewee <sup>3, 4</sup>	<i>Contopus virens</i>	Special Concern	Special Concern	Potential/Unconfirmed
Evening Grosbeak <sup>4</sup>	<i>Coccothraustes vespertinus</i>	Special Concern	No Status	No habitat
Golden-winged Warbler <sup>6</sup>	<i>Vermivora chrysoptera</i>	Special Concern	Threatened	No habitat
Grasshopper Sparrow <sup>6</sup>	<i>Ammodramus savannarum</i>	Special Concern	Special Concern	No habitat
Horned Grebe <sup>3</sup>	<i>Podiceps auritus</i>	Special Concern	Special Concern	No habitat
Least Bittern <sup>3</sup>	<i>Ixobrychus exilis</i>	Threatened	Threatened	No habitat
Loggerhead Shrike <sup>3</sup>	<i>Lanius ludovicianus</i>	Endangered	No Status	No habitat
Olive-sided Flycatcher <sup>6</sup>	<i>Contopus cooperi</i>	Special Concern	Threatened	No habitat
Peregrine Falcon <sup>6</sup>	<i>Falco peregrinus</i>	Special Concern	Special Concern	No habitat
Piping Plover <sup>6</sup>	<i>Charadrius melodus</i>	Endangered	Endangered	No habitat
Red-headed Woodpecker <sup>3</sup>	<i>Melanerpes erythrocephalus</i>	Special Concern	Threatened	No habitat

Table 3: Species at Risk Potentially or Confirmed to be Present within the Study Area

*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
Red Knot <i>rufa</i> subspecies <sup>6</sup>	<i>Calidris canutus rufa</i>	Endangered	Endangered	No habitat
Red-necked Phalarope <sup>6</sup>	<i>Phalaropus lobatus</i>	Special Concern	No Status	No habitat
Rusty Blackbird <sup>6</sup>	<i>Euphagus carolinus</i>	Special Concern	Special Concern	Potential/Unconfirmed
Short-eared Owl <sup>6</sup>	<i>Asio flammeus</i>	Special Concern	Special Concern	No habitat
Wood Thrush <sup>1, 3, 4</sup>	<i>Hylocichla mustelina</i>	Special Concern	Threatened	No habitat
Yellow Rail <sup>3</sup>	<i>Coturnicops noveboracensis</i>	Special Concern	Special Concern	No habitat
<b>Mammals</b>				
Eastern Small-footed Myotis <sup>3</sup>	<i>Myotis leibii</i>	Endangered	N/A	No habitat
Little Brown Myotis <sup>3</sup>	<i>Myotis lucifugus</i>	Endangered	Endangered	No habitat
Northern Myotis <sup>3</sup>	<i>Myotis septentrionalis</i>	Endangered	Endangered	No habitat
Tri-coloured Bat <sup>3</sup>	<i>Perimyotis subflavus</i>	Endangered	Endangered	No habitat

\*This table was assembled from various sources of background information. The following information sources were consulted to compile background information: 1 – LIO geodatabase (MNRF, 2018); 2 – Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019); 3 – MNRF Background Information Request (Devlin, 2019); 4 – Atlas of the Breeding Birds of Ontario (Bird Studies Canada et al., 2008); 5 – NHIC data (MNRF, 2014); 6 – General range

Of the SAR identified by background information as potentially present within the vicinity of the study area, habitat observed during the field investigation within the study area does not appear to be suitable for the life processes of the following SAR: Bald Eagle, Bank Swallow, Barn Owl, Barn Swallow, Black Tern, Bobolink, Canada Warbler, Chimney Swift, Eastern Meadowlark, Eastern Prairie Fringed Orchid, Eastern Small-footed Myotis, Eastern Whip-poor-will, Evening Grosbeak, Golden-winged Warbler, Grasshopper Sparrow, Gypsy Cuckoo Bumble Bee, Horned Grebe, Jefferson Salamander, Least Bittern, Little Brown Myotis, Loggerhead Shrike, Northern Myotis, Olive-sided Flycatcher, Peregrine Falcon, Piping Plover, Red Knot *rufa* subspecies, Red-headed Woodpecker, Red-necked Phalarope, Short-eared Owl, Tri-colored Bat, Western Chorus Frog, Wood Thrush, and Yellow Rail. In addition, although habitat was observed to be suitable for the Rusty Blackbird, the species was not observed to be present within the study area, or within 50 m of the study area. Only low quality, migratory habitat for this species is available within the wooded areas of the study habitat. It is unlikely that this species relies on habitat within the study area for significant life processes. The Common Nighthawk may



utilize adjacent property consisting of gravel lots (north of the study area) for nesting, however no nesting habitat was identified within the study area. A Barn Swallow was identified directly north of the study area in the gravel lot, perched on the ground and also foraging within the study area (**Photo 17**). This species may utilize the study area for aerial foraging, however it does not provide any nesting habitat (i.e. bridges, box culverts, other artificial structures with covered ledges) or significant habitat for its life processes. These species will not be discussed further in this report.

Suitable habitat for the following species was deemed to be potentially present within the study area, during the 2019 field investigation: Blanding's Turtle, Butternut, Common Snapping Turtle, Eastern Milksnake, Eastern Wood-pewee, and Monarch.

The Butternut is listed as 'Endangered' under the *Endangered Species Act* (ESA) (2007) and the *Species at Risk Act* (SARA) (2002). Habitat for this species and individuals of this species are afforded protection. Habitat is available within the study area due to the wide range of habitat preferences for Butternuts in which to grow. Butternuts are shade intolerant and prefer open areas but often become crowded out by other pioneer species (i.e. regenerating areas). Ten (10) Butternuts were identified and located within the study area during the July 18, 2019 field investigation. Three (3) of these individuals appeared to be mature trees with at least one (1) fruiting (**Photos 18 - 22**). The Butternuts were identified within the Mineral Cultural Savannah (CUS1) and Mineral Cultural Thicket (CUT1) south of the PSW. Under the ESA, individuals must be assessed by a qualified Butternut Health Inspector to determine the general health and viability of the individual to resist the butternut canker (*Sirococcus clavigignenti-juglandacearum*) and produce immune offspring.

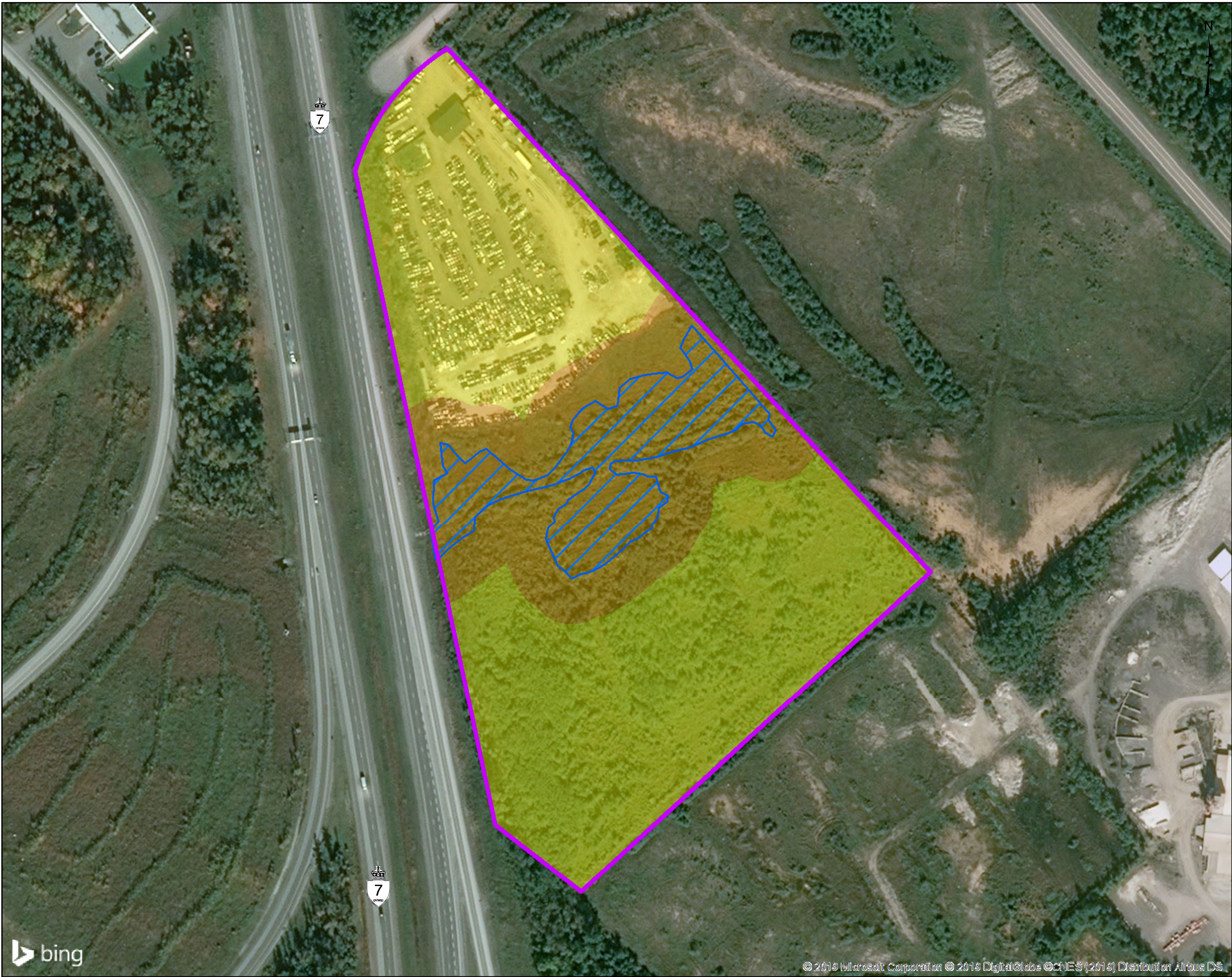
Adult Monarch may utilize cultural meadows, meadow marshes, and cultural thickets within the study area for foraging if there are a variety of wildflowers available. This species relies heavily on milkweed (*Asclepias* spp.) for several life processes. Common milkweed was identified within the study area. This species is listed as 'Special Concern' under ESA and SARA and does not receive habitat protection. No individuals of this species were observed during the field investigations.

Migratory habitat for Blanding's Turtle and Common Snapping Turtle is available within the study area within the PSW. The Common Snapping Turtle is listed as 'Special Concern' under the ESA and SARA and does not receive habitat protection. The Blanding's Turtle is listed as 'Threatened' under the ESA and SARA and receives habitat protection. The City of Ottawa has indicated a Blanding's Turtle has been recorded to be present within 2 km of the study area. Based on the *General Habitat Description for the Blanding's Turtle* (*Emydoidea blandingii*) by MNRF (2013a), Category 2 Habitat for Blanding's Turtle is available in any connected wetland and waterbody complex extending up to 2 km from the Blanding's Turtle occurrences as well as 30 m around these suitable wetlands/waterbodies. Category 3 Blanding's Turtle Habitat is any area from 30 m to 250 m around Category 2 Habitat. These habitats are present within study area (**Figure 5**). These habitats are also suitable for the Snapping Turtle. The habitat within the study area only provides the function of migration to more suitable habitat outside of the study area for these species. No nesting habitat for these species was observed within the study area and it is not likely that these species are present in significant numbers within the study area due to the limited wetland habitat type available. No individuals of these species were observed during the field investigations.

The Eastern Milksnake may be present within the study area for foraging, breeding, and/or overwintering. This species is considered a habitat generalist and may utilize a variety of habitats within the study area. This species is listed as 'Special Concern' under the SARA and does not receive habitat protection. No individuals of this species were observed during the field investigations.

The Eastern Wood-pewee is listed as 'Special Concern' under the ESA and SARA. The habitat for this species is not afforded protection under the ESA or SARA. However, individuals of this species, their eggs, nest and fledglings are protected under the *Migratory Birds Convention Act* (MBCA) (1994). The Eastern Wood-pewee is a habitat generalist which will utilize a variety of habitats for nesting and foraging, however it prefers edge habitat near water. Habitat of this type is available within the study area; however, it is unlikely that this species relies on the study area for important life processes as no individuals were identified during the field investigations.





LEGEND

- Site Location
- Updated PSW Boundary
- Category 2 Blandings Turtle Habitat
- Category 3 Blandings Turtle Habitat

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources, 2015.



CLIENT:	METRO TOWING		
PROJECT:	6776 ROTHBORNE ROAD		
TITLE:	BLANDINGS TURTLE HABITAT		
<b>McINTOSH PERRY</b> <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>	PROJECT NO: CP-17-0381		FIGURE:
	Date	Nov 30, 2018	5
	GIS	LC	
	Checked By	EP	



### 3.7 Wildlife & Significant Wildlife Habitat

The study area is located in the Smiths Falls Ecodistrict (6E-11) of the Lake Simcoe-Rideau Ecozone (6E) within the Mixedwood Plains Ecozone (Ecological Stratification Working Group, 1996). Characteristic wildlife present within this Ecozone includes: northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), white-tailed deer (*Odocoileus virginianus*), groundhog (*Marmota monax*), waterfowl, turtles, snakes, and various bird species (Crins, et al., 2009).

The following section outlines the existing wildlife observations from the field investigations conducted within the study area. **Table 4** lists the species observed during the 2017, 2018, and 2019 field investigations. Habitat present within the study area represented appropriate breeding/nesting/foraging habitat for all wildlife species observed with the exception of the Canada Goose (*Branta canadensis*).

Table 4: Wildlife Species Observed within the Study Area			
Common Name	Scientific Name	Resident/Seasonally	Evidence
<b>Amphibians</b>			
spring peeper	<i>Pseudacris crucifer</i>	Resident	Singing males, within appropriate breeding habitat, during appropriate breeding season (singing male)
<b>Birds</b>			
Alder Flycatcher	<i>Empidonax alnorum</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
American Goldfinch	<i>Spinus tristis</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
American Robin	<i>Turdus migratorius</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
American Woodcock	<i>Scolopax minor</i>	Seasonally	Visual observation
Blue Jay	<i>Cyanocitta cristata</i>	Resident	Singing male
Canada Goose	<i>Branta canadensis</i>	Seasonally	Visual observation
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Common Yellowthroat	<i>Geothlypis trichas</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season, carrying nesting material
Eastern Phoebe	<i>Sayornis phoebe</i>	Seasonally	Singing male

Table 4: Wildlife Species Observed within the Study Area

Common Name	Scientific Name	Resident/Seasonally	Evidence
European Starling	<i>Sturnus vulgaris</i>	Resident	Visual observation
Gray Catbird	<i>Dumetella carolinensis</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Killdeer	<i>Charadrius vociferus</i>	Seasonally	Singing male
Mallard	<i>Anas platyrhynchos</i>	Seasonally	Visual observation
Ovenbird	<i>Seiurus aurocapilla</i>	Seasonally	Singing male
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Song Sparrow	<i>Melospiza melodia</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Swamp Sparrow	<i>Melospiza georgiana</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Warbling Vireo	<i>Vireo gilvus</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Yellow Warbler	<i>Setophaga petechia</i>	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
<b>Mammals</b>			
North American beaver	<i>Castor canadensis</i>	Resident	Chewed branches observed, small beaver dam in watercourse
white-tailed deer	<i>Odocoileus virginianus</i>	Resident	Tracks, browse, adult observed

For those observations of male birds singing, within appropriate breeding habitat, during the appropriate breeding season, this quality of breeding evidence represents “possible breeder,” under the Ontario Breeding Bird Atlas’ *Breeding Evidence Codes* (Bird Studies Canada, 2019) with the exception of the Common Yellowthroat which is a ‘probable breeder’ within the study area due to the observation that a male individual was carrying nesting



materials. The Alder Flycatcher, American Goldfinch, American Robin, American Woodcock, Canada Goose, Chestnut-sided Warbler, Common Yellowthroat, Eastern Phoebe, Gray Catbird, Great Crested Flycatcher, Killdeer, Mallard, Ovenbird, Song Sparrow, Swamp Sparrow, Warbling Vireo, White-throated Sparrow, Yellow Warbler, their nests, and eggs are protected under the MBCA. The Canada Goose was observed as a flyover and is not considered to be a resident breeder within the study area. The Blue Jay is afforded protection under the *Fish and Wildlife Conservation Act* (FWCA) (1997). The European Starling and Red-winged Blackbird are not afforded protection under the MBCA or FWCA.

## 4.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed development within the study area involves the following:

- Clearing of approximately 4.44 ha (4.27 ha in the south end and 0.17 ha within the PSW and setback) of the study area to convert into a gravel tow yard;
- Construction of an access road from the existing tow yard north of the study area to the south end of the study area which will also act as a fire route;
- Installation of a culvert at the fire route access road crossing over the tributary of Poole Creek within the PSW, and
- Construction of a proposed warehouse in the southwest corner of the study area.

Refer to **Figure 6** for the site plan for the proposed development. The development will include clearing approximately 4.27 ha of vegetation in the south end of the study area. This will occur adjacent to a 30 m buffer around the PSW. Light duty (15 mm Granular 'A' and 350 mm Granular 'B') gravel will be placed in the cleared area which will serve as a tow yard. As part of the clearing, the construction of a clay berm has been recommended by MVCA south of the PSW to separate a 30 m buffer zone around the PSW from the tow yard. This berm will act as an ecological boundary from the tow yard and prevent runoff from entering the PSW. Additionally, a grass swale will be constructed on the north side of the existing berm separating the study area and the existing tow yard to the north. The swale will be constructed within the existing gravel of the tow yard and will have a width ranging from 9.6 m to 12 m. The purpose of the swale construction is to divert storm water from the existing tow yard eastward. A 600 mm pipe with a length of 11.21 m will be installed in the swale where the fire route access road will cross the swale. The pipe will divert stormwater under the proposed road from the west end of the swale to the east end. Level spreaders will be installed on the northwest and southwest quadrants of the proposed culvert installation. These areas will function as stormwater controls.

A fire route access road will be constructed from Rothbourne Road which will extend through the existing tow yard and enter the study area. The gravel road will cross the PSW at its narrowest point within the study area where a culvert will be installed within the watercourse for the road crossing. The width of the travelled lanes of the road will be 6 m with a 2 m slope on both sides; a total of 10 m wide. The road will continue south along the west end of the study area and end in a cul-de-sac in the southwest corner of the study area. Eight (8) parking spots with typical dimensions (2.6 m to 3.1 m wide and minimum of 5.2 m length) will be developed on the north side of the cul-de-sac. Additional clearing will occur within the PSW and its buffers at the narrowest point to accommodate the fire route access road. Heavy duty (150 mm Granular 'A' and 500 mm Granular 'B' Type 2) gravel will be installed to form the fire route access road.

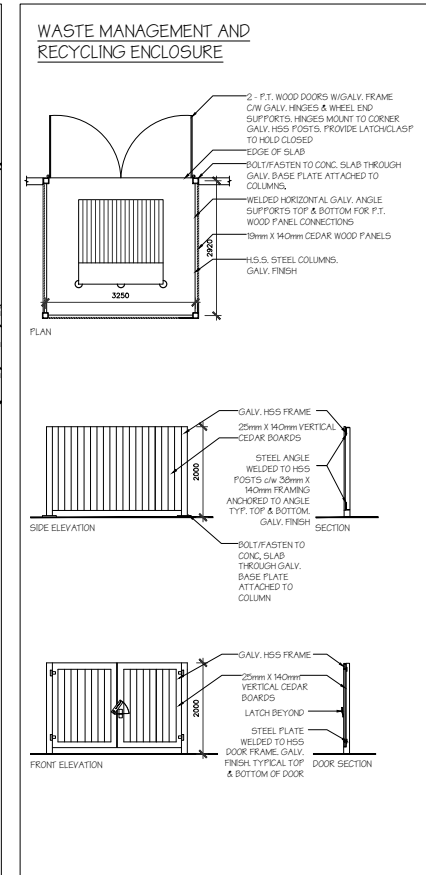
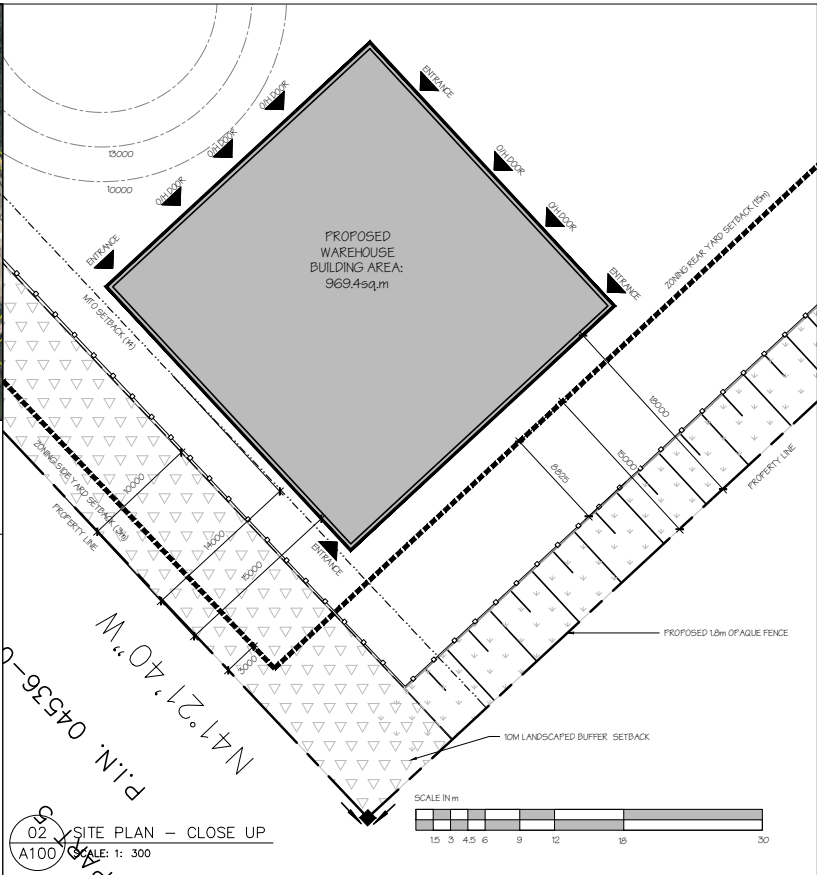
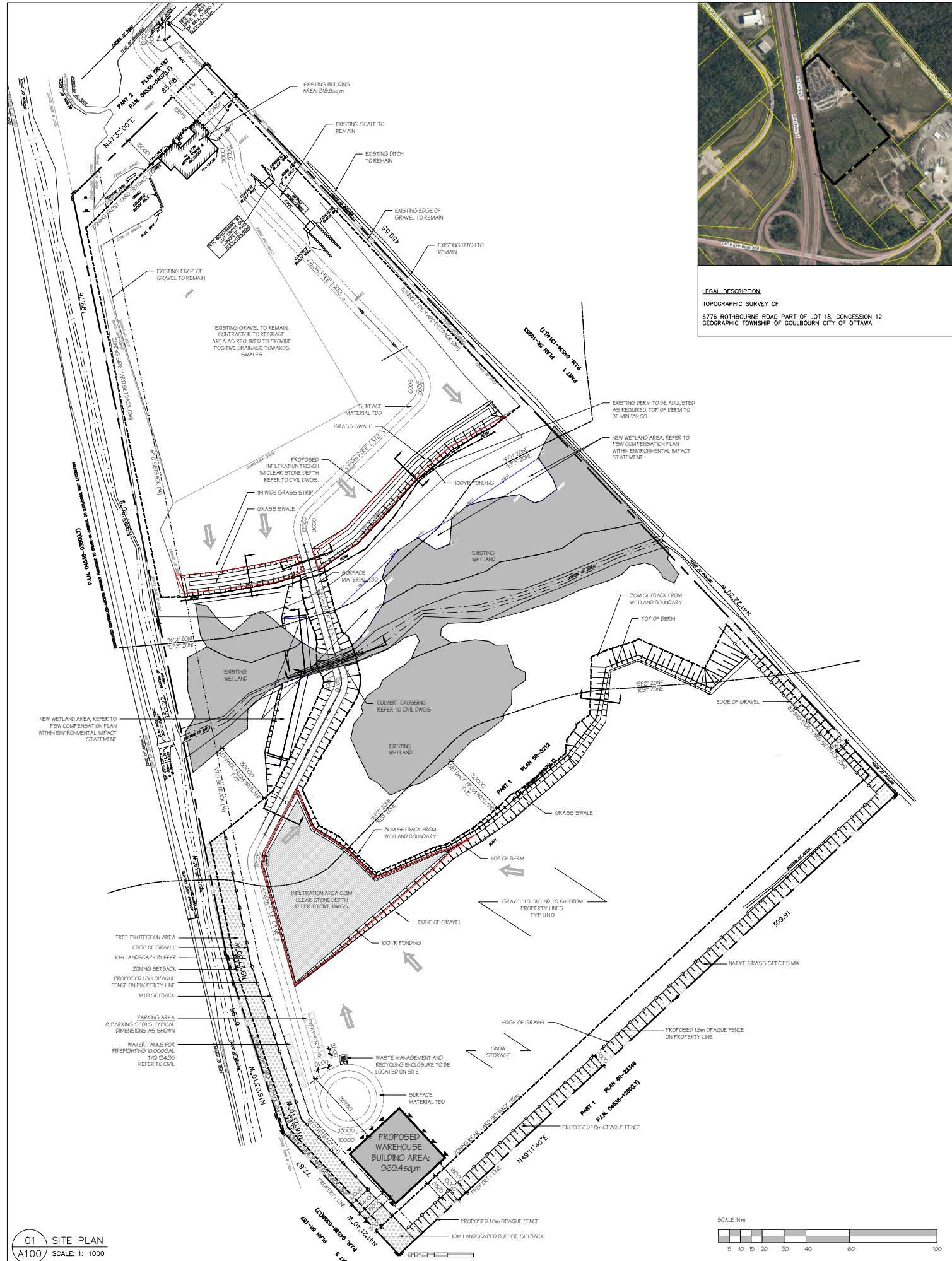
The proposed culvert to be installed in the tributary of Poole Creek will be a concrete box culvert with a span of 2.4 m, a rise of 1.2 m, and a length of 21 m. The culvert will be set at the slope of the existing watercourse and sunk by 10% (120 mm). Rip rap will be installed at the inlet and outlet of the culvert to minimize erosion.

The proposed warehouse will be constructed in the southwest corner of the study area. The proposed warehouse will have a width and length of 30.48 m and a height of 8.53 m, covering an area of 969.4 m<sup>2</sup>. The warehouse will adhere to the following setbacks:

- Zoning side yard setback of 3 m on the west side and 15 m on the south side;
- A landscape buffer setback of 10 m on the west side, and
- Ministry of Transportation of Ontario (MTO) setback of 14 m from the Highway 7 ROW on the west side and south side.

In addition to the setbacks, an opaque 1.8 m fence will be installed along the entire property line including the existing tow yard property north of the study area.





NOTES:

- 1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.
- 2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR SUBMITTAL TO ASSIST WITH THE EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.
- 3) DO NOT SCALE DRAWINGS.
- 4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY.
- 5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

CLIENTS:  
ROCK WEDGE & SAM WEBER  
OTTAWA, ON  
T: 613.223.0109

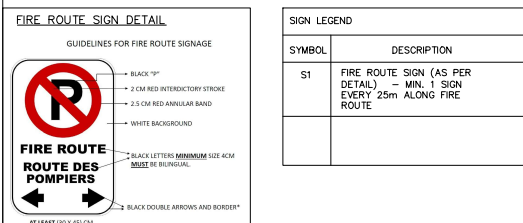
CIVIL ENGINEER & PLANNER:  
MONTGOMERY FERRY  
15 WALGREEN ROAD R.R. 3, CARP,  
OTTAWA, ON K0A 1L0  
T: 613.903.5603

SURVEYOR:  
MONTGOMERY FERRY  
15 WALGREEN ROAD R.R. 3, CARP,  
OTTAWA, ON K0A 1L0  
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LEGEND

- NATIVE GRASS SPECIES MIX
- TREE PROTECTION AREA
- WETLAND COMPENSATION AREA
- WETLAND HABITAT, PER 2103/03/07 ASSESSMENT AND MNR.
- PROPOSED FENCE
- REVISED SETBACKS
- CLAY BERM
- 6m LANDSCAPE BUFFER
- PROPERTY LINE
- MTD SETBACK
- EXISTING FENCES
- MTD SETBACK
- DRAINAGE ARROW
- STORMCEPTOR
- 100yr FLOODING ELEVATIONS

Item	6776 Rothbourne Rd - Ontario Building Data Matrix Part 3					OBC Reference			
1	Project Description:		<input checked="" type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Change of Use	<input checked="" type="checkbox"/> Part 11 11.1 to 11.4	<input checked="" type="checkbox"/> Part 3 1.1.2. [A]	<input type="checkbox"/> Part 9 1.1.2. [A]89.10.1.3.			
2	Major Occupancy (s)		Group "F2" Warehouse	3.1.2.1. (1)		9.10.2.			
3	Building Area (m²)		Existing 0 New 969.4m² Total 969.4m²	1.4.1.2. [A]		1.1.1.2. [A]			
4	Gross Area (m²)		Existing 0 New 969.4m² Total 969.4m²	1.4.1.2. [A]		1.1.1.2. [A]			
5	Number of Storeys		Above Grade 1 Below Grade 0	1.4.1.2. [A] & 3.2.1.1.		1.1.1.2. [A] & 9.10.4.			
6	Height of Building (m)		8.5m						
7	Number of Streets/ Fire Fighter Access		1	3.2.2.10. & 3.2.5.		9.10.20.			
8	Building Classification		3.2.2.7.1. GROUP F2	3.2.2.20. -.83		9.10.2.			
9	Sprinkler System Proposed		<input type="checkbox"/> Entire Building <input type="checkbox"/> Selected Compartments <input type="checkbox"/> Selected Floor Areas <input type="checkbox"/> Basement <input type="checkbox"/> in lieu of roof rating <input checked="" type="checkbox"/> Not Required	3.2.2.20. -.83 3.2.1.5. 3.2.2.17. INDEX		9.10.8.2.   INDEX			
10	Standpipe Required		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.9.		N/A			
11	Fire Alarm Required		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.4.		9.10.18.			
12	Water Service/ Supply is adequate		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.7.		N/A			
13	High Building		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.6.		N/A			
14	Permitted Construction		<input checked="" type="checkbox"/> Combustible <input checked="" type="checkbox"/> Non-Combustible	3.2.2.20. -.83		9.10.6.			
15	Actual Construction		<input type="checkbox"/> Combustible <input checked="" type="checkbox"/> Non-Combustible						
16	Mezzanine(s) Area (m²)		0	3.2.1.1. (3)-(8)		9.10.4.1.			
17	Occupant load based on 1 <sup>st</sup> Floor: Occupancy		Group "F2" Load 10 Persons	3.1.1.7.		9.9.1.3.			
18	Barrier-free Design		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (not required)	3.8.		9.5.2.			
19	Hazardous Substances		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.3.1.2. & 3.3.1.19		9.10.1.3. (4)			
19	Required Fire Resistance Rating (FRR)	Horizontal Assemblies		Listed Design No. or Description (SG-2)		3.2.2.20.83 & 3.2.1.4.			
		FRR (Hours)				9.10.8.			
		Floors 0 Hours		0 FRR Due to		9.10.9.			
		Roof 0 Hours		Non-Combustible construction					
		Mezzanine 0 Hours							
		FRR of Supporting Members		Listed Design No. or Description (SG-2)					
		Floors 0 Hours		0 FRR Due to					
		Roof 0 Hours		Non-Combustible construction					
20	Spatial Separation - Construction of Exterior Walls					3.2.3.		9.10.14.	
	Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of openings	FRR (Hours)	Listed Design or Description	Construction	Cladding
								Comb.	NonComb.
	North	0	0	L/H, H/L	0%	0	OBC SB-0	<input type="checkbox"/>	<input type="checkbox"/>
	South	0	0	L/H, H/L	0%	0	OBC SB-0	<input type="checkbox"/>	<input type="checkbox"/>
	East	0	0	L/H, H/L	0%	0	OBC SB-0	<input type="checkbox"/>	<input type="checkbox"/>
	West	0	0	L/H, H/L	0%	0	OBC SB-0	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>



APPROVED ☐ REFUSED ☐

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

ADAM BROWN, RURAL PLANNING SERVICES  
DEVELOPMENT REVIEW WEST  
PLANNING, INFRASTRUCTURE AND ECONOMIC  
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

ZONING

EXISTING ZONING	REQUIRED	EXISTING BLD.	PROPOSED
MIN. FRONT YARD SETBACK	15m	15.5m	N/A
MIN. REAR YARD SETBACK	15m		18m
MIN. INTERIOR YARD SETBACK	3-8m	20.4m EAST	3m WEST
MAX. BUILDING HEIGHT	15.0m		±8.5m
MIN. LOT AREA	8,000sq.m		100,849sq.m
MIN. LOT WIDTH	60m		158m
MAX LOT COVERAGE	50%		1.3%

SHEET INDEX:

- A100 - SITE PLAN & NOTES
- A200 - FLOOR PLAN
- A400 - ELEVATIONS
- A401 - ELEVATIONS

07 2020-02-21 ISSUED FOR SPC

08 2020-02-19 ISSUED FOR REVIEW

05 2019-08-26 ISSUED FOR SPC

04 2019-07-10 ISSUED FOR REVIEW

03 2019-06-12 ISSUED FOR REVIEW

02 2019-05-27 PRELIMINARY REVIEW

01 2019-04-17 PRELIMINARY REVIEW

NO DATE REVISION

S.J.LAWRENCE  
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s.j.lawrence@sjlarchitect.com

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PROJECT:  
**METRO TOW TRUCK  
WAREHOUSE BUILDING**

6776 ROTHBOURNE RD. OTTAWA, ON

SHEET TITLE:  
**SITE PLAN**

DRAWN BY:  
**A.L.**

CHECKED BY:  
**S.J.L.**

PLOT DATE:  
**2020.02.21**

PROJECT DATE:  
**2019.02.01**

JOB NUMBER:  
**SL-958-22**

SCALE:  
**2020.02.14**

SHEET NUMBER:

**A100**

APPLICATION #

## 5.0 IMPACT ASSESSMENT & RECOMMENDATIONS

The following sections outline and assess any potential impacts that are expected as a result of the proposed development. Recommendations for mitigation measures to avoid these impacts are outlined in Section 6.0 of this report.

### 5.1 Natural Heritage System Components, Surface Water, Groundwater and Fish Habitat

#### 5.1.1 Wetland Compensation Design

A portion of the Goulbourn Wetland Complex (PSW) is present within the study area. The boundaries of this PSW were reclassified due to outdated modelling of the wetland boundaries. Approximately 0.43 ha of the previous boundary was removed from the study area. Approximately 1.23 ha were added to the study area in a west-east orientation across the middle of the study area (**Figure 7**). Due to the presence of a PSW within the study area, a 30 m setback from the boundaries of the PSW is established in which no clearing or development are to take place (see **Figure 6**). This setback was chosen based on the City of Ottawa watercourse setback policies and Conservation Authority regulations (City of Ottawa, 2003). However, the proposed site plan illustrates that the fire route access road will be constructed within the PSW. Clearing of vegetation and installation of a culvert within the PSW will occur as part of the road construction within the PSW. Approximately 129 m<sup>2</sup> of the PSW will be impacted due to the installation of the road. The wetland habitat within the study area is part of a wetland complex that provides significant ecological functions including habitat for flora/fauna and species at risk as well as providing groundwater protection and surface water which sustains watercourses in the area. A 30 m setback from the PSW boundaries was established to protect the PSW from further alteration as downstream stretches of the watercourse and wetland have been significantly and permanently altered. No construction (with the exception of the road crossing and wetland enhancement) will be afforded within this setback.

Due to the impacts of the road installation on the PSW, approximately 129 m<sup>2</sup> of wetland must be re-established within the property. Potential wetland enhancement areas for wetland re-establishment are present on the north side of the PSW boundary and directly adjacent to the west side of the proposed culvert crossing, within the setback limits (**Figure 7**). Conditions which support the ecological functions of the existing PSW must be created and maintained within the potential wetland enhancement area. This will compensate for the wetland area impacted by the installation of a fire route access road.

Level spreaders will be constructed directly adjacent to the northwest and southwest quadrants of the culvert installation which is directly adjacent to the PSW boundaries. These level spreaders will act as storm water management areas which will allow treated and settled water to slowly drain back into the wetland. These areas cover approximately 466 m<sup>2</sup> and will be included in the wetland compensation. The stormwater retained in these areas will not be sourced from the existing or proposed tow yard due to the existing berm north of the PSW and the proposed berm south of the PSW which will separate the wetland from the tow yards. This will reduce potential contaminants from entering the storm water in the level spreaders. This will potentially create extensions (i.e. compensation) to the existing PSW as the temporary presence of pools may create habitat for specialized flora and fauna (e.g. amphibian breeding habitat). The level spreaders will be designed so that the stormwater will pool, settle, and slowly drain into the wetland (i.e. incorporating rip rap substrates, spreading

concentrated flows, and utilization of grass swales). The stormwater reaching the wetland will be controlled to pre-development rates which meets an enhanced level of quality control (80 % Total Suspended Solids removal) (McIntosh Perry, 2019). It is not anticipated that these areas will contribute to significant alteration of flows and water levels within the watercourse and PSW.

Additional wetland compensation areas will be constructed on the north side of the PSW, east of the proposed culvert crossing. Certain areas directly adjacent to the north side of the PSW will be graded to match the existing wetland conditions and seeded/planted with native plants that compliment or match the existing flora composition of the wetland. These areas will create approximately 881 m<sup>2</sup> of new wetland as part of the wetland compensation. Combined with the level spreaders, a total of approximately 1347 m<sup>2</sup> of new wetland will be constructed as part of the wetland compensation. This provides approximately 10:1 compensation of wetlands within the study area.

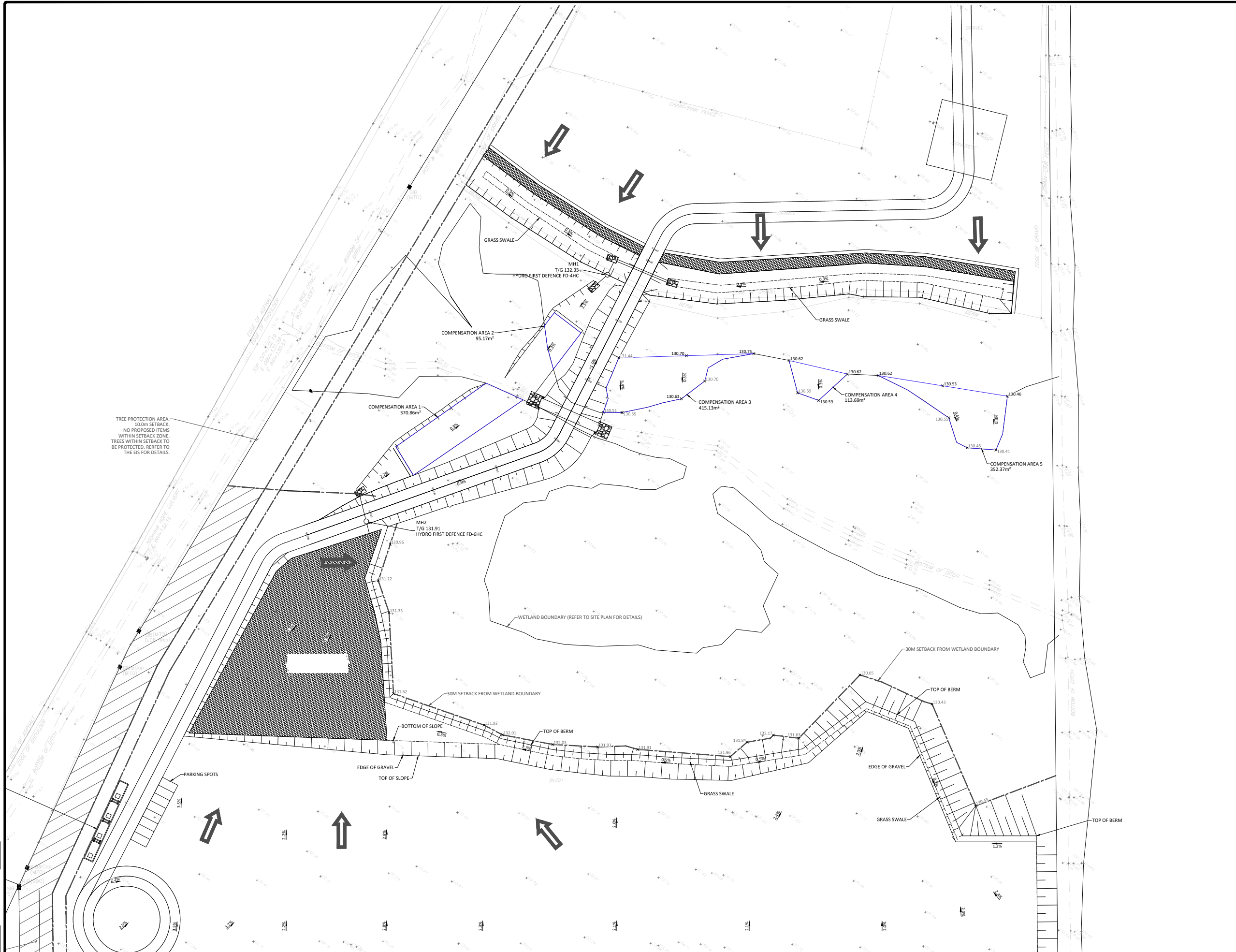
The installation of a culvert in the tributary of Poole Creek will cause temporary impacts to the watercourse. In a memo prepared by McIntosh Perry, the proposed culvert installed in the watercourse will be a concrete box culvert with a span of 2.4 m, rise of 1.2 m, and length of 21 m. The culvert will be embedded 10% (120 mm) into the existing slope of the watercourse and existing alignment. The culvert size was chosen to reflect the dimensions of the upstream culvert under Highway 7 (2.1 m by 1.1 m) and the downstream culvert under Rothbourne Road (2.7 m and 1.0 m). The design flow of the proposed culvert during the 5-year return period is 0.33 m<sup>3</sup>/s with an outlet velocity of 1.00 m/s. The culvert design was also chosen to adhere to City of Ottawa standard design practices in which overtopping of the culvert will not occur during the 100-year return period. Rip rap will be installed at the inlet and outlet as well to control erosion of the banks and substrate of the watercourse. Rip rap substrate will allow potential groundwater to continue to seep through and enter the watercourse. Riparian areas that are permanently altered as part of the culvert/road installation will be compensated in the wetland compensation design. Native plants that match the existing conditions will be seeded/planted within the wetland compensation areas which will exceed the amount of riparian area removed due to the installation. It is not anticipated that flows or water levels within the watercourse will be significantly altered or impacted due to the installation of the box culvert.

#### 5.1.2 Fish Habitat

No fish habitat was present within the study area due to migration barriers downstream of the study area. If possible, migration connection to the study area may be re-established as part of the wetland restoration. Migration barriers downstream would need to be removed in order for fish to access the study area. The installation of rip rap on both ends of the culvert will provide potential spawning habitat for Mottled Sculpin if connection is re-established. The interstitial spaces of the rip rap can be used by this species for spawning habitat in the spring. Groundwater may also be negatively impacted by installing the new culvert by creating and impermeable barrier to upwellings or seepage within the watercourse; however, the installation of rip rap provides alternative areas in which groundwater can permeate to the surface water.



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LAST SAVE: Monday, December 23, 2019 1:13:19 PM  
LAST PLOT: Monday, December 23, 2019 1:13:19 PM  
LAST PLOT: Monday, December 23, 2019 1:13:19 PM



**LOCATION PLAN**

**LEGEND**

DC	BARRIER CURB	(AS PER OPSD 219.130)
DC	CURB DEPRESSION	
DC	MOUNTABLE CURB	
DC	EASEMENT	
DC	HEAVY DUTY ASPHALT	
DC	CONCRETE SIDEWALK	
DC	PAVING STONE	
DC	STORM MANHOLE	
DC	CATCHBASIN OR DITCH INLET	
DC	LANDSCAPE CATCHBASIN	
DC	SANITARY MANHOLE	
DC	PERFORATED PIPE IN SWALES	
DC	WATER VALVE/CHAMBER	
DC	FIRE HYDRANT	
DC	CENTRELINE OF SWALE	
DC	SLOPING AT 3:1 (UNLESS SPECIFIED)	
DC	PROPOSED ELEVATION	
DC	EXISTING ELEVATION	
DC	SWALE ELEVATION	
DC	TOP OF WALL ELEVATION	
DC	BOTTOM OF WALL ELEVATION	
DC	EMERGENCY OVERLAND FLOW ROUTE	
DC	SILT FENCE (AS PER OPSD 219.130)	
DC	STRAW BALE CHECK DAM (AS PER OPSD 219.180)	
DC	BUILDING ENTRANCES (MAIN, SIDE, OVERHEAD)	
DC	RIP-RAP (AS PER OPSD 810.010 OR OPSD 810.020)	
DC	INFILTRATION TRENCH (REFER TO DETAILS)	

**FOR REVIEW ONLY**  
**NOT FOR CONSTRUCTION**

1	ISSUED FOR SITE PLAN CONTROL	DEC. 23, 2019
No.	Revisions	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.

**SCALE 1 : 500**

**McINTOSH PERRY**  
115 Walgreen Road, RR3, Carp, ON K0A 1L0  
Tel: 613-836-2184 Fax: 613-836-3742  
www.mcintoshperry.com

Stamp:

Client: **METRO TOWING**  
2759 LANCASTER ROAD  
OTTAWA, ON K1B 4V8

Project: **METRO TOW TRUCK WAREHOUSE BUILDING**  
6776 ROTHBOURNE RD.  
OTTAWA, ON

Drawing Title: **PSW COMPENSATION PLAN**

Scale:	1:500	Project Number:	CP-17-0381
Drawn By:	C.D.H.	Design Number:	COMP
Checked By:	R.P.K.		
Designed By:	C.D.H.		

D07-12-XX-XXXX

## 5.2 Vegetation Cover

### 5.2.1 Tree Conservation

Vegetation removal is proposed to occur on approximately 4.44 ha of the study area in the south end and within the PSW and its setback where the road installation is to occur. The majority of the vegetation communities to be impacted by clearing within the study area are indicative of previously disturbance where regeneration of pioneer species (i.e. poplars) and non-native invasive species (i.e. common buckthorn) have established. The mature trees within the Fresh-Moist White Cedar-Sugar Maple Mixed Forest and the Dry-Fresh White Pine-Sugar Maple Mixed Forest are not anticipated to be impacted by clearing activities as these trees are located within the 10 m landscape setback, and a 14 m MTO setback which is not proposed to be cleared in the west end of the study area (**Figure 8**). If vegetation clearing is proposed for the south and southeast periphery of the study area within these setbacks (for the purposes of grading), it is recommended that these areas are re-seeded with native grass species which may include but is not limited to: Canada wild rye (*Elymus canadensis*), Indiangrass (*Sorghastrum nutans*), and little bluestem (*Schizachyrium scoparium*). Alternatively, these areas may be re-seeded with a native seed mixture which contains a variety of grass and wildflower species which may promote more diverse ecological functions. Appropriate wildflower species in the mixture may include but is not limited to: black-eyed Susan (*Rudbeckia hirta*), blue vervain (*Verbena hastata*), boneset (*Eupatorium perfoliatum*), and common milkweed (*Asclepias syriaca*).

Clearing will not occur within the 30 m setback from the PSW which will also provide conservation of existing trees. Clearing will not occur within the Tree Protection Area in which the FOM2-2 and FOM7-1 vegetation communities are located. These communities are the only representations of mature coniferous and deciduous trees within the study area. These trees will not be impacted as no clearing or grading will occur within the Tree Protection Area. Recommendations have been outlined in Section 6.0 to protect trees within the Tree Protection Area setback limits.

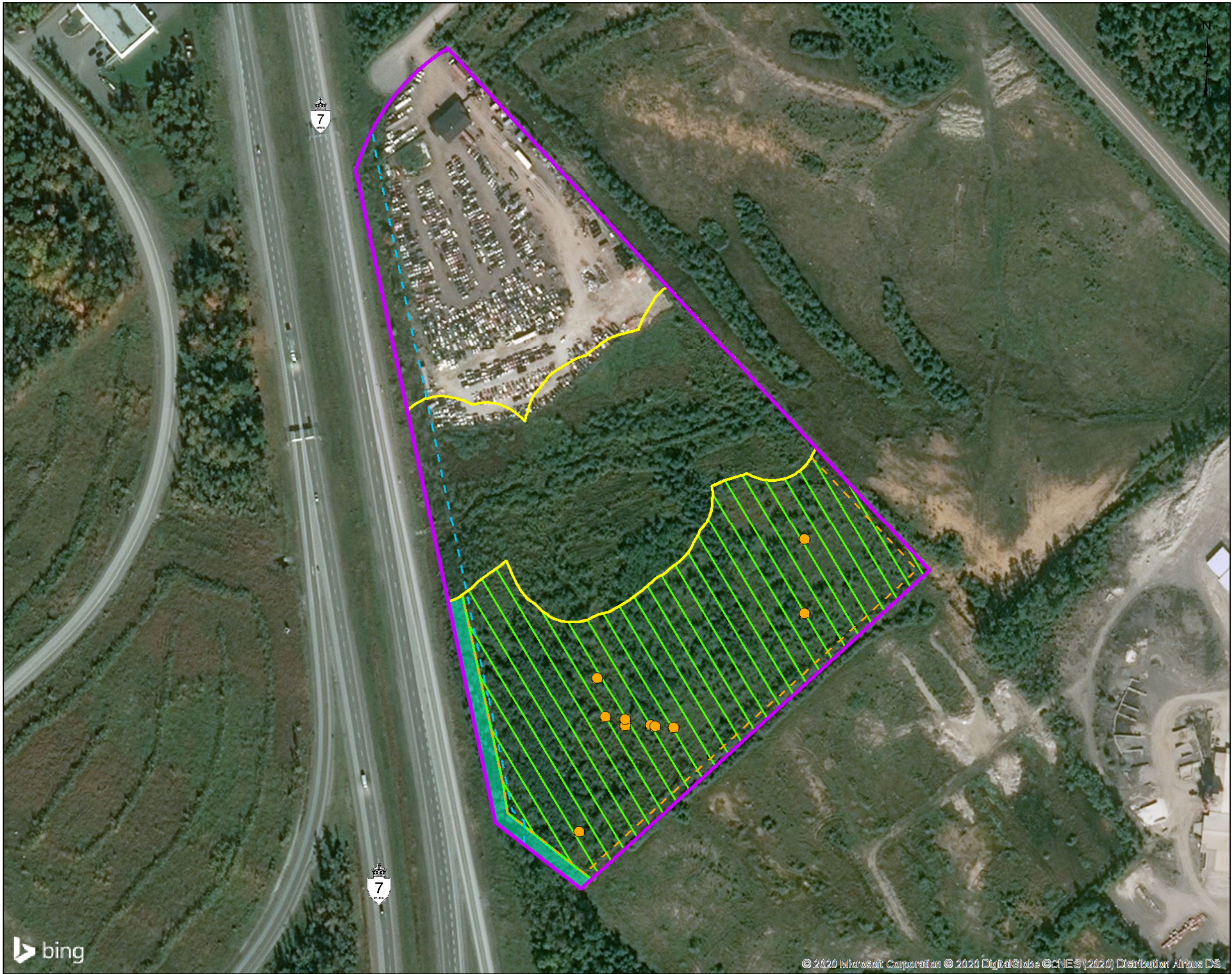
### 5.2.2 SAR Vegetation

Several Butternut trees ranging in age and height classes were identified within the Mineral Cultural Savannah and Mineral Cultural Thicket south of the PSW within the study area (**Figure 8**). At least 30 days prior to any vegetation clearing, these individuals must be assessed by a qualified Butternut Health Assessor into Categories 1, 2 or 3 as part of the requirements under Section 23.7 of Ontario Regulation (O. Reg.) 242/08 – *General* of the ESA. The following are definitions of the Butternut Categories during a health assessment under O. Reg. 242/08:

- Category 1 tree – “the butternut tree is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut trees in the area in which the tree is located”;
- Category 2 tree – “the butternut is not affected by butternut canker, or the butternut tree is affected by butternut canker, but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut trees in the area in which the tree is located”, and
- Category 3 tree – “the butternut tree may be useful in determining sources of resistance to butternut canker”.

The Report prepared by the Butternut Health Assessor will include recommendations on how many trees may be cleared, permitting requirements, and any mitigation measures to be taken as part of the project works. No other at-risk vegetation was observed within this area. Impact to adjacent vegetation as a result of the proposed removal is not anticipated. The entirety of the development is proposed to occur within the study area.





LEGEND

- Butternut Location
- Test
- Site Location
- 30m PSW Setback
- Landscape/Tree Conservation Setback
- MTO Setback
- Tree Protection
- Vegetation Clearing

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources, 2015.



CLIENT:	METRO TOWING		
PROJECT:	6776 ROTHBORNE ROAD		
TITLE:	BUTTERNUT LOCATIONS		
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO:	CP-17-0381	FIGURE:
	Date	Nov 30, 2018	7
	GIS	LC	
	Checked By	EP	



### 5.3 Habitat for Species at Risk & Significant Wildlife Habitat

Due to their status of 'Special Concern,' habitat for the Eastern Wood-pewee is considered Significant Wildlife Habitat. Given that no individuals of this species were heard or observed during the May 13, 2019 field investigation and this species is known to be habitat generalist, it is not anticipated that this species will be negatively impacted by the proposed development. It is unlikely that this species relies significantly on habitat within the study area for life processes due to the species' generalist behaviour with regards to habitat. However, an avian screening should be conducted prior to any proposed vegetation clearing by a qualified avian biologist, if clearing is to be conducted from April 10 to September 5, to ensure the species is not utilizing the study area for nesting purposes. Eastern Wood-pewee nests and eggs are afforded protection under the MBCA and cannot be harmed, harassed, or killed as a result of development activities.

Category 2 and 3 Blanding's Turtle habitat is present within the majority of the study area. These areas may also contain other SAR turtles and Eastern Milksnake. Overwintering habitat for Blanding's Turtle is not present within the wetland associated with the study area. No nesting habitat is present within the study area. Suitable habitat for life processes of this species is available outside of the study area. An elemental occurrence of Blanding's Turtle was identified within 2 km northeast of the study area. It is unlikely that the Blanding's Turtle exists in high densities within the study area due limited habitat available and function the habitat provides (migratory corridor only). Snapping Turtles will may be present in the wetland habitat within the study area for similar purposes (migratory corridor).

The project will include construction of a road crossing/culvert through the PSW. Any excavation or heavy equipment use in the wetland within the study area, conducted between June 1 and September 15, has the potential to harm travelling Blanding's Turtles and other SAR turtles that utilize the watercourse. As such, the following mitigation measures should be employed to protect SAR and their habitat during construction and to maintain compliance with the ESA. Consultation with the Ottawa District of MECP has been initiated due to the confirmed presence of Category 2 and 3 Blanding's Turtle Habitat within the study area. The below mitigation measures must be confirmed as sufficient with MECP as well as confirmation of any permits and approvals that may be required to complete the proposed project works. These mitigation measures should only be utilized once final approval from MECP has been confirmed:

- **Timing of Road Construction Work:** In-water work within Category 2 Blanding's Turtle Habitat is anticipated. No in-water work shall be conducted within wetland habitat during the active turtle period from May 1 to September 15 of any year, unless the area has been cleared of turtles by a qualified biologist;
- **Exclusion Measures to Prevent Turtle Nesting in the Work Area:** Temporary turtle exclusion barriers should be installed by May 1, prior to the turtle nesting season, at the work locations where soils are stockpiled. This will reduce the likelihood of culvert and road installation work harming or killing turtle eggs, by preventing turtles from accessing and nesting within the work zone. Temporary turtle exclusion measures should be maintained until July 15 (i.e. the end of the period when turtle lay their eggs):

- All stockpiled topsoil, sand and gravel must be completely encircled with silt fence or completely covered with geotextile to prevent turtles from accessing and nesting in the materials between May 1 and July 15 of any year;
- “Heavy duty” silt fence, particularly those with reinforced nylon netting, should not be used during construction, as they have the potential to trap and kill large-bodied snakes (MNRF, 2013b), and
- All temporary turtle exclusions measures must be removed after the work has been completed.

If any SAR are observed during construction, all work within the work site should cease and the local MECP management biologist should be contacted (Ottawa District Office: 613-521-3450).

## 5.4 Wildlife & Significant Wildlife Habitat

A total of 17 species of migratory birds and one (1) non-migratory bird were observed to be possible breeders within the study area during the 2019 field investigation (**Table 4**). Therefore, if construction (including any vegetation removal) is proposed from April 10 to September 5 (Hussel and Lepage, 2015), of any year, the area where clearing is proposed to occur, must be screened by an avian specialist prior to construction activity. This is recommended in order to prevent negative impacts to migratory birds and other bird species (especially those that are known to nest within recently cleared areas, such as the Killdeer), their nests and eggs, which are protected under the MBCA or the FWCA.

The white-tailed deer is a highly mobile species which travels for extended periods of time in search of food. There were no deer yards or significant browse evidence (i.e. only minimal browse was observed) which suggests that this species does not rely significantly on the study area for life processes. The North American beaver is an amphibious species which occupy most of its life in water. Impacts to the watercourse within the study area will occur due to the installation of the new culvert crossing, however there was no evidence of beavers utilizing the specific site in which the culvert will be installed. Negative impacts are not anticipated to wildlife habitat as a result of the proposed development.

## 5.5 Wildland Fire Risk Assessment

According to Section 3.1.8 of the *Provincial Policy Statement*, 2014, “Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire. Development may, however, be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards.”

Wildland fire assessment is necessary to determine the presence or absence of forest types associated with the risk of high to extreme wildland fire. Recommended mitigation techniques are designed to disrupt that principle of combustion by eliminating one or more of the three necessary elements of fire (heat, oxygen and fuel). They do so by minimizing the opportunity for ignition of new fires from embers; reducing the potential for direct flame contact from approaching wildland fires; and reducing the effects of radiant heat from an approaching wildland fire by reducing the opportunity for crown fire potential (MNRF, 2016).



The woody species composition (refer to Section 3.5), condition (i.e. very few coniferous trees on the southwest edge of the study area within a regenerating area consisting of young deciduous trees, etc.), and health (i.e. low occurrence of insect or diseased trees), within 100 m of the proposed development, characterizes the adjacent wooded area as not a hazardous forest type. Therefore, further risk assessment and mitigation measures are not required.

## 6.0 RECOMMENDED MITIGATION

In order to minimize or eliminate environmental impacts and to help achieve ecological and environmental improvements from the proposed construction and development, the following mitigation measures are recommended:

- The creation of 1347 m<sup>2</sup> of wetland directly adjacent to the existing PSW within the setback will compensate for the 129 m<sup>2</sup> of PSW area impacted due to the installation of the fire route access road. This wetland enhancement will support the ecological functions of the existing PSW by potentially diversifying the wetland habitat (i.e. level spreaders may provide amphibian breeding habitat) as well as extending the existing wetland boundaries through an approximate 10:1 compensation;
- To reduce impacts to fish in the tributary of Poole Creek downstream of the study area, in-water work should be conducted from July 1 to March 14 in order to avoid potential downstream impacts;
- As part of the proposed works, the following mitigation measures must be implemented for Tree Preservation efforts:
  - Protect trees and their roots (within the setback limits) from damage, compaction, and compensation resulting from construction;
  - Do not place material or equipment on bare roots of the protected trees;
  - Do not attach any signs or notices to protected trees to prevent mechanical damage to the tree;
  - Do not damage the root system, trunk or branches of any protected trees;
  - Ensure that exhaust fumes from all equipment are not directed towards the canopy of the protected trees;
- In accordance with Appendix 10 of the *Environmental Impact Statement Guidelines*, it is recommended that only locally appropriate native species be used for landscaping within the subject property. This would contribute to re-establishing native plants within the wider landscape and potentially have a positive impact for biodiversity (i.e., using native species for pollinators such as bees). This can be implemented during the construction of the grass swale on the north side of the northern berm. Disturbed areas should be replanted with locally grown native species. Use of non-native plant material should be discouraged;
- Natural areas to be retained are to be isolated by sturdy construction fencing or similar barriers at least 1 m in height during construction in order to ensure their retention;
- To prevent the introduction and spread of invasive plant species into the site, equipment utilized during construction should be inspected and cleaned in accordance with the *Clean Equipment Protocol for Industry (Appendix C)*;
- Due to the presence of Butternut trees within the study area, a Butternut Health Assessment must be conducted at least 30 days prior to vegetation clearing. The recommendations and mitigation measures determined within the report must be followed to satisfy the ESA requirements;
- During construction, the Contractor should have a spill kit on-hand at all times, in case of spills;
- In accordance with Appendix 10 of the *Environmental Impact Statement Guidelines* (2015) for the City of Ottawa, no clearing of any vegetation or other construction, should occur from April 10 to September 5, unless a qualified biologist has determined that no nesting is occurring within 5 days prior to the clearing.

Note: these dates are based upon breeding bird nesting data for eastern Ontario, provided by Environment Canada. The nests and eggs of many species are protected under federal and/or provincial legislation (i.e. MBCA, FWCA);

- In accordance with Table 1 of the City of Ottawa's *Protocol for Wildlife Protection during Construction* (2015), prior to removal of any shrubs or trees in March through mid-August (breeding migratory birds), a biologist should be retained to inspect the habitat for active nests or dens. If none are determined to be present, removal should occur within a few days of the inspection (the same day if possible during sensitive periods). Thickets or woodlands should not be removed during sensitive times of year (i.e. March through mid-August for the breeding season, Mid-October through March for overwintering wildlife). The *Canadian Wildlife Service does not support relying on inspections for migratory bird nests in such habitats due to the difficulty of locating all nests and risk to birds*, and
- Should any SAR be discovered during construction, a management biologist at MECP – Ottawa District should be contacted immediately, and operations modified to avoid any negative impacts to SAR or their habitat until further direction is provided by MNRF.



## 7.0 SUMMARY

This EIS supports the development of a tow yard on the property at 6776 Rothbourne Road, legally known as “Part Lot 18 Concession 12, Geographic Township of Goulbourn, City of Ottawa.”

This EIS has assessed existing land use and determined the impacts to the natural heritage features (i.e. PSW, Significant Woodland, unevaluated wetland, Significant Wildlife Habitat, etc.), as well as SAR and SAR habitat as a result of the proposed development. The project design incorporates mitigation measures to protect natural heritage features or compensate for any loss of these features. The mitigations measures include various strategic designs to achieve no residual effects on the natural heritage features:

- Avoidance Measures:
  - Tree Protection Area setback to protect the remaining mature coniferous and deciduous trees within the study area;
  - PSW setback to avoid any development within 30 m of the wetland (with the exception of the culvert/road installation);
- Structural Designs:
  - The culvert crossing is designed to ensure groundwater seeps are able to permeate through installed rip rap substrate;
  - The level spreaders are designed to enhance wetland habitat and ensure that no functions of the wetland will be impacted by changes in flow or water levels;
- Compensation:
  - Approximately 1347 m<sup>2</sup> of wetland habitat will be created and integrated with the existing wetland to compensate for the loss of 129 m<sup>2</sup> of wetland, and
  - Butternut saplings will potentially be planted either on site or in suitable habitat as part of the recommendations in the Butternut Health Assessment.

The proposed works required consultation with MVCA which was conducted on several dates from 2017 to 2018 (August 30, 2017, September 17, 2018, May 14, 2018, and December 11, 2018). Consultation with MVCA will continue to determine requirements for the proposed works. Consultation with the Ottawa District of MECP must also continue to establish and confirm recommendations regarding Blanding’s Turtle habitat. These recommendations must be incorporated into the project design upon confirmation. These recommendations will be provided to protect migratory habitat for SAR turtles and snakes. Recommendations in the Butternut Health Assessment must also be followed to either protect Butternuts present within the study area or compensate for removals of individual Butternuts.

If the recommendations and mitigation measures provided in Sections 5.0 and 6.0 of this report are followed, the proposed development is not anticipated to negatively impact the natural heritage features observed to be present within the study area.

## 8.0 LIMITATIONS

The investigations undertaken by McIntosh Perry with respect to this report and any conclusions or recommendations made in this report reflect McIntosh Perry's judgment based on the site conditions observed at the time of the site inspection(s) on the date(s) set out in this report and on information available at the time of the preparation of this report.

This report has been prepared for specific application to this site, and it is based, in part, upon visual observation of the site and terrestrial investigations at various locations during a specific time interval, as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, or portions of the site which were unavailable for direct investigation.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions, and recommendations in this report may be necessary.

If you have any question, comments, or concerns, please do not hesitate to contact the undersigned at McIntosh Perry at 613-903-6147.

Sincerely,  
McIntosh Perry Consulting Engineers Ltd.



---

Erik Pohanka, B. Sc.  
Biologist

## 9.0 REFERENCES

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## **APPENDIX A – SITE PHOTOGRAPHS**





*Photo 1: Mineral Cultural Meadow (CUM1) in the northeast side of the study area. 23 May 2019.*



*Photo 2: Mineral Meadow Marsh (MAM2) in the north end of the study area. 23 May 2019.*





*Photo 3: North end of proposed fire route access road through the Mineral Meadow Marsh in the north end of the 20 m setback from the PSW. 23 May 2019.*



*Photo 4: Mineral Cultural Savannah (CUS1) present throughout the majority of the south and east end of the study area. 23 May 2019.*





*Photo 5: Mineral Cultural Thicket (CUT1) present within the center of the study area. 23 May 2019.*



*Photo 6: Fresh-Moist Poplar-Deciduous Forest (FOD8-1) present in the south end towards the west side of the study area where the proposed fire route access road and warehouse are to be located. 23 May 2019.*





*Photo 7: Dry-Fresh White Pine-Sugar Maple Mixed Forest (FOM2-2) present along the southwest boundary of the study site near Highway 7. 18 July 2019.*



*Photo 8: Upstream view of tributary of Poole Creek entering study area from Highway 7 culvert (background) and entering PSW within study area. 23 May 2019.*





*Photo 9: Downstream view of tributary of Poole Creek within Willow Mineral Thicket Swamp (SWT2-2) of the PSW. 23 May 2019.*



*Photo 10: Small beaver dam constructed in the tributary of Poole Creek within the PSW. 23 May 2019.*





*Photo 11: North American beaver (Castor canadensis) chew evidence was present in and near the tributary of Poole Creek. 23 May 2019.*



*Photo 12: Downstream view of tributary of Poole Creek within the PSW. 23 May 2019.*





*Photo 13: Cattail Mineral Shallow Marsh (MAS2-1) of the PSW. 23 May 2019.*

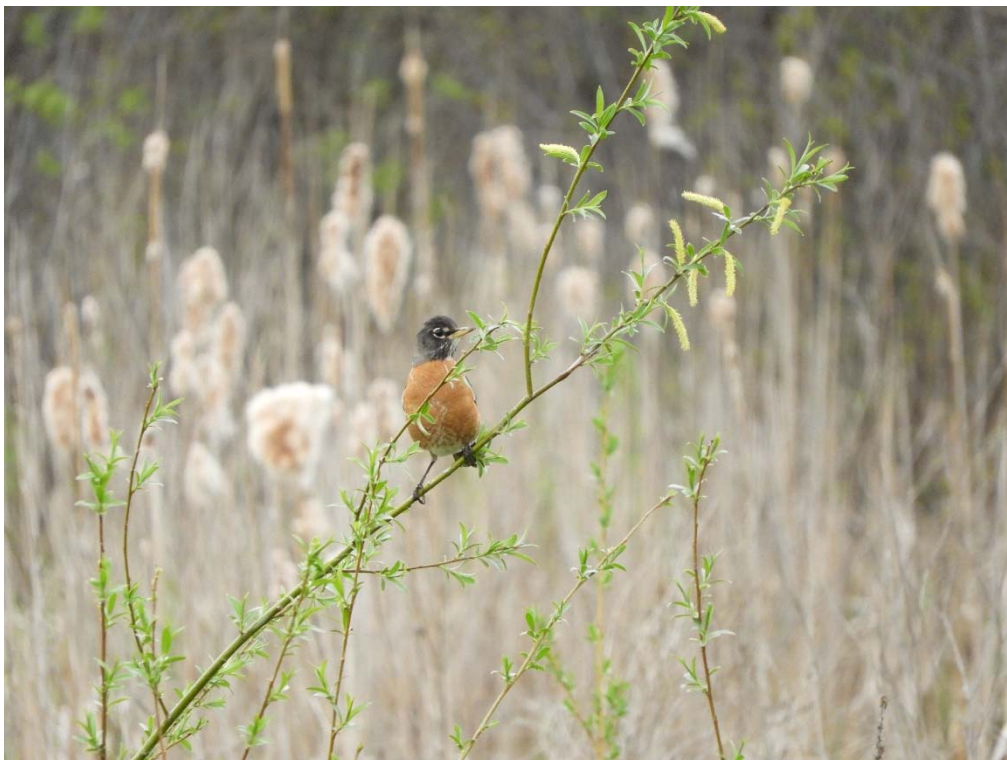


*Photo 14: Film on standing water which may indicate groundwater upwelling within the PSW. 23 May 2019.*





*Photo 15: White-tailed deer (Odocoileus virginianus) tracks and an adult were observed within the study area during the 2019 field investigations. 23 May 2019.*



*Photo 16: American Robin (Turdus migratorius) observed within the study area which represents one of several migratory bird species present in the study area. 23 May 2019.*





*Photo 17: Barn Swallow (Hirundo rustica) observed in the existing tow yard just outside the study area which was also observed foraging in the study area. 23 May 2019.*



*Photo 18: Immature Butternut (Juglans cinerea) observed within the study area. 18 July 2019.*





*Photo 19: Mature Butternut (Juglans cinerea) observed within the study area. 18 July 2019.*

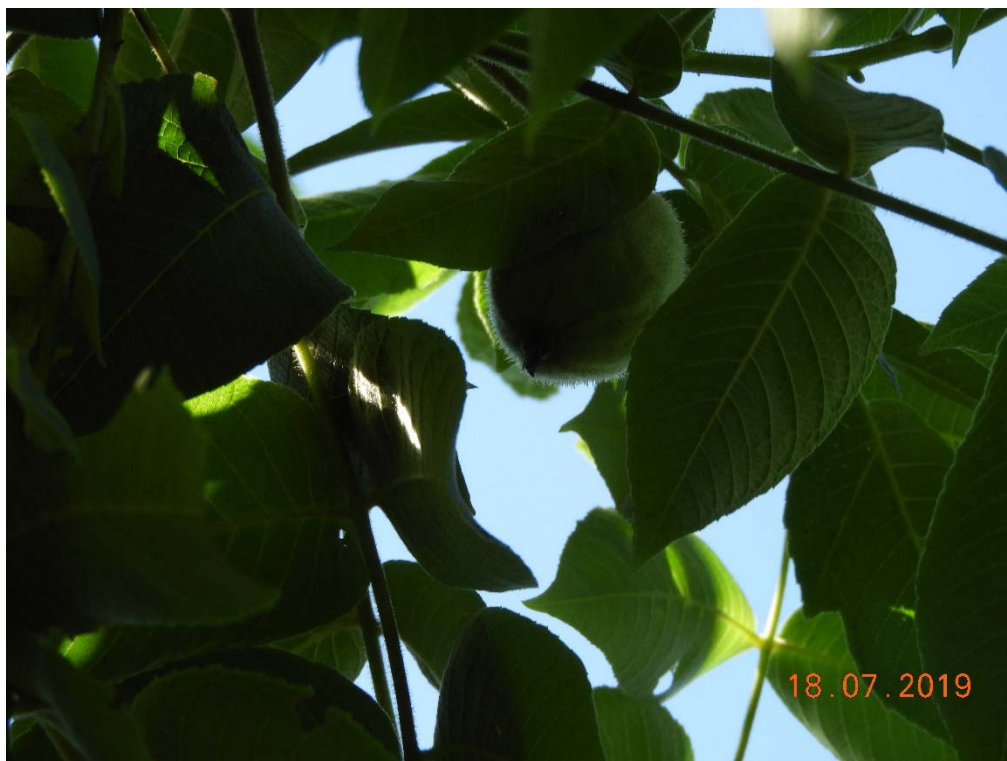


*Photo 20: Bark of mature Butternut (Juglans cinerea) with low rate of damage from Butternut canker. 18 July 2019.*





*Photo 21: Bark of mature Butternut (Juglans cinerea) with moderate rate of damage from Butternut canker. 18 July 2019.*



*Photo 22: Fruit (nut) of mature Butternut (Juglans cinerea) within the study area. 18 July 2019.*

## **APPENDIX B – REGULATORY AGENCY CORRESPONDENCE**



## Erik Pohanka

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**From:** Jeff King  
**Sent:** Friday, April 12, 2019 3:36 PM  
**To:** Erik Pohanka  
**Subject:** FW: Info request 6776 Rothbourne  
**Attachments:** InfoRequestGuide\_2018-12-18-FINAL.PDF; InformationRequest-ResponseLetter.pdf; KVD\_In\_Water\_Work\_Timing\_Guidelines\_2018-02-27.pdf; TownshipsSAR\_KemptvilleDistrict\_Nov2018.pdf

**Jeff King, C.Tech.**

**Assistant Vice President, Environmental**

**T.** 613.714.4607 | **F.** 613.267.7992 | **C.** 613.229.2882

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**From:** Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>  
**Sent:** April 12, 2019 3:16 PM  
**To:** Heather Lunn <h.lunn@mcintoshperry.com>  
**Cc:** Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>  
**Subject:** RE: Info request 6776 Rothbourne

Thank you for your request.  
Please find attached your Response Letter, Work in Water Timing Guidelines, Species at Risk Lists by Township and an Information Request Guide.

**Scott Smithers**  
**Management Biologist**  
**Kemptville District Office**  
**Ministry of Natural Resources and Forestry**  
**(T) 613-258-8614**  
**(F) 613-258-3920**  
[Scott.smithers@ontario.ca](mailto:Scott.smithers@ontario.ca)

---

**From:** Heather Lunn <[h.lunn@mcintoshperry.com](mailto:h.lunn@mcintoshperry.com)>  
**Sent:** January-07-19 8:40 AM  
**To:** Inforequest, Kemptville (MNRF) <[Kemptville.Inforequest@ontario.ca](mailto:Kemptville.Inforequest@ontario.ca)>  
**Subject:** FW: Info request

Good morning,

We were just wondering if the attached request, sent in mid-October, has been lost in the shuffle somewhere? We are hoping to get the requested information soon, but understand the MNRF's heavy workload at the moment.

Thanks,

Heather

**Heather Lunn, B.A.**

**Terrestrial Ecologist**

115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0

**T.** 613.778.8715 | **F.** 613.836.3742 | **C.** 613.812.8987

[h.lunn@mcintoshperry.com](mailto:h.lunn@mcintoshperry.com) | [www.mcintoshperry.com](http://www.mcintoshperry.com)

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**From:** Heather Lunn

**Sent:** October-17-18 3:26 PM

**To:** 'kemptville.inforequest@ontario.ca' <[kemptville.inforequest@ontario.ca](mailto:kemptville.inforequest@ontario.ca)>

**Subject:** Info request

Please see attached for a request for background information.

Thanks,

Heather

**Heather Lunn, B.A.**

**Terrestrial Ecologist**

115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0

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**McINTOSH PERRY**

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## Natural Heritage Information Request Response

Thank you for your request for information on natural heritage features. In order to provide the most efficient service possible, the attached *Natural Heritage Information Request Guide* has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Lands Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. In order to ensure access to reliable and up to date information, the attached list provides a summary of species at risk that have been observed, or may potentially be present, at a geographic township / municipal level.

This information will assist in scoping the necessary field assessments for an area if development or site alteration is proposed. This information is not meant to circumvent the responsibility of the proponent to undertake species and / or habitat surveys. Surveys or additional site level assessment are often required to confirm presence or absence of natural heritage features and values. Environmental consulting firms have the professional and technical expertise to assess sites for natural heritage features and can gauge the potential for such features to exist.

Absence or lack of information for a given geographic area does not necessarily mean the absence of natural heritage features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. In addition, new species may be listed and new natural heritage features may be defined over time. For these reasons, the Ministry cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.

Thank you for your inquiry.



Last Revised: February 27, 2018

**SUBJECT: UPDATED IN-WATER WORK TIMING GUIDELINES IN KEMPTVILLE DISTRICT**

**To: all interested parties**

The Ministry of Natural Resources and Forestry Kemptville District Office has recently reviewed and updated its In-water Work Timing Guidelines. These guidelines are intended to provide the timing for in-water work related to an activity, in order to protect fish during spawning and other critical life stages. Timing guidelines are based on species\* presence and are therefore subject to change if new information becomes available.

**Timing Guidelines in Kemptville District are:**

<b>Waterbody (and applicable geography or Fisheries Management Zone)</b>	<b>Timing Guidelines (no in-water works)</b>
○ St. Lawrence River (FMZ 20)	March 15 – July 15 (Spring spawning species)
○ Ottawa River – Lac Des Chats (FMZ 12)	October 1 to July 15 (Spring and fall spawning species, including Lake Trout and Lake Whitefish)
○ Ottawa River – Lac Deschenes (FMZ 12)	October 15 to July 15 (Spring and fall spawning species, including Cisco)
○ Ottawa River – Lac Dollard des Ormeaux (FMZ 12)	January 1 to July 15 (Winter and spring spawning species, including Burbot)
○ Big Rideau Lake (South Burgess, North Burgess, Bastard and South Elmsley Twps) ○ Charleston Lake (Lansdowne and Escott Twps) ○ Crow Lake (South Crosby Twp)	October 1 to June 30 (Spring and fall spawning species, including Lake Trout)
○ Bass Lake (South Elmsley Twp) ○ Lower Rideau Lake (South Elmsley Twp) ○ Bob's Lake (South Sherbrooke Twp) ○ Christie Lake (South Sherbrooke Twp) ○ Dalhousie Lake (Dalhousie Twp) ○ Davern Lake (South Sherbrooke Twp) ○ Farren Lake (South Sherbrooke Twp) ○ Grippen Lake (Leeds Twp) ○ Indian Lake (South Crosby Twp) ○ Little Long Lake (Lansdowne Twp) ○ Millpond Lake (South Burgess) ○ Otter Lake (South Elmsley, South Burgess and Bastard Twps)	October 15 to June 30 (Spring and Fall spawning species, including Lake Whitefish and Cisco)

<ul style="list-style-type: none"> <li>○ Otty Lake (North Burgess and North Elmsley Twps)</li> <li>○ Pike Lake (North Burgess Twp)</li> <li>○ Silver Lake (South Sherbrooke Twp)</li> <li>○ Redhorse Lake (Lansdowne Twp)</li> <li>○ Tay River (South Sherbrooke, Bathurst, Drummond and North Elmsley Twps)</li> <li>○ Wolfe Lake (North Crosby Twp)</li> </ul>	
<ul style="list-style-type: none"> <li>○ Bennett Lake (Bathurst Twp)</li> <li>○ Crosby Lake (North Crosby Twp)</li> <li>○ Gananoque River (Leeds Twp)</li> <li>○ Lac Georges (Plantagenet and Alfred Twps)</li> <li>○ Gillies Lake (Lanark Twp)</li> <li>○ Little Crosby Lake (North Crosby Twp)</li> <li>○ McLaren Lake (North Burgess Twp)</li> <li>○ Mississippi Lake (Drummond, Beckwith and Ramsay Twps)</li> <li>○ Mississippi River (Beckwith, Ramsay, Pakenham and Fitzroy Twps)</li> <li>○ Raisin River below Martintown dam (Charlottenburgh Twp)</li> <li>○ Rideau River (Wolford, Oxford, Montague, Marlborough, South Gower, North Gower, Osgood, Nepean and Gloucester Twps)</li> <li>○ South Lake (Leeds Twp)</li> <li>○ South Nation River below Plantagenet weir (Plantagenet Twp)</li> <li>○ Upper Rideau Lake (North Crosby Twp)</li> <li>○ Westport Sand Lake (North Crosby Twp)</li> </ul>	January 1 – June 30 (Winter and spring spawning species, including Burbot)
<ul style="list-style-type: none"> <li>○ Small rivers and streams (denoted on 1:50,000 National Topographic System maps as being one-lined)</li> <li>○ All other waterbodies in FMZ 18</li> </ul>	March 15 to June 30 (Spring spawning species)

*\*Additional timing guidelines may apply as they relate to endangered and threatened species for works in both water and wetland areas. Timing guidelines are subject to change, depending on species found in a given waterbody.*

Should you have any questions, please do not hesitate to contact Joffre Côté, Management Biologist (at 613-258-8214 or [joff.cote@ontario.ca](mailto:joff.cote@ontario.ca)) or Jane Devlin, Management Biologist (at 613-258-8418 or [jane.devlin@ontario.ca](mailto:jane.devlin@ontario.ca)).

Sincerely,

John Boos

Resources Management Supervisor  
Kemptville District Office  
Ministry of Natural Resources and Forestry



## Kemptville District Species at Risk, Listed by Geographic Township

The following lists have been created to supplement the Species at Risk Occurrence information available in Natural Heritage Make a Map, and provide summaries of species at risk that have been observed, or may potentially be present, at a geographic township / municipal level in Kemptville District. Species with historical observations may not be included. The full Species at Risk in Ontario list can be found in *Ontario Regulation 230/08* (ESA , 2007) and on our website ([www.ontario.ca/page/species-risk-ontario](http://www.ontario.ca/page/species-risk-ontario)). The lists below were last updated in November 2018, and include amendments to *O. Reg.230/08* on/up to August 1, 2018.

### Geographic Townships:

ALFRED	FINCH	NORTH CROSBY
AUGUSTA	FITZROY	NORTH GOWER
BASTARD	GLOUCESTER	NORTH SERBROOKE
BATHURST	GOULBOURN	OSGOODE
BECKWITH	HUNTLEY	OSNABRUCK
BURGESS	KENYON	OXFORD
CALEDONIA	KITLEY	PAKENHAM
CAMBRIDGE	LANARK	PLANTAGENET
CHARLOTTENBURGH	LANCASTER	RAMSAY
CLARENCE	LANSDOWNE	ROXBOROUGH
CORNWALL	LAVANT	RUSSELL
CUMBERLAND	LEEDS	SOUTH CROSBY
DALHOUSIE	LOCHIEL	SOUTH GOWER
DARLING	LONGUEUIL	SOUTH SHERBROOKE
DRUMMOND	MARCH	TORBOLTON
EAST HAWKESBURY	MARLBOROUGH	WEST HAWKESBURY
EDWARDSBURGH	MATILDA	WILLIAMSBURGH
ELIZABETHTOWN	MONTAGUE	WINCHESTER
ELMSLEY	MOUNTAIN	WOLFORD
ESCOTT	NEPEAN	YONGE

ALFRED	AUGUSTA	BASTARD
American Eel	American Eel	American Eel
American Ginseng	American Ginseng	Bald Eagle
Bald Eagle	Bald Eagle	Bank Swallow
Bank Swallow	Bank Swallow	Barn Swallow
Barn Swallow	Barn Swallow	Black Tern
Black Tern	Black Tern	Blanding's Turtle
Blanding's Turtle	Blanding's Turtle	Bobolink
Bobolink	Bobolink	Bridle Shiner
Butternut	Bridle Shiner	Butternut
Canada Warbler	Butternut	Cerulean Warbler
Channel Darter	Cerulean Warbler	Chimney Swift
Chimney Swift	Chimney Swift	Eastern Meadowlark
Common Nighthawk	Eastern Meadowlark	Eastern Musk Turtle
Cutlip Minnow	Eastern Musk Turtle	Eastern Ribbonsnake
Eastern Meadowlark	Eastern Ribbonsnake	Eastern Small-footed Myotis
Eastern Musk Turtle	Eastern Small-footed Myotis	Eastern Whip-poor-will
Eastern Ribbonsnake	Eastern Whip-poor-will	Eastern Wood-pewee
Eastern Small-footed Myotis	Eastern Wood-pewee	Golden-winged Warbler
Eastern Wood Pewee	Grass Pickerel	Grass Pickerel
Evening Grosbeak	Gray Ratsnake	Gray Ratsnake
Hickorynut	Least Bittern	Least Bittern
Lake Sturgeon	Little Brown Myotis	Little Brown Myotis
Least Bittern	Loggerhead Shrike	Loggerhead Shrike
Little Brown Myotis	Louisiana Waterthrush	Monarch
Monarch	Monarch	Northern Map Turtle
Northern Map Turtle	Northern Map Turtle	Northern Myotis
Northern Myotis	Northern Myotis	Pugnose Shiner
Peregrine Falcon	Short-eared Owl	Snapping Turtle
River Redhorse	Snapping Turtle	Tri-colored Bat
Rusty Blackbird	Transverse Lady Beetle	Wood Thrush
Short-eared Owl	Tri-colored Bat	
Silver Lamprey	Wood Thrush	
Snapping Turtle	Yellow-banded Bumblebee	
Spotted Turtle		
Tri-colored Bat		
West Virginia White		
Whip poor will		
Wood Thrush		



BATHURST	BECKWITH	BURGESS
American Eel	American Eel	American Eel
American Ginseng	Bald Eagle	American Ginseng
Bald Eagle	Bank Swallow	Bald Eagle
Bank Swallow	Barn Swallow	Bank Swallow
Barn Swallow	Black Tern	Barn Swallow
Black Tern	Blanding's Turtle	Blanding's Turtle
Blanding's Turtle	Bobolink	Bobolink
Bobolink	Butternut	Bridle Shiner
Butternut	Chimney Swift	Butternut
Cerulean Warbler	Eastern Meadowlark	Canada Warbler
Chimney Swift	Eastern Musk Turtle	Cerulean Warbler
Eastern Meadowlark	Eastern Small-footed Myotis	Chimney Swift
Eastern Musk Turtle	Eastern Whip-poor-will	Common Five-lined Skink
Eastern Small-footed Myotis	Eastern Wood-pewee	Common Nighthawk
Eastern Whip-poor-will	Least Bittern	Eastern Meadowlark
Eastern Wood-pewee	Little Brown Myotis	Eastern Musk Turtle
Golden-winged Warbler	Loggerhead Shrike	Eastern Ribbonsnake
Gray Ratsnake	Monarch	Eastern Small-footed Myotis
Least Bittern	Northern Myotis	Eastern Whip-poor-will
Little Brown Myotis	Snapping Turtle	Eastern Wood-pewee
Little Brown Myotis	Tri-colored Bat	Golden-winged Warbler
Monarch	Wood Thrush	Gray Ratsnake
Northern Map Turtle		Least Bittern
Northern Myotis		Little Brown Myotis
Rusty Blackbird		Loggerhead Shrike
Snapping Turtle		Monarch
Tri-colored Bat		Northern Map Turtle
Wood Thrush		Northern Myotis
		Olive-sided Flycatcher
		Peregrine Falcon
		Pugnose Shiner
		Snapping Turtle
		Tri-colored Bat
		Wood Thrush

CALEDONIA	CAMBRIDGE	CHARLOTTENBURGH
American Ginseng	American Brook Lamprey	American Eel
Amphibians	American Eel	American Ginseng
Bald Eagle	Bald Eagle	Bald Eagle
Bank Swallow	Bank Swallow	Bank Swallow
Barn Swallow	Barn Swallow	Barn Swallow
Black Tern	Black Tern	Black Tern
Blanding's Turtle	Blanding's Turtle	Blanding's Turtle
Bobolink	Bobolink	Bobolink
Butternut	Branching Burreed	Bridle Shiner
Canada Warbler	Butternut	Butternut
Chimney Swift	Chimney Swift	Canada Warbler
Common Nighthawk	Eastern Meadowlark	Chimney Swift
Eastern Meadowlark	Eastern Small-footed Myotis	Common Nighthawk
Eastern Ribbonsnake	Eastern Whip-poor-will	Cutlip Minnow
Eastern Small-footed Myotis	Eastern Wood-pewee	Eastern Meadowlark
Eastern Wood Pewee	Evening Grosbeak	Eastern Musk Turtle
Evening Grosbeak	Horned Grebe	Eastern Ribbonsnake
Golden Eagle	Lake Sturgeon	Eastern Small-footed Myotis
Little Brown Myotis	Little Brown Myotis	Eastern Wood Pewee
Monarch	Monarch	Evening Grosbeak
Northern Myotis	Northern Map Turtle	Grass Pickerel
Peregrine Falcon	Northern Myotis	Gray Fox
Rusty Blackbird	Short-eared Owl	King Rail
Short-eared Owl	Snapping Turtle	Lake Sturgeon
Snapping Turtle	Tri-colored Bat	Least Bittern
Spotted Turtle	Wood Thrush	Little Brown Myotis
Tri-colored Bat	Yellow-banded Bumblebee	Monarch
West Virginia White		Northern Map Turtle
Whip poor will		Northern Myotis
Wood Thrush		Northern Sunfish
		Olive-sided Flycatcher
		River Redhorse
		Rusty Blackbird
		Silver Lamprey
		Snapping Turtle
		Tri-colored Bat
		West Virginia White
		Whip poor will
		Wood Thrush
		Yellow Rail

CLARENCE	CORNWALL	CUMBERLAND
American Brook Lamprey	American Eel	American Brook Lamprey
American Eel	Bald Eagle	American Eel
Bald Eagle	Bank Swallow	Bald Eagle
Bank Swallow	Barn Swallow	Bank Swallow
Barn Owl	Blanding's Turtle	Barn Swallow
Barn Swallow	Bobolink	Black Tern
Black Tern	Butternut	Blanding's Turtle
Blanding's Turtle	Chimney Swift	Bobolink
Bobolink	Cutlip Minnow	Butternut
Butternut	Eastern Meadowlark	Channel Darter
Channel Darter	Eastern Musk Turtle	Chimney Swift
Chimney Swift	Eastern Silvery Minnow	Common Nighthawk
Eastern Meadowlark	Eastern Small-footed Myotis	Eastern Meadowlark
Eastern Ribbonsnake	Eastern Wood-pewee	Eastern Silvery Minnow
Eastern Silvery Minnow	Lake Sturgeon	Eastern Small-footed Myotis
Eastern Small-footed Myotis	Least Bittern	Eastern Whip-poor-will
Eastern Whip-poor-will	Little Brown Myotis	Eastern Wood-pewee
Eastern Wood-pewee	Monarch	Henslow's Sparrow
Lake Sturgeon	Northern Map Turtle	Horned Grebe
Least Bittern	Northern Myotis	Lake Sturgeon
Little Brown Myotis	Peregrine Falcon	Little Brown Myotis
Monarch	Pugnose Shiner	Monarch
Northern Map Turtle	River Redhorse	Northern Brook Lamprey
Northern Myotis	Silver Lamprey	Northern Map Turtle
Olive-sided Flycatcher	Snapping Turtle	Northern Myotis
River Redhorse	Spotted Turtle	Peregrine Falcon
Short-eared Owl	Tri-colored Bat	Short-eared Owl
Silver Lamprey	Wood Thrush	Silver Lamprey
Snapping Turtle	Yellow Rail	Snapping Turtle
Transverse Lady Beetle		Spotted turtle
Tri-colored Bat		Tri-colored Bat
Wood Thrush		Wood Thrush
		Yellow-banded Bumblebee



DALHOUSIE	DARLING	DRUMMOND
American Eel	American Eel	American Eel
American Ginseng	American Ginseng	American Ginseng
Bald Eagle	Bald Eagle	Bald Eagle
Bank Swallow	Bank Swallow	Bank Swallow
Barn Swallow	Barn Swallow	Barn Swallow
Black Tern	Blanding's Turtle	Black Tern
Blanding's Turtle	Bobolink	Blanding's Turtle
Bobolink	Bogbean Buckmoth	Bobolink
Butternut	Butternut	Butternut
Cerulean Warbler	Chimney Swift	Chimney Swift
Chimney Swift	Eastern Meadowlark	Eastern Meadowlark
Common Five-lined Skink	Eastern Silvery Minnow	Eastern Musk Turtle
Eastern Meadowlark	Eastern Small-footed Myotis	Eastern Small-footed Myotis
Eastern Musk Turtle	Eastern Whip-poor-will	Eastern Whip-poor-will
Eastern Ribbonsnake	Eastern Wood-pewee	Eastern Wood-pewee
Eastern Silvery Minnow	Little Brown Myotis	Golden-winged Warbler
Eastern Small-footed Myotis	Monarch	Gray Ratsnake
Eastern Whip-poor-will	Northern Map Turtle	Least Bittern
Eastern Wood-pewee	Northern Myotis	Little Brown Myotis
Little Brown Myotis	Pale-bellied Frost Lichen	Loggerhead Shrike
Loggerhead Shrike	Snapping Turtle	Monarch
Monarch	Tri-colored Bat	Northern Myotis
Northern Map Turtle	Wood Thrush	Rusty Blackbird
Northern Myotis	Wood Turtle	Snapping Turtle
Pale-bellied Frost Lichen		Tri-colored Bat
Snapping Turtle		Wood Thrush
Snapping Turtle		
Tri-colored Bat		
Wood Thrush		

EAST HAWKESBURY	EDWARDSBURGH	ELIZABETHTOWN
American Eel	American Eel	American Eel
American Ginseng	Bald Eagle	American Ginseng
Bald Eagle	Bank Swallow	American Water-willow
Bank Swallow	Barn Swallow	Bald Eagle
Barn Swallow	Black Tern	Bank Swallow
Black Tern	Blanding's Turtle	Barn Swallow
Blanding's Turtle	Bobolink	Black Tern
Bobolink	Butternut	Blanding's Turtle
Bridle Shiner	Chimney Swift	Bobolink
Butternut	Cutlip Minnow	Bridle Shiner
Canada Warbler	Eastern Meadowlark	Butternut
Channel Darter	Eastern Small-footed Myotis	Cerulean Warbler
Chimney Swift	Eastern Whip-poor-will	Chimney Swift
Common Nighthawk	Eastern Wolf	Common Nighthawk
Cutlip Minnow	Eastern Wood-pewee	Cutlip Minnow
Eastern Meadowlark	Gypsy Cuckoo Bumble Bee	Eastern Meadowlark
Eastern Musk Turtle	Henslow's Sparrow	Eastern Musk Turtle
Eastern Ribbonsnake	Horned Grebe	Eastern Pondmussel
Eastern Small-footed Myotis	Little Brown Myotis	Eastern Prairie Fringed Orchid
Eastern Wood Pewee	Monarch	Eastern Ribbonsnake
Evening Grosbeak	Northern Map Turtle	Eastern Silvery Minnow
Hickorynut	Northern Myotis	Eastern Small-footed Myotis
Lake Sturgeon	Pugnose Shiner	Eastern Whip-poor-will
Least Bittern	Snapping Turtle	Eastern Wood-pewee
Little Brown Myotis	Tri-colored Bat	Golden-winged Warbler
Mammals	Wood Thrush	Grass Pickerel
Monarch		Gray Fox
Northern Map Turtle		Gray Ratsnake
Northern Myotis		Henslow's Sparrow
River Redhorse		King Rail
Rusty Blackbird		Least Bittern
Short-eared Owl		Little Brown Myotis
Silver Lamprey		Loggerhead Shrike
Snapping Turtle		Monarch
Tri-colored Bat		Northern Map Turtle
West Virginia White		Northern Myotis
Whip poor will		Short eared Owl
Wood Thrush		Snapping Turtle
		Spotted Turtle
		Transverse Lady Beetle
		Tri-colored Bat
		Wood Thrush
		Yellow Rail

ELMSLEY	ESCOTT	FINCH
American Eel	American Eel	American Eel
Bald Eagle	American Ginseng	Bald Eagle
Bank Swallow	Bald Eagle	Bank Swallow
Barn Swallow	Bank Swallow	Barn Swallow
Black Tern	Barn Swallow	Blanding's Turtle
Blanding's Turtle	Black Tern	Bobolink
Bobolink	Blanding's Turtle	Butternut
Bridle Shiner	Bobolink	Chimney Swift
Butternut	Bridle Shiner	Eastern Meadowlark
Chimney Swift	Butternut	Eastern Small-footed Myotis
Common Nighthawk	Cerulean Warbler	Eastern Wood-pewee
Eastern Meadowlark	Chimney Swift	Little Brown Myotis
Eastern Musk Turtle	Common Five-lined Skink	Loggerhead Shrike
Eastern Ribbonsnake	Common Nighthawk	Monarch
Eastern Small-footed Myotis	Eastern Meadowlark	Northern Map Turtle
Eastern Whip-poor-will	Eastern Musk Turtle	Northern Myotis
Eastern Wood-pewee	Eastern Ribbonsnake	Short-eared Owl
Golden-winged Warbler	Eastern Silvery Minnow	Snapping Turtle
Grasshopper Sparrow	Eastern Small-footed Myotis	Tri-colored Bat
Gray Ratsnake	Eastern Whip-poor-will	Wood Thrush
Least Bittern	Eastern Wood-pewee	Yellow-banded Bumblebee
Little Brown Myotis	Golden-winged Warbler	
Loggerhead Shrike	Grass Pickerel	
Monarch	Gray Fox	
Northern Map Turtle	Gray Ratsnake	
Northern Myotis	Henslow's Sparrow	
Peregrine Falcon	Horned Grebe	
Snapping Turtle	Lake Sturgeon	
Tri-colored Bat	Least Bittern	
Wood Thrush	Little Brown Bat	
	Loggerhead Shrike	
	Monarch	
	Northern Map Turtle	
	Northern Myotis	
	Olive-sided Flycatcher	
	Peregrine Falcon	
	Piping Plover	
	Pugnose Shiner	
	Red-headed Woodpecker	
	Snapping Turtle	
	Tri-colored Bat	
	Wood Thrush	



FITZROY	GLOUCESTER	GOULBOURN
American Eel	American Eel	Bald Eagle
American Ginseng	American Ginseng	Bank Swallow
Bald Eagle	Bald Eagle	Barn Swallow
Bank Swallow	Bank Swallow	Blanding's Turtle
Barn Swallow	Barn Swallow	Bobolink
Blanding's Turtle	Black Tern	Bogbean Buckmoth
Bobolink	Blanding's Turtle	Butternut
Butternut	Bobolink	Chimney Swift
Canada Warbler	Butternut	Common Nighthawk
Chimney Swift	Canada Warbler	Eastern Meadowlark
Common Nighthawk	Channel Darter	Eastern Prairie Fringed Orchid
Eastern Meadowlark	Chimney Swift	Eastern Small-footed Myotis
Eastern Musk Turtle	Common Nighthawk	Eastern Whip-poor-will
Eastern Ribbonsnake	Eastern Meadowlark	Eastern Wood-pewee
Eastern Silvery Minnow	Eastern Musk Turtle	Gypsy Cuckoo Bumble Bee
Eastern Small-footed Myotis	Eastern Ribbon Snake	Horned Grebe
Eastern Whip-poor-will	Eastern Small-footed Myotis	Least Bittern
Eastern Wood-pewee	Eastern Whip-poor-will	Little Brown Myotis
King Rail	Eastern Wood-pewee	Loggerhead Shrike
Lake Sturgeon	Evening Grosbeak	Monarch
Least Bittern	Gypsy Cuckoo Bumble Bee	Northern Myotis
Little Brown Myotis	Henslow's Sparrow	Red-headed Woodpecker
Loggerhead Shrike	Hickorynut	Snapping Turtle
Monarch	Lake Sturgeon	Tri-colored Bat
Northern Map Turtle	Least Bittern	Wood Thrush
Northern Myotis	Little Brown Myotis	Yellow Rail
Olive-sided Flycatcher	Loggerhead Shrike	
Peregrine Falcon	Monarch	
Red-headed Woodpecker	Northern Brook Lamprey	
River Redhorse	Northern Map Turtle	
Short-eared Owl	Northern Myotis	
Snapping Turtle	Peregrine Falcon	
Transverse Lady Beetle	Red-headed Woodpecker	
Tri-colored Bat	River Redhorse	
Wood Thrush	Rusty Blackbird	
	Short-eared Owl	
	Silver Lamprey	
	Snapping Turtle	
	Spotted Turtle	
	Transverse Lady Beetle	
	Tri-colored Bat	
	Wood Thrush	

HUNTLEY	KENYON	KITLEY
Bald Eagle	American Eel	Bald Eagle
Bank Swallow	American Ginseng	Bank Swallow
Barn Swallow	Bank Swallow	Barn Swallow
Blanding's Turtle	Barn Swallow	Black Tern
Bobolink	Black Tern	Blanding's Turtle
Butternut	Blanding's Turtle	Bobolink
Chimney Swift	Bobolink	Butternut
Eastern Meadowlark	Bridle Shiner	Cerulean Warbler
Eastern Ribbonsnake	Butternut	Chimney Swift
Eastern Silvery Minnow	Canada Warbler	Eastern Meadowlark
Eastern Small-footed Myotis	Chimney Swift	Eastern Musk Turtle
Eastern Whip-poor-will	Common Nighthawk	Eastern Small-footed Myotis
Eastern Wood-pewee	Cutlip Minnow	Eastern Whip-poor-will
Golden-winged Warbler	Eastern Meadowlark	Eastern Wood-pewee
Least Bittern	Eastern Prairie Fringed-orchid	Golden-winged Warbler
Little Brown Myotis	Eastern Ribbonsnake	Grasshopper Sparrow
Loggerhead Shrike	Eastern Small-footed Myotis	Gray Ratsnake
Monarch	Eastern Wood Pewee	Least Bittern
Mottled Duskywing	Evening Grosbeak	Little Brown Myotis
Northern Myotis	Gray Fox	Loggerhead Shrike
Snapping Turtle	Least Bittern	Monarch
Spotted Turtle	Little Brown Myotis	Northern Myotis
Tri-colored Bat	Monarch	Snapping Turtle
Wood Thrush	Northern Myotis	Tri-colored Bat
	Rusty Blackbird	Wood Thrush
	Snapping Turtle	
	Tri-colored Bat	
	West Virginia White	
	Whip poor will	
	Wood Thrush	

LANARK	LANCASTER	LANSDOWNE
American Eel	American Eel	American Eel
American Ginseng	American Ginseng	American Ginseng
Bald Eagle	Bald Eagle	Bald Eagle
Bank Swallow	Bank Swallow	Bank Swallow
Barn Swallow	Barn Swallow	Barn Swallow
Black Tern	Black Tern	Black Tern
Blanding's Turtle	Blanding's Turtle	Blanding's Turtle
Bobolink	Bobolink	Blunt-lobed Woodsia
Butternut	Bridle Shiner	Bobolink
Chimney Swift	Butternut	Bridle Shiner
Eastern Meadowlark	Canada Warbler	Broad Beech Fern
Eastern Musk Turtle	Chimney Swift	Butternut
Eastern Small-footed Myotis	Common Nighthawk	Cerulean Warbler
Eastern Whip-poor-will	Cutlip Minnow	Chimney Swift
Eastern Wood-pewee	Eastern Meadowlark	Common Five-lined Skink
Least Bittern	Eastern Musk Turtle	Common Nighthawk
Little Brown Myotis	Eastern Ribbonsnake	Cutlip Minnow
Monarch	Eastern Small-footed Myotis	Eastern Meadowlark
Northern Map Turtle	Eastern Wood Pewee	Eastern Musk Turtle
Northern Myotis	Evening Grosbeak	Eastern Ribbonsnake
Olive-sided Flycatcher	Golden Eagle	Eastern Small-footed Myotis
Snapping Turtle	Grass Pickerel	Eastern Whip-poor-will
Transverse Lady Beetle	Gray Fox	Eastern Wood-pewee
Tri-colored Bat	King Rail	Golden-winged Warbler
Wood Thrush	Lake Sturgeon	Grass Pickerel
	Least Bittern	Gray Fox
	Little Brown Myotis	Gray Ratsnake
	Monarch	Henslow's Sparrow
	Northern Map Turtle	Lake Sturgeon
	Northern Myotis	Least Bittern
	Northern Sunfish	Little Brown Myotis
	Olive-sided Flycatcher	Loggerhead Shrike
	Rusty Blackbird	Monarch
	Silver Lamprey	Northern Map Turtle
	Snapping Turtle	Northern Myotis
	Tri-colored Bat	Peregrine Falcon
	West Virginia White	Piping Plover
	Whip poor will	Pugnose Shiner
	Wood Thrush	Red-headed Woodpecker
		Short-eared Owl
		Snapping Turtle
		Tri-colored Bat
		West Virginia White
		Yellow-banded Bumblebee
		Yellow-breasted Chat



LAVANT	LEEDS	LOCHIEL
American Eel	American Eel	American Eel
American Ginseng	American Ginseng	American Ginseng
Bald Eagle	Bald Eagle	Bank Swallow
Bank Swallow	Bank Swallow	Barn Swallow
Barn Swallow	Barn Swallow	Black Tern
Blanding's Turtle	Black Tern	Blanding's Turtle
Bobolink	Blanding's Turtle	Bobolink
Butternut	Bobolink	Bridle Shiner
Chimney Swift	Bridle Shiner	Butternut
Common Five-lined Skink	Butternut	Canada Warbler
Eastern Meadowlark	Cerulean Warbler	Chimney Swift
Eastern Ribbonsnake	Chimney Swift	Common Nighthawk
Eastern Silvery Minnow	Common Five-lined Skink	Cutlip Minnow
Eastern Small-footed Myotis	Eastern Meadowlark	Eastern Meadowlark
Eastern Wood-pewee	Eastern Musk Turtle	Eastern Ribbonsnake
Little Brown Myotis	Eastern Pondmussel	Eastern Small-footed Myotis
Monarch	Eastern Prickly Pear Cactus	Eastern Wood Pewee
Northern Map Turtle	Eastern Ribbonsnake	Evening Grosbeak
Northern Myotis	Eastern Small-footed Myotis	Gray Fox
Pale-bellied Frost Lichen	Eastern Whip-poor-will	Little Brown Myotis
Short-eared Owl	Eastern Wood-pewee	Monarch
Snapping Turtle	Golden-winged Warbler	Northern Myotis
Tri-colored Bat	Grass Pickerel	Northern Sunfish
Wood Thrush	Gray Fox	Rusty Blackbird
	Gray Ratsnake	Short-eared Owl
	Henslow's Sparrow	Snapping Turtle
	Lake Sturgeon	Tri-colored Bat
	Least Bittern	West Virginia White
	Little Brown Myotis	Whip poor will
	Loggerhead Shrike	Wood Thrush
	Monarch	
	Northern Map Turtle	
	Northern Myotis	
	Olive-sided Flycatcher	
	Peregrine Falcon	
	Pugnose Shiner	
	Snapping Turtle	
	Tri-colored Bat	
	Wood Thrush	

LONGUEUIL	MARCH	MARLBOROUGH
American Eel	American Eel	American Ginseng
American Ginseng	American Ginseng	Bald Eagle
Bank Swallow	Bald Eagle	Bank Swallow
Barn Swallow	Bank Swallow	Barn Swallow
Black Tern	Barn Swallow	Black Tern
Blanding's Turtle	Black Tern	Blanding's Turtle
Bobolink	Blanding's Turtle	Bobolink
Butternut	Bobolink	Bogbean Buckmoth
Canada Warbler	Butternut	Bridle Shiner
Channel Darter	Canada Warbler	Butternut
Chimney Swift	Chimney Swift	Chimney Swift
Common Nighthawk	Eastern Meadowlark	Common Nighthawk
Cutlip Minnow	Eastern Musk Turtle	Eastern Meadowlark
Eastern Meadowlark	Eastern Small-footed Myotis	Eastern Musk Turtle
Eastern Musk Turtle	Eastern Whip-poor-will	Eastern Prairie Fringed Orchid
Eastern Ribbonsnake	Eastern Wood-pewee	Eastern Small-footed Myotis
Eastern Small-footed Myotis	Hickorynut	Eastern Whip-poor-will
Eastern Wood Pewee	Horned Grebe	Eastern Wood-pewee
Evening Grosbeak	Lake Sturgeon	Grasshopper Sparrow
Golden Eagle	Least Bittern	King Rail
Hickorynut	Little Brown Myotis	Least Bittern
Lake Sturgeon	Loggerhead Shrike	Little Brown Myotis
Least Bittern	Monarch	Loggerhead Shrike
Little Brown Myotis	Northern Map Turtle	Monarch
Monarch	Northern Myotis	Northern Map Turtle
Northern Map Turtle	Peregrine Falcon	Northern Myotis
Northern Myotis	River Redhorse	Red-headed Woodpecker
River Redhorse	Rusty Blackbird	Snapping Turtle
Rusty Blackbird	Rusty-patched Bumble Bee	Spotted Turtle
Short-eared Owl	Silver Lamprey	Tri-colored Bat
Silver Lamprey	Snapping Turtle	Wood Thrush
Snapping Turtle	Transverse Lady Beetle	Yellow Rail
Spotted Turtle	Tri-colored Bat	
Tri-colored Bat	Wood Thrush	
West Virginia White	Yellow-banded Bumblebee	
Whip poor will		
Wood Thrush		

MATILDA	MONTAGUE	MOUNTAIN
American Eel	Bald Eagle	Bank Swallow
Bald Eagle	Bank Swallow	Barn Swallow
Bank Swallow	Barn Swallow	Blanding's Turtle
Barn Swallow	Black Tern	Bobolink
Bobolink	Blanding's Turtle	Butternut
Butternut	Bobolink	Canada Warbler
Chimney Swift	Butternut	Chimney Swift
Cutlip minnow	Chimney Swift	Common Nighthawk
Eastern Meadowlark	Common Nighthawk	Eastern Meadowlark
Eastern Musk Turtle	Eastern Meadowlark	Eastern Small-footed Myotis
Eastern Small-footed Myotis	Eastern Musk Turtle	Eastern Wood-pewee
Eastern Wood-pewee	Eastern Prairie Fringed Orchid	Evening Grosbeak
Evening Grosbeak	Eastern Small-footed Myotis	Little Brown Myotis
Henslow's Sparrow	Eastern Whip-poor-will	Monarch
Lake Sturgeon	Eastern Wood-pewee	Northern Myotis
Little Brown Myotis	Golden-winged Warbler	Peregrine Falcon
Loggerhead Shrike	Grasshopper Sparrow	Rusty Blackbird
Monarch	Gray Ratsnake	Short-eared Owl
Northern Map Turtle	Least Bittern	Snapping Turtle
Northern Myotis	Little Brown Myotis	Tri-colored Bat
Peregrine Falcon	Loggerhead Shrike	Wood Thrush
Rusty Blackbird	Monarch	Yellow-banded Bumblebee
Short-eared Owl	Northern Myotis	
Snapping Turtle	Snapping Turtle	
Tri-colored Bat	Tri-colored Bat	
Wood Thrush	Wood Thrush	
Yellow-banded Bumblebee		



NEPEAN	NORTH CROSBY	NORTH GOWER
American Eel	American Eel	Bald Eagle
Bald Eagle	Bald Eagle	Bank Swallow
Bank Swallow	Bank Swallow	Barn Swallow
Barn Owl	Barn Swallow	Blanding's Turtle
Barn Swallow	Black Tern	Bobolink
Black Tern	Blanding's Turtle	Bridle Shiner
Blanding's Turtle	Blunt-lobed Woodsia	Butternut
Bobolink	Bobolink	Chimney Swift
Butternut	Bridle Shiner	Eastern Meadowlark
Chimney Swift	Butternut	Eastern Musk Turtle
Eastern Meadowlark	Cerulean Warbler	Eastern Small-footed Myotis
Eastern Small-footed Myotis	Chimney Swift	Eastern Wood-pewee
Eastern Whip-poor-will	Eastern Meadowlark	Evening Grosbeak
Eastern Wood-pewee	Eastern Musk Turtle	Gypsy Cuckoo Bumble Bee
Evening Grosbeak	Eastern Ribbonsnake	Henslow's Sparrow
Gypsy Cuckoo Bumble Bee	Eastern Small-footed Myotis	Least Bittern
Hickorynut	Eastern Wood-pewee	Little Brown Myotis
Horned Grebe	Golden-winged Warbler	Loggerhead Shrike
Lake Sturgeon	Gray Ratsnake	Monarch
Least Bittern	King Rail	Northern Map Turtle
Little Brown Myotis	Least Bittern	Northern Myotis
Loggerhead Shrike	Little Brown Myotis	Peregrine Falcon
Monarch	Loggerhead Shrike	Red-headed Woodpecker
Northern Map Turtle	Monarch	Rusty Blackbird
Northern Myotis	Northern Map Turtle	Rusty-patched Bumble Bee
Peregrine Falcon	Northern Myotis	Short-eared Owl
Piping Plover	Olive-sided Flycatcher	Snapping Turtle
Red Knot <i>rufa</i> subspecies	Red-headed Woodpecker	Tri-colored Bat
Red-necked Phalarope	Snapping Turtle	Wood Thrush
River Redhorse	Tri-colored Bat	Yellow-banded Bumblebee
Rusty Blackbird	Wood Thrush	
Rusty-patched Bumble Bee	Yellow Rail	
Silver Lamprey		
Snapping Turtle		
Transverse Lady Beetle		
Tri-colored Bat		
Wood Thrush		
Yellow-banded Bumblebee		

NORTH SERBROOKE	OSGOODE	OSNABRUCK
Bald Eagle	Bald Eagle	American Eel
Bank Swallow	Bank Swallow	Bald Eagle
Barn Swallow	Barn Swallow	Bank Swallow
Blanding's Turtle	Blanding's Turtle	Barn Swallow
Bobolink	Bobolink	Blanding's Turtle
Butternut	Bridle Shiner	Bobolink
Cerulean Warbler	Butternut	Butternut
Chimney Swift	Canada Warbler	Chimney Swift
Eastern Meadowlark	Cerulean Warbler	Cutlip Minnow
Eastern Musk Turtle	Chimney Swift	Eastern Meadowlark
Eastern Small-footed Myotis	Common Nighthawk	Eastern Small-footed Myotis
Eastern Wood-pewee	Eastern Meadowlark	Eastern Wood-pewee
Little Brown Myotis	Eastern Musk Turtle	Lake Sturgeon
Monarch	Eastern Ribbonsnake	Least Bittern
Northern Map Turtle	Eastern Small-footed Myotis	Little Brown Myotis
Northern Myotis	Eastern Whip-poor-will	Monarch
Snapping Turtle	Eastern Wood-pewee	Northern Map Turtle
Tri-colored Bat	Evening Grosbeak	Northern Myotis
Wood Thrush	Henslow's Sparrow	Pugnose Shiner
	Least Bittern	Red Knot <i>rufa</i> subspecies
	Little Brown Myotis	Red-headed Woodpecker
	Monarch	Red-necked Phalarope
	Northern Map Turtle	Snapping Turtle
	Northern Myotis	Tri-colored Bat
	Rusty Blackbird	Wood Thrush
	Rusty-patched Bumble Bee	Yellow Rail
	Snapping Turtle	
	Tri-colored Bat	
	Wood Thrush	

OXFORD	PAKENHAM	PLANTAGENET
American Ginseng	American Eel	American Eel
Bald Eagle	American Ginseng	American Ginseng
Bank Swallow	Bald Eagle	Bald Eagle
Barn Swallow	Barn Swallow	Bank Swallow
Black Tern	Blanding's Turtle	Barn Swallow
Blanding's Turtle	Bobolink	Black Tern
Bobolink	Bogbean Buckmoth	Blanding's Turtle
Bridle Shiner	Butternut	Bobolink
Butternut	Chimney Swift	Butternut
Chimney Swift	Eastern Meadowlark	Canada Warbler
Eastern Meadowlark	Eastern Musk Turtle	Channel Darter
Eastern Musk Turtle	Eastern Ribbonsnake	Chimney Swift
Eastern Small-footed Myotis	Eastern Silvery Minnow	Common Nighthawk
Eastern Whip-poor-will	Eastern Small-footed Myotis	Cutlip Minnow
Eastern Wood-pewee	Eastern Whip-poor-will	Eastern Meadowlark
Grasshopper Sparrow	Eastern Wood-pewee	Eastern Musk Turtle
Gray Ratsnake	Evening Grosbeak	Eastern Ribbonsnake
Gypsy Cuckoo Bumble Bee	Grasshopper Sparrow	Eastern Small-footed Myotis
Least Bittern	Least Bittern	Eastern Wood Pewee
Little Brown Myotis	Little Brown Myotis	Evening Grosbeak
Monarch	Loggerhead Shrike	Hickorynut
Northern Map Turtle	Monarch	Lake Sturgeon
Northern Myotis	Northern Map Turtle	Least Bittern
Snapping Turtle	Northern Myotis	Little Brown Myotis
Tri-colored Bat	Rapids Clutail	Monarch
Wood Thrush	Red-headed Woodpecker	Northern Myotis
	River Redhorse	River Redhorse
	Short-eared Owl	Rusty Blackbird
	Snapping Turtle	Silver Lamprey
	Tri-colored Bat	Snapping Turtle
	Wood Thrush	Tri-colored Bat
		West Virginia White
		Whip poor will
		Wood Thrush



RAMSAY	ROXBOROUGH	RUSSELL
American Eel	American Ginseng	Bald Eagle
American Ginseng	Bald Eagle	Bank Swallow
Bald Eagle	Bank Swallow	Barn Swallow
Bank Swallow	Barn Swallow	Bobolink
Barn Swallow	Bobolink	Butternut
Black Tern	Butternut	Chimney Swift
Blanding's Turtle	Chimney Swift	Eastern Meadowlark
Bobolink	Cutlip Minnow	Eastern Small-footed Myotis
Butternut	Eastern Meadowlark	Eastern Wood-pewee
Chimney Swift	Eastern Small-footed Myotis	Horned Grebe
Common Nighthawk	Eastern Wood-pewee	Little Brown Myotis
Eastern Meadowlark	Golden-winged Warbler	Monarch
Eastern Musk Turtle	Least Bittern	Northern Myotis
Eastern Ribbonsnake	Little Brown Myotis	Red Knot <i>rufa</i> subspecies
Eastern Small-footed Myotis	Monarch	Red-necked Phalarope
Eastern Wood-pewee	Northern Myotis	Snapping Turtle
Golden-winged Warbler	Red-headed Woodpecker	Tri-colored Bat
Gray Ratsnake	Snapping Turtle	Wood Thrush
Gypsy Cuckoo Bumble Bee	Spotted Turtle	
Horned Grebe	Tri-colored Bat	
Least Bittern	Wood Thrush	
Little Brown Myotis	Yellow Rail	
Loggerhead Shrike		
Monarch		
Mottled Duskywing		
Northern Myotis		
Rapids Clubtail		
Red-headed Woodpecker		
River Redhorse		
Short-eared Owl		
Snapping Turtle		
Transverse Lady Beetle		
Tri-colored Bat		
Wood Thrush		
Yellow Rail		

<b>SOUTH CROSBY</b>	<b>SOUTH GOWER</b>	<b>SOUTH SHERBROOKE</b>
American Eel	Bald Eagle	American Eel
American Ginseng	Bank Swallow	American Ginseng
Bald Eagle	Barn Swallow	Bald Eagle
Bank Swallow	Blanding's Turtle	Bank Swallow
Barn Swallow	Bobolink	Barn Swallow
Black Tern	Bridle Shiner	Black Tern
Blanding's Turtle	Butternut	Blanding's Turtle
Bobolink	Chimney Swift	Bobolink
Bridle Shiner	Eastern Meadowlark	Butternut
Butternut	Eastern Musk Turtle	Common Five-lined Skink
Cerulean Warbler	Eastern Small-footed Myotis	Common Nighthawk
Chimney Swift	Eastern Whip-poor-will	Eastern Meadowlark
Common Five-lined Skink	Eastern Wood-pewee	Eastern Musk Turtle
Eastern Meadowlark	Evening Grosbeak	Eastern Ribbonsnake
Eastern Musk Turtle	Least Bittern	Eastern Small-footed Myotis
Eastern Pondmussel	Little Brown Myotis	Eastern Whip-poor-will
Eastern Ribbonsnake	Monarch	Eastern Wood-pewee
Eastern Small-footed Myotis	Northern Map Turtle	Golden-winged Warbler
Eastern Whip-poor-will	Northern Myotis	Gray Ratsnake
Eastern Wood-pewee	Rusty Blackbird	Least Bittern
Golden-winged Warbler	Short-eared Owl	Little Brown Myotis
Grass Pickerel	Snapping Turtle	Loggerhead Shrike
Gray Ratsnake	Tri-colored Bat	Monarch
Gypsy Cuckoo Bumble Bee	Wood Thrush	Northern Map Turtle
Least Bittern		Northern Myotis
Little Brown Myotis		Snapping Turtle
Monarch		Tri-colored Bat
Mottled Duskywing		Wood Thrush
Northern Map Turtle		
Northern Myotis		
Prothonotary Warbler		
Rusty-patched Bumble Bee		
Snapping Turtle		
Transverse Lady Beetle		
Tri-colored Bat		
Wood Thrush		
Yellow-banded Bumblebee		

TORBOLTON	WEST HAWKESBURY	WILLIAMSBURGH
American Eel	American Eel	American Eel
American Ginseng	American Ginseng	Bald Eagle
Bald Eagle	Bank Swallow	Bank Swallow
Bank Swallow	Barn Swallow	Barn Swallow
Barn Swallow	Black Tern	Blanding's Turtle
Blanding's Turtle	Blanding's Turtle	Bobolink
Bobolink	Bobolink	Butternut
Butternut	Bridle Shiner	Canada Warbler
Chimney Swift	Butternut	Cerulean Warbler
Eastern Meadowlark	Canada Warbler	Chimney Swift
Eastern Musk Turtle	Channel Darter	Cutlip Minnow
Eastern Small-footed Myotis	Chimney Swift	Eastern Meadowlark
Eastern Wood-pewee	Common Nighthawk	Eastern Musk Turtle
Hickorynut	Cutlip Minnow	Eastern Ribbonsnake
Horned Grebe	Eastern Meadowlark	Eastern Small-footed Myotis
Lake Sturgeon	Eastern Musk Turtle	Eastern Wood-pewee
Least Bittern	Eastern Ribbonsnake	Evening Grosbeak
Little Brown Myotis	Eastern Small-footed Myotis	Grass Pickerel
Monarch	Eastern Wood Pewee	Lake Sturgeon
Mottled Duskywing	Evening Grosbeak	Least Bittern
Northern Barrens Tiger Beetle	Hickorynut	Little Brown Myotis
Northern Map Turtle	Lake Sturgeon	Monarch
Northern Myotis	Least Bittern	Northern Map Turtle
Red-headed Woodpecker	Little Brown Myotis	Northern Myotis
River Redhorse	Mammals	Pugnose Shiner
Rusty-patched Bumble Bee	Monarch	Rusty Blackbird
Silver Lamprey	Northern Map Turtle	Snapping Turtle
Snapping Turtle	Northern Myotis	Tri-colored Bat
Transverse Lady Beetle	River Redhorse	Wood Thrush
Tri-colored Bat	Rusty Blackbird	
Wood Thrush	Silver Lamprey	
Yellow-banded Bumblebee	Snapping Turtle	
	Tri-colored Bat	
	West Virginia White	
	Whip poor will	
	Wood Thrush	



WINCHESTER	WOLFORD	YONGE
American Eel	Bald Eagle	American Eel
Bank Swallow	Bank Swallow	American Ginseng
Barn Swallow	Barn Swallow	Bald Eagle
Blandings Turtle	Black Tern	Bank Swallow
Bobolink	Blanding's Turtle	Barn Swallow
Butternut	Bobolink	Blanding's Turtle
Canada Warbler	Butternut	Bobolink
Chimney Swift	Canada Warbler	Bridle Shiner
Common Nighthawk	Chimney Swift	Broad Beech Fern
Eastern Meadowlark	Common Nighthawk	Butternut
Eastern Musk Turtle	Common Nighthawk	Cerulean Warbler
Eastern Small-footed Myotis	Eastern Meadowlark	Chimney Swift
Eastern Wood-pewee	Eastern Musk Turtle	Common Five-lined Skink
Evening Grosbeak	Eastern Small-footed Myotis	Common Nighthawk
Little Brown Myotis	Eastern Whip-poor-will	Eastern Meadowlark
Monarch	Eastern Wood-pewee	Eastern Musk Turtle
Northern Map Turtle	Golden-winged Warbler	Eastern Pondmussel
Northern Myotis	Grasshopper Sparrow	Eastern Ribbonsnake
Peregrine Falcon	Gray Ratsnake	Eastern Small-footed Myotis
River Redhorse	Least Bittern	Eastern Whip-poor-will
Rusty Blackbird	Little Brown Myotis	Eastern Wood-pewee
Snapping Turtle	Loggerhead Shrike	Golden-winged Warbler
Tri-colored Bat	Monarch	Grass Pickerel
Wood Thrush	Northern Map Turtle	Gray Ratsnake
	Northern Myotis	Henslow's Sparrow
	Snapping Turtle	Lake Sturgeon
	Tri-colored Bat	Least Bittern
	Wood Thrush	Little Brown Myotis
	Yellow-breasted Chat	Monarch
		Northern Map Turtle
		Northern Myotis
		Piping Plover
		Pugnose Shiner
		Red-headed Woodpecker
		Silver Lamprey
		Snapping Turtle
		Tri-colored Bat
		Wood Thrush

## **APPENDIX C – CLEAN EQUIPMENT PROTOCOL FOR INDUSTRY**

# Clean Equipment Protocol for Industry

Inspecting and cleaning equipment for the  
purposes of invasive species prevention



*Catalyst for research and response*





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[www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca), [www.invadingspecies.com](http://www.invadingspecies.com) or [www.invasivespeciescentre.ca](http://www.invasivespeciescentre.ca)

# Table Of Contents

<b>Introduction .....</b>	<b>1</b>
<b>Why Cleaning Vehicles and Equipment is Important .....</b>	<b>3</b>
<b>Impacts of Invasive Species on Industry .....</b>	<b>4</b>
Construction.....	4
Forestry/Agriculture .....	4
Land Management (Trail Use/Maintenance).....	4
Roadsides/Utilities .....	4
<b>Steps to Prevent the Unintentional Introduction of Invasive Species from Equipment .....</b>	<b>5</b>
When to Inspect.....	5
How to Inspect .....	5
When to Clean.....	6
Where to Clean .....	6
How to Clean Inside .....	6
How to Clean Outside .....	6
<b>Final Inspection Checklist .....</b>	<b>7</b>
Equipment Required .....	7
<b>Inspection and Cleaning Diagrams and Checklists .....</b>	<b>8</b>
2WD and 4WD Vehicles.....	8
Excavator .....	9
Backhoe.....	10
Bulldozer .....	11
<b>Contacts and Resources .....</b>	<b>12</b>
<b>Appendix A: Identification of Invasive Plants found in Ontario .....</b>	<b>13</b>

# Introduction

## Why Invasive Plants are a Problem

Invasive alien species are “a growing environmental and economic threat to Ontario. Alien species are plants, animals and microorganisms that have been accidentally or deliberately introduced into areas beyond their normal range. Invasive species are defined as harmful alien species whose introduction or spread threatens the environment, the economy, or society, including human health (Government of Canada 2004).” (Ontario Invasive Species Strategic Plan, 2012). The great majority of plant invasions occur in habitats that have been disturbed either naturally or by humans (Rejmanek 1989; Hobbs and Huenneke 1992; Hobbs 2000).

The ecological effects of invasive species are often irreversible and, once established, they are extremely difficult and costly to control or eradicate. According to Pimental et al. (1999), invasive species in the U.S. cause economic and environmental damages totalling over \$138 billion per year, with agricultural weed control and crop losses totalling approximately \$34 billion per year. Exact figures for the total economic and environmental damages are not available for Canada. In Ontario however, the costs of dealing with just one invasive species is astonishing; Zebra Mussels cost Ontario power producers who draw water from the lake \$6.4 million per year in increased control/operating costs and about \$1 million per year in research costs (Colautti et al. 2006).

Invasive species can spread to new areas when contaminated mud, gravel, water, soil and plant material are unknowingly moved by equipment used on different sites. This method of spread is called an unintentional introduction, and is one of the four major pathways for invasive species introduction into a new area of Ontario (Ontario Invasive Species Strategic Plan, 2012).



**Buckthorn removal, Lynde Shores Conservation Area.**

Photo by: Central Lake Ontario Conservation Authority

Invasive plant seed and propagules (plant material, i.e. rhizomes) have the ability to travel sight unseen in mud attached to or lodged in various parts and spaces between parts of vehicles, machinery and other mechanical equipment. A recent study at Montana State University found that most seeds (99% on paved roads and 96% on unpaved roads) stayed attached to the vehicle after traveling 160 miles (257 km) under dry conditions.

Invasive plant species are commonly transported on or in vehicles and construction equipment when they are moved to new locations. Those vehicles include four-wheel drives, excavators, tractors, loaders, water trucks and all-terrain vehicles. Failure to properly clean vehicles and machinery of soils, mud, and contaminated water that may contain invasive species seed and propagules can result in permanent, irreversible environmental impacts. These impacts can mean substantial cost to the landowner, land manager and/or the user. Businesses may also face liability issues for activities and operations that result in the introduction of invasive species.



Some of the invasive species in Ontario which have been known to spread through equipment transfer include:

- **Common Buckthorn** (*Rhamnus cathartica*)
- **Dog-strangling Vine** (*Cynanchum rossicum*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)
- **Glossy Buckthorn** (*Frangula alnus*)
- **Japanese Knotweed** (*Polygonum cuspidatum*)
- **Miscanthus or Chinese Silver Grass** (*Miscanthus sinensis*)
- **Phragmites or Common Reed** (*Phragmites australis* subsp. *australis*)
- **Reed Canary Grass** (*Phalaris arundinacea*)
- **Wild Parsnip** (*Pastinaca sativa*)
- **Wild Chervil** (*Anthriscus sylvestri*)



**Dog-strangling vine**  
(*Cynanchum rossicum*)  
Photo by: Hayley Anderson



**Garlic Mustard**  
(*Alliaria petiolata*)  
Photo by: Ken Towle



**Phragmites**  
(*Phragmites australis* subsp. *Australis*)  
Photo by: Michael Irvine

These plants impact biodiversity by out-competing native species for space, sunlight, and nutrients. They can also have impacts on road and driver safety by physically blocking intersection sightlines, and in the case of Phragmites and Miscanthus, may fuel intense grass fires if ignited, which can damage utility stations and hydro lines.

### The harmful effects of invasive species include:

- Physical and structural damage to infrastructure
- Human health hazards (i.e. Giant Hogweed and Wild Parsnip exposure)
- Delays and increased cost in construction activities
- Environmental damage (i.e. erosion)
- Aesthetic degradation
- Loss of biodiversity
- Reduced property values
- Loss of productivity in woodlots and agriculture

# Why Cleaning Vehicles and Equipment is Important

Passenger and recreational vehicles as well as heavy machinery are major vectors for spreading terrestrial invasive species into new areas.

It is much more costly to control invasive species after their establishment and spread than it is to prevent their spread. The spread of invasive species through unintentional introduction can be minimized significantly by the diligent cleaning of vehicles and equipment when leaving one site and moving to the next. In the case of large properties, cleaning before moving to a new site is recommended, even if it is within the same property.

This guide has been developed for the construction, agriculture, forestry and other land management industries, to provide equipment operators and practitioners with tools and techniques to identify and prevent the unintentional introduction of invasive species. It establishes a standard for cleaning vehicles and equipment and provides a guide where current codes of practice, industry standards or other environmental management plans are not already in place.

---

## Passenger and recreational vehicles include:

- 2WD and 4WD cars
- 2WD and 4WD trucks
- All Terrain Vehicles (ATV's)
- Motorbikes
- Snowmobiles

## Heavy machinery includes:

- Trucks
  - Tractors
  - Mowers
  - Slashers
  - Trailers
  - Backhoes
  - Graders
  - Dozers
  - Excavators
  - Skidders
  - Loaders
  - Water Tankers and Trucks
- 



**Dog-strangling Vine plants attached to ATV.**

Photo by: Francine Macdonald



**Plant material attached to bobcat.**

Photo by: TH9 Outdoor Services

# Impacts of Invasive Species on Industry

## Construction

In the UK, Japanese Knotweed (*Polygonum cuspidatum* or *Fallopia japonica*) is classified as a hazardous material. When construction occurs in established Japanese Knotweed stands workers sift the soil to remove root fragments and institute treatment plans to ensure that the Knotweed does not re-sprout, as it can damage housing foundations by growing through concrete and asphalt. The contractors must also thoroughly clean their equipment, and dispose of the contaminated soil at biohazard waste sites. While we do not have these requirements in Ontario, Japanese Knotweed is present here.

Invasive plant species can also increase site preparation and weed control costs, and reduce property values. For example, in Vermont the presence of the aquatic invasive plant Eurasian Watermilfoil (*Myriophyllum spicatum*) depressed shoreline residence property value by as much as 16.4% (Zhang and Boyle, 2010).

## Forestry/Agriculture

Invasive plant species which become established in forests will out-compete native species and prevent forest re-generation after logging or natural disturbance. Dog-strangling Vine (*Cynanchum rossicum*) is of particular concern in conifer plantations. This species thrives in the filtered light and open soils of mature plantations, and suppresses seedling establishment of native hardwoods. If its invasion continues, very few juvenile trees will survive to fill the shrinking canopy of over-mature pines. Reforestation sites are also susceptible; the thick mats of vegetation and aggressive competition from Dog-strangling Vine decrease available planting space and increase costs as more mature vegetation needs to be planted in order to ensure the new vegetation can outcompete the invasive plant. As a result, expensive control programs are often required.

## Land Management (Trail Use/Maintenance)

Recreational trail use and the maintenance of trails can facilitate the transport of invasive plant material and seeds, and create open and disturbed sites that are prime locations for the establishment of invasive species. Studies have proven that trails act as corridors which assist in the spread of invasive plant species. Humans, their pets, and vehicles such as ATV's can be vectors of invasion along trails because seeds and plant pieces can be carried on equipment and clothing. In addition, frequent trampling along trails alters soil properties, limits the growth of some native species, and creates conditions that may favour the growth of non-native species (Kuss et al. 1985; Marion et al. 1985; Yorks et al. 1997).

## Roadsides/Utilities

Invasive species can increase the cost of roadside and utility maintenance by requiring additional maintenance and control efforts. The presence of invasive species can also provide a safety hazard. In the case of Phragmites and Miscanthus (invasive grass species), along with interrupting sight lines, the dead stalks which remain standing each autumn also provide combustible material. Fires in these stands burn intensely, and can damage utilities and hydro lines. Phragmites along roadsides is generally assumed to be spread through the transport and burial of rhizome fragments through ditching, ploughing, and other human activities that transport rhizomes on machinery. Studies have shown that vehicles and road-fill operations can transport invasive plant seeds into uninfested areas, and road construction and maintenance operations provide optimal disturbed sites for seed germination and seedling establishment (Schmidt 1989; Lonsdale & Lane 1994; Greenberg et al. 1997; Trombulak & Frissell 2000).



# Steps to Prevent the Unintentional Introduction of Invasive Species from Equipment

Inspection and cleaning of all machinery and equipment should be performed in accordance with the procedures, checklists and diagrams provided in this protocol.

When visiting more than one site, always schedule work in the sites that are the least disturbed and free of known invasive species first, and visit sites with known invasive species infestations last. This will greatly reduce the risk of transferring plants to new locations.

---

## When to Inspect

### Inspection should be done before:

- Moving vehicles out of a local area of operation
- Moving machinery between properties or sites within the same property where invasive species may be present in one area, and not in another
- Using machinery along roadsides, in ditches, and along watercourses
- Vehicles using unformed dirt roads, trails or off road conditions
- Using machinery to transport soil and quarry materials
- Visiting remote areas where access by vehicles is limited

### Inspection should be done after:

- Operating in areas known to have terrestrial invasive plants or are in high risk areas (i.e. recently disturbed areas near known invaded areas)
- Transporting material (i.e. soil) that is known to contain, or has the potential to contain, invasive species
- Operating in an area or transporting material that you are uncertain contain invasive species
- In the event of rain. If mud contains seeds, they can travel indefinitely until it rains or the road surface is wet, allowing for long distance transport. This may result in transporting seeds to areas where those species did not previously exist

---

## How to Inspect

- Inspect the vehicle thoroughly inside and out for where dirt, plant material and seeds may be lodged or adhering to interior and exterior surfaces.
- Remove any guards, covers or plates that are easy to remove.
- Attention should be paid to the underside of the vehicle, radiators, spare tires, foot wells and bumper bars.

If clods of dirt, seed or other plant material are found, removal should take place immediately, using the techniques outlined below.

## When to Clean

Vehicles and heavy equipment that stay on formed and sealed roads have a low risk of spreading invasive species. Cleaning is only required when inspection identifies visible dirt clods and plant material or when moving from one area to another.

Depending on the invasive species present, vehicles may need to be cleaned even when deep snow is present. Phragmites, for example, can still be spread, even in packed snow because the seed heads are usually above the surface of the snow. Other plants, such as Dog-strangling vine, will be contained beneath deep snow.

*\*Regular inspection of vehicles and machinery will identify if any soil or plant material has been collected on or in vehicles and machinery.*

## Where to Clean

Clean the vehicle/equipment in an area where contamination and seed spread is not possible (or limited). The site should be:

- Ideally, mud free, gravel covered or a hard surface. If this option is not available, choose a well maintained (i.e. regularly mowed) grassy area.
- Gently sloping to assist in draining water and material away from the vehicle or equipment. Care should be taken to ensure that localized erosion will not be created, and that water runs back into the area where contamination occurred.
- At least 30m away from any watercourse, water body and natural vegetation.
- Large enough to allow for adequate movement of larger vehicles and equipment.

*\*Safely locate the vehicle and equipment away from any hazards. If mechanized, ensure engine is off and the vehicle or equipment is immobilized.*

## How to Clean Inside

Clean the interior of the vehicle by sweeping, vacuuming or using a compressed air device. Particular attention should be paid to the floor, foot wells, pedals, seats and under the seats.

## How to Clean Outside

Knock off all large clods of dirt. Use a pry bar or other device if necessary.

Identify areas that may require cleaning with compressed air rather than water such as radiators and grills. Clean these areas first prior to using water.

Clean the vehicle with a high pressure hose in combination with a stiff brush and/or pry bar to further assist the removal of dirt clods.

Start cleaning from the top of the vehicle and work down to the bottom.

Emphasis should be placed on the undersides, wheels, wheel arches, guards, chassis, engine bays, radiator, grills and other attachments.

When the cleaning is finished avoid driving through the waste water when removing the vehicle or equipment from the cleaning site.

For equipment such as water trucks that may be exposed to aquatic invasive species, trucks should be disinfected with bleach solution before conducting work in a new area. For further information please refer to the Invading Species Awareness Program's Technical Guidelines listed under Contacts and Resources.



**Hosing down a vehicle in Queensland Australia**

Photo by: TH9 Outdoor Services

# Final Inspection Checklist

**Conduct a final inspection to ensure the following general clean standard has been achieved:**

- No clods of dirt should be visible after wash down.
- Radiators, grills and the interiors of vehicles should be free of accumulations of seed, soil, mud and plant material parts including seeds, roots, flowers, fruit and or stems.

Diagrams have been provided to assist in quickly identifying key areas to inspect and clean on a variety of vehicles associated with the targeted industries. These can be used in combination with vehicle checklists to ensure all areas of the vehicles have been inspected and cleaned.

## Equipment Required

- A pump and high pressure hose OR High pressure water unit
- Minimum water pressure for vehicle cleaning should be at least 90 pounds per square inch. Water can be supplied as high volume/low pressure or low volume/high pressure (NOAA Fisheries Service).
- Air compressor and blower OR Vacuum
- Shovel
- Pry bar
- Stiff brush or broom



**Cleaning station at construction site.**

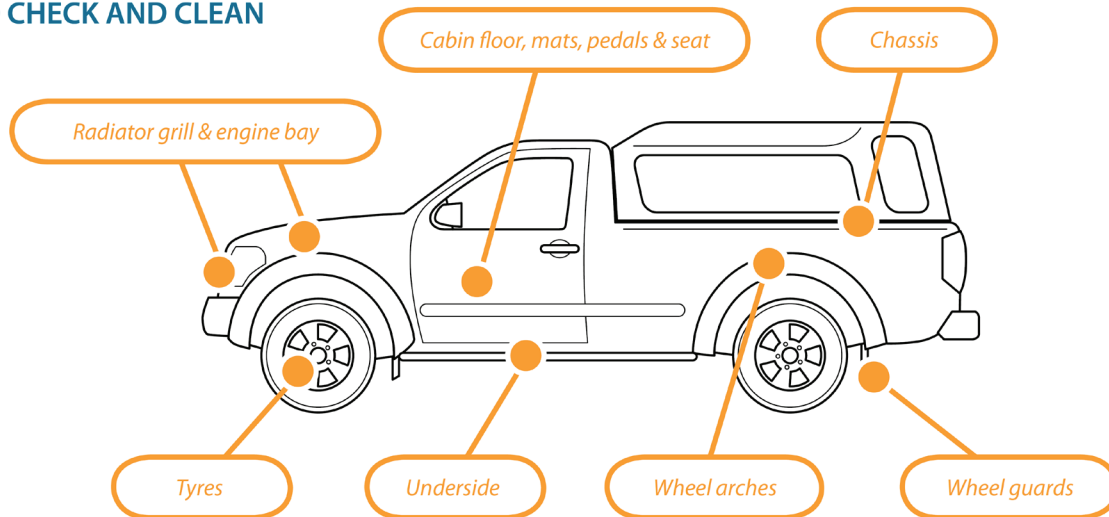
Photo by: Mark Heaton, OMNR



# Inspection and Cleaning Diagrams and Checklists

## 2WD and 4WD Vehicles

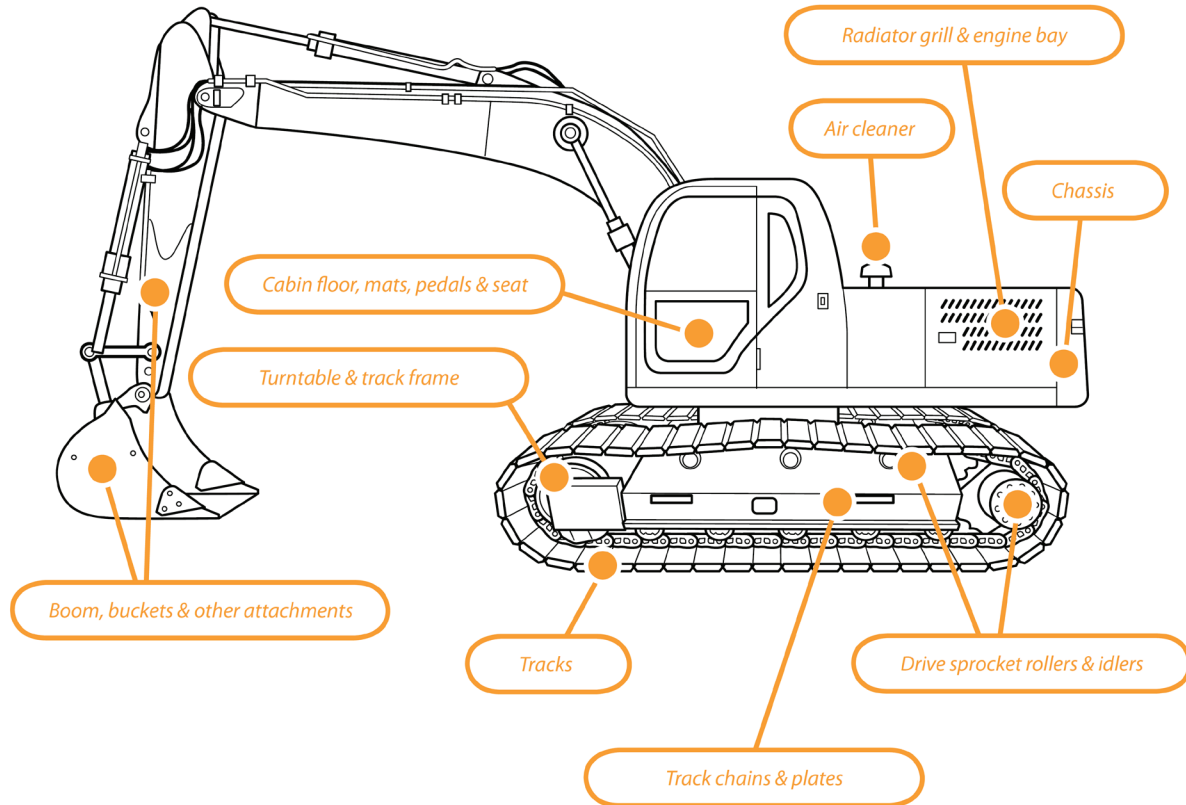
### 4WD VEHICLE WITH KEY SPOTS TO CHECK AND CLEAN



		✓
<b>Cabin</b>	Floor, mats, pedals, seats	
<b>Engine</b>	Radiators, engine bay, grill	
<b>Body</b>	Underside, chassis, crevices, ledges, bumper bars	
<b>Wheels</b>	All wheels (including spare), wheel arches, guards	
<b>Tray</b>	Floor, canopy (if included)	

# Excavator

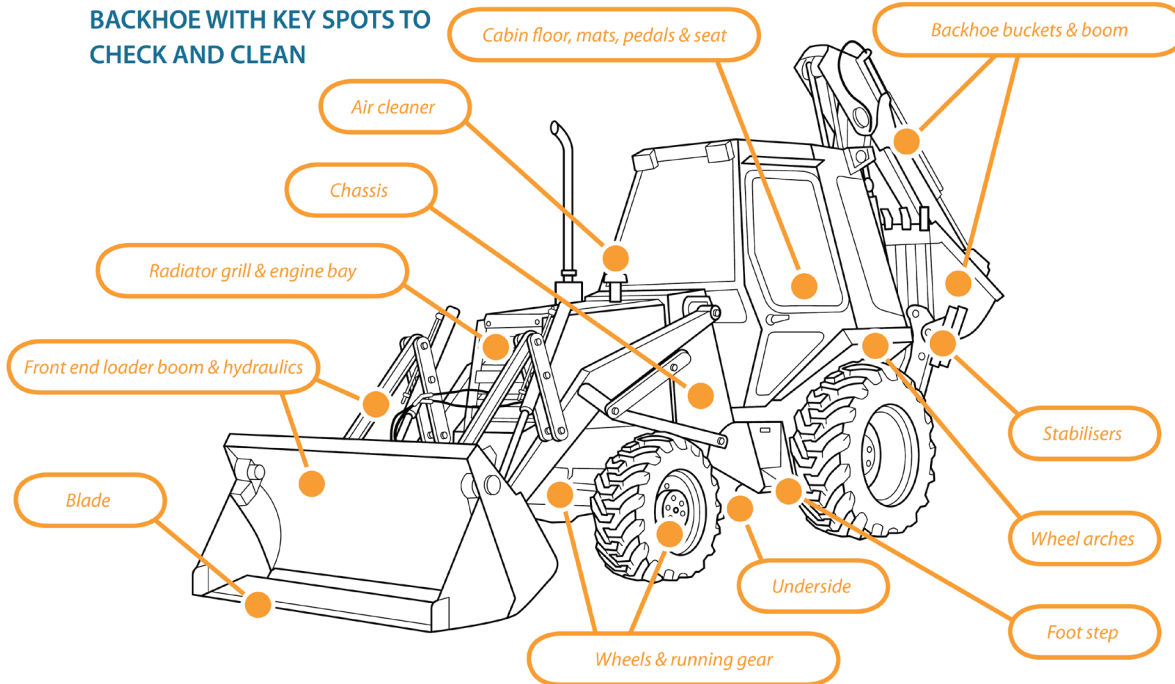
## EXCAVATOR WITH KEY SPOTS TO CHECK AND CLEAN



		✓
<b>Cabin</b>	Floor, mats, pedals, seats	
<b>Engine</b>	Radiators, engine bay, grill, air cleaner	
<b>Tracks</b>	Tracks, track frame, drive sprocket rollers, idlers	
<b>Body Plates</b>	Plates of cabin	
<b>Body</b>	Ledges, channels	
<b>Bucket</b>		
<b>Booms</b>		
<b>Turret Pivot</b>		

## Backhoe

### BACKHOE WITH KEY SPOTS TO CHECK AND CLEAN

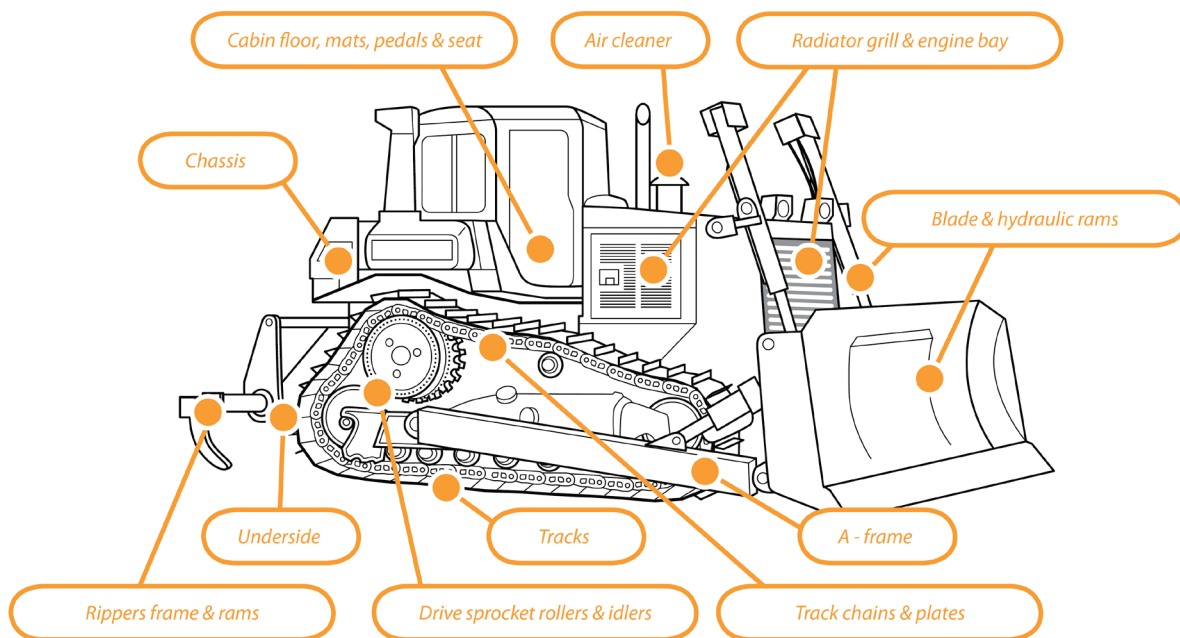


		✓
Cabin	Floor, mats, pedals, seats, foot step	
Engine	Radiators, engine bay, grill, air cleaner	
Wheels	All wheels (including spare), wheel arches, guards	
Front end loader	Blade, hydraulics, booms	
Backhoe	Buckets, boom, hydraulics, stabilizers	



## Bulldozer

### BULLDOZER WITH KEY SPOTS TO CHECK AND CLEAN



		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill, air cleaner	
Tracks	Tracks, track frame, drive sprocket rollers, idlers	
Body Plates	Belly plates and rear plates	
Body	Ledges, channels	
Blade	Pivot points, hydraulic rams, a-frame	
Ripper	Ripper frame, ripper points	

# Contacts and Resources

Ontario Invasive Species Strategic Plan 2012. Government of Ontario. Online, accessed May 8, 2012.

[http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@biodiversity/documents/document/stdprod\\_097634.pdf](http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@biodiversity/documents/document/stdprod_097634.pdf)

Invasive Species Management for Infrastructure Managers and the Construction Industry 2008. Wade, M. Booy, O. and White, V. Online, accessed April 27, 2012

[http://www.ciria.org/service/Web\\_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web\\_Site&ContentID=9001](http://www.ciria.org/service/Web_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web_Site&ContentID=9001)

T.I.P.S (Targeted Invasive Plant Solutions) Highway Operations. British Columbia Invasive Species Council. Online, accessed May 8, 2012

[http://www.bcinvativeplants.com/iscbc/publications/TIPS/Highways\\_Operations\\_TIPS.pdf](http://www.bcinvativeplants.com/iscbc/publications/TIPS/Highways_Operations_TIPS.pdf)

Invading Species Awareness Program Workshop Manual: Aquatic Invasive Species: An Introduction to Identification, Collection and Reporting of Aquatic Invasive Species in Ontario Waters (includes information on decontaminating equipment).

<http://www.invadingspecies.com/download/publications/manuals/WorkshopManual.pdf>

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## Reporting Invasive Species

To report invasive species, or view maps of existing records, visit the Invading Species Awareness Program website [www.invadingspecies.com/report/](http://www.invadingspecies.com/report/) or [www.eddmaps.org/Ontario](http://www.eddmaps.org/Ontario).

Or call the OFAH/MNR Invading Species Awareness Program Hotline at **1-800-563-7711**

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### Clean Equipment Protocol Working Group:

Diana Shermet, Central Lake Ontario Conservation Authority; Paula Berketo, Ontario Ministry of Transportation; Travis Cameron, Ontario Ministry of Natural Resources; Jennifer Hoare, Ontario Parks; Michael Irvine, Ontario Ministry of Natural Resources; Alison Kirkpatrick, OFAH/MNR Invading Species Awareness Program; Erika Weisz, Ontario Ministry of Natural Resources; Amanda Chad, Ontario Power Generation; Nancy Vidler, Lambton Shores Phragmites Community Group; Nigel Buffone, Du Pont Canada Company; Ewa Bednarczuk, Lower Trent Conservation Authority

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### More Information:

Ontario Invasive Plant Council: [www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca)

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# Appendix A: Identification of Invasive Plants found in Ontario

- **Common Buckthorn** (*Rhamnus cathartica*) and **Glossy Buckthorn** (*Frangula alnus*)
- **Dog-strangling Vine** (*Cynanchum rossicum*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Japanese Knotweed** (*Polygonum cuspidatum*)
- **Phragmites or Common Reed** (*Phragmites australis* subsp. *australis*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)

## common & glossy buckthorn

(*Rhamnus cathartica* & *R. frangula*)



**Plant type:** Shrub/small tree

**Arrangement:** Common buckthorn are sub-opposite (almost opposite). Glossy buckthorn are alternate.

**Leaf:** The common buckthorn leaf is egg shaped, edge of the leaf is “pebbled” (small rounded teeth). Veins converging toward leaf top. The glossy buckthorn leaf is more slender (tear drop shaped) and smooth margined.

**Bark:** Smooth, young bark with prominent raised patches or lenticels; rough texture and peeling bark when mature.

**Seed/Flowers:** Flowers are green-yellowish, small and inconspicuous. Green berries becoming purplish/black in late summer, berry > 1 cm in diameter.

**Buds/Twigs:** Common buckthorn has thorn-like tip on many twigs. Glossy buckthorn buds have no bud scales and lack thorny tips to twigs.

**Habitat:** Various - forest, thickets, meadows, dry to moist soils.

**Similar native species:** Native dogwoods, which lack the thorny “tip”. Native dogwoods are truly opposite in arrangement of twigs; only alternate leaved (pagoda) dogwood has alternate branching.



## dog-strangling vine

(*Cynanchum rossicum* & *C. nigrum*)



**Plant type:** Herb, twining vine

**Arrangement:** Opposite

**Leaf:** Lance shaped, smooth margin (edge)

**Bark:** n/a

**Seed/Flowers:** Bean shaped seed pod with seeds attached to downy 'umbrellas'. Flowers - pink (*C. rossicum*) or purple (*C. nigrum*) with five petals.

**Buds/Twigs:** n/a

**Habitat:** Dry to moist soils; more dominant in meadows and woodland edges.

**Similar native species:** Swamp milkweed (*Asclepias incarnata* spp.), is an upright plant, typically found in wetland habitats.

## garlic mustard

(*Alliaria petiolata*)



**Plant type:** Herb

**Arrangement:** Alternate

**Leaf:** Saw tooth like edge, elongated heart shape. Garlic/onion smell when crushed. Leaves are kidney shaped with prominent veins.

**Bark:** n/a

**Seed/Flowers:** Cluster of small white flowers with four petals. Small black < 1 mm rounded seed found in elongated 'tube-like' seed pods (similar to a bean pod).

**Buds/Twigs:** n/a

**Habitat:** Various – dry to moist soils, in all habitat types, less often in meadows.

**Similar native species:** n/a

## japanese knotweed

(*Polygonum cuspidatum*)



**Plant type:** Herb, 2 - 4 m in height.

**Arrangement:** Alternate

**Leaf:** Tear drop shaped, sharp pointed, dark green, flattened at base.

**Bark:** n/a

**Seed/Flowers:** Flowering stalk of many small greenish-white flowers.

**Buds/Twigs:** Large plant with a 'bamboo-like' stem. Stem light green maturing to tan colour.

**Habitat:** Moist to wet soils found in wetlands, water-courses and roadside ditches.

**Similar native species:** None.

## common reed

(*Phragmites australis*)



**Plant type:** Grass

**Arrangement:** Alternate

**Leaf:** Broad leaf > 1 cm wide.

**Bark:** n/a

**Seed/Flowers:** Dense cascading 'broom-like' flower head. 'Cottony' in appearance when mature.

**Buds/Twigs:** Stems rough and ridged, ligule a densely hairy band. Mature plants > 3 m tall.

**Habitat:** Moist to wet soils. Found in wetlands, water-courses and road side ditches.

**Similar native species:** Species of mannagrass (*Glyceria* sp) including tall northern, eastern and rattlesnake grass. A native common reed exists but has a smooth stem and the ligule is not hairy. It is also quite rare.



# giant hogweed

(*Heracleum mantegazzianum*)



**Plant type:** Herb. Mature plants can be over 3m tall.

**Arrangement:** Alternate

**Leaf:** Lobed leaf 1-2 m wide, lobes sharp-pointed.

**Bark:** n/a

**Seed/Flowers:** Small, white flowers in a large umbrella-shaped cluster, .75 m wide.

**Buds/Twigs:** Hairy stem with purple spots.

**Habitat:** Fresh to wet soils in forests, swamps, meadows, marshes.

**Similar native species:** Cow parsnip (*Heracleum maximum*) – has smaller flowers, no purple spots on stems. Angelica (*Angelica atropurpurea*) has a rounded-topped flower cluster and leaves divided into many leaflets.

**Do not touch this plant because it is poisonous. If you do, wash your skin immediately in cool soapy water and do not expose the area to sunlight.**

**Seek professional advice before removing.**

## Identification of Invasive Plants found in Ontario Photos by:

Credit Valley Conservation, Greg Bales, Ken Towle, Patrick Hodge,

Ontario Federation of Anglers and Hunters, Francine Macdonald, Matt Smith



