



# GEMTEC

[www.gemtec.ca](http://www.gemtec.ca)

**Environmental Impact Statement  
Proposed Development  
3025 Carp Road  
Geographic Township of Huntley  
Ottawa, Ontario**

experience • knowledge • integrity



expérience • connaissance • intégrité



# GEMTEC

[www.gemtec.ca](http://www.gemtec.ca)

Submitted to:

Argue Construction Ltd.  
2900 Carp Road  
Carp, Ontario  
K0A 1L0

**Environmental Impact Statement  
Proposed Development  
3025 Carp Road  
Geographic Township of Huntley  
Ottawa, Ontario**

August 6, 2020  
Project: 61730.61 - V04

## TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Purpose .....	1
1.2	Background.....	1
1.3	Objective.....	2
1.4	Physical Setting .....	2
1.4.1	Land Use Context .....	3
2.0	METHODOLOGY .....	3
2.1	Desktop Review .....	3
2.2	Field Investigations .....	3
2.2.1	Ecological Land Classification.....	4
2.2.2	Amphibian Breeding Survey.....	5
2.2.3	Turtle Basking Survey .....	5
2.2.4	Turtle Nesting Survey .....	5
2.3	Data Analysis.....	5
3.0	EXISTING ENVIRONMENT .....	6
3.1	Ecoregion .....	6
3.2	Landforms, Soils and Bedrock Geology .....	6
3.3	Surface Water, Groundwater and Fish Habitat.....	6
3.4	Vegetation Communities .....	7
3.5	Wildlife .....	8
4.0	NATURAL HERITAGE FEATURES.....	8
4.1	Significant Wetlands .....	8
4.2	Significant Woodlands .....	9
4.3	Significant Valleylands .....	9
4.4	Significant Areas of Natural and Scientific Interest .....	10
4.5	Significant Wildlife Habitat.....	10
4.5.1	Habitats of Seasonal Concentrations of Animals.....	10
4.5.2	Rare Vegetation Communities .....	11
4.5.3	Specialized Habitats for Wildlife .....	11
4.5.4	Habitats of Species of Conservation Concern .....	13
4.5.5	Animal Movement Corridors.....	14
4.6	Fish Habitat.....	14
4.7	Species at Risk .....	14
5.0	PROPOSED PROJECT .....	15
6.0	IMPACT ASSESSMENT .....	15

## TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Purpose .....	1
1.2	Background.....	1
1.3	Objective.....	2
1.4	Physical Setting .....	2
1.4.1	Land Use Context .....	3
2.0	METHODOLOGY .....	3
2.1	Desktop Review .....	3
2.2	Field Investigations .....	3
2.2.1	Ecological Land Classification.....	4
2.2.2	Amphibian Breeding Survey.....	5
2.2.3	Turtle Basking Survey.....	5
2.2.4	Turtle Nesting Survey .....	5
2.3	Data Analysis.....	5
3.0	EXISTING ENVIRONMENT .....	6
3.1	Ecoregion.....	6
3.2	Landforms, Soils and Bedrock Geology .....	6
3.3	Surface Water, Groundwater and Fish Habitat.....	6
3.4	Vegetation Communities .....	7
3.5	Wildlife .....	8
4.0	NATURAL HERITAGE FEATURES.....	8
4.1	Significant Wetlands .....	8
4.2	Significant Woodlands.....	9
4.3	Significant Valleylands .....	9
4.4	Significant Areas of Natural and Scientific Interest.....	10
4.5	Significant Wildlife Habitat.....	10
4.5.1	Habitats of Seasonal Concentrations of Animals.....	10
4.5.2	Rare Vegetation Communities .....	11
4.5.3	Specialized Habitats for Wildlife .....	11
4.5.4	Habitats of Species of Conservation Concern .....	13
4.5.5	Animal Movement Corridors.....	14
4.6	Fish Habitat.....	14
4.7	Species at Risk.....	14
5.0	PROPOSED PROJECT .....	15
6.0	IMPACT ASSESSMENT .....	15



6.1	Local Wetlands .....	16
6.2	Significant Woodlands .....	16
6.3	Significant Wildlife Habitat.....	17
6.3.1	<i>Confirmed</i> Woodland Amphibian Breeding Habitat .....	17
6.3.2	<i>Candidate</i> Turtle Nesting Habitat .....	18
6.4	Fish Habitat.....	18
6.5	Species at Risk .....	19
6.5.1	Bank Swallow .....	19
6.5.2	Barn Swallow .....	20
6.5.3	Eastern Small-footed Myotis .....	21
6.5.4	Little Brown Myotis.....	22
6.5.5	Tri-colored Bat .....	22
6.5.6	Blanding's Turtle .....	23
6.5.7	Butternut.....	24
6.6	Cumulative Impacts .....	25
7.0	RECOMMENDED AVOIDANCE AND MITIGATION MEASURES.....	25
7.1	Significant Wildlife Habitat.....	26
7.2	Fish Habitat.....	26
7.3	Species at Risk .....	28
7.3.1	Barn Swallow .....	28
7.3.2	Eastern Small-footed Myotis, Little Brown Myotis & Tri-colored Bat .....	28
7.3.3	Blanding's Turtle .....	28
7.4	Wildlife .....	29
7.5	Best Practice Measures for Mitigation of Cumulative Impacts .....	30
8.0	CONCLUSIONS.....	31
9.0	LIMITATION OF LIABILITY .....	32
10.0	REFERENCES.....	33

## LIST OF TABLES

Table 2.2	Summary of Field Investigations .....	4
Table 4.1	Summary of Turtle Basking Surveys.....	11
Table 4.2	Summary of Amphibian Breeding Call Surveys .....	12

## LIST OF APPENDICES

Appendix A	Report Figures
Appendix B	Site Photographs
Appendix C	Report Summary Tables
Appendix D	Tree Conservation Report
Appendix E	MNRF Habitat Descriptions
Appendix F	CVs for Key Personnel

## 1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Argue Construction Ltd. to complete an Environmental Impact Statement (EIS) for the property located in the Geographic Township of Huntley, Ottawa, Ontario (hereafter referred to as “the subject property”). The property is municipally addressed as 3025 Carp Road. The location of the subject property is illustrated on Figure A.1 in Appendix A.

### 1.1 Purpose

The property owner is seeking to develop the existing property for future commercial purposes. Based on *Section 4.7 – Environmental Protection* of the City of Ottawa Official Plan (Ottawa, 2012a) an EIS is required showing that the proposed development will not negatively impact any potential natural heritage features, which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2, in Appendix A.

### 1.2 Background

A historical EIS was prepared for the subject property in 2014 by Kilgour & Associates Ltd. (Kilgour) for a land severance application, to sever the eastern rural commercial zoning areas from the western and central mineral extraction areas on the remainder of the property.

GEMTEC has reviewed the Kilgour EIS and has found the methodologies employed, findings and evaluation of impacts to have been completed in a conservative manner following industry best practices. The Kilgour 2014 EIS determined that there would be no negative impacts on the natural heritage features on-site as a result of the proposed land severance.

The GEMTEC EIS, presented herein, further evaluates the impacts of the proposed development on the natural heritage features on-site while also incorporating Kilgour’s findings and observations in the assessment of natural heritage features. The proposed development, supported by this EIS, occurs on the severance parcel 3b identified in the 2014 Kilgour EIS report.

GEMTEC completed an initial EIS report, dated March 30, 2020 (Version 2) for the property, in support of the proposed development plan and was submitted to the City of Ottawa for review and comment. Following correspondence with City planning staff and GEMTEC biologists it was determined that an updated EIS report was required along with the completion of additional wildlife surveys for the site to further evaluate the presence or absences of species at risk and significant wildlife habitat.

### 1.3 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that “development and site alteration shall not be permitted in: significant woodlands, significant valleylands, significant wildlife habitat and significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.” Similarly, the 2020 Provincial Policy Statement states that development and site alteration shall not be permitted in fish habitat or habitats of species at risk except in accordance with provincial and federal requirements.” Furthermore, the 2020 Provincial Policy Statement states, “development and site alteration shall not be permitted on adjacent lands to natural heritage features unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. “

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed development on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following federal, provincial and municipal policies and guidelines:

- Provincial Policy Statement (MMAH, 2020);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010);
- City of Ottawa Official Plan (Ottawa, 2012a); and
- City of Ottawa EIS Guidelines (Ottawa, 2012b)

### 1.4 Physical Setting

The subject property is located on Part of Lot 11, Concession 1, in the Geographic Township of Huntley and is addressed as 3025 Carp Road. The subject property currently consists of vacant wasteland vegetation, a man-made pond resulting from previous mineral extraction activities and hedgerows of trees along the property boundaries. The subject property is bound to the north, south and west by neighbouring properties of Lot 11, Concession 3. To the east the site is bound by Carp Road and properties fronting to Carp Road.

### 1.4.1 Land Use Context

The subject property is situated within a larger peri-urban area consisting of commercial, light industrial, mineral extraction, residential and agricultural land uses. The existing land use designation from the City of Ottawa is rural employment area. The City of Ottawa zoning by-law is rural commercial zone (RC9).

## 2.0 METHODOLOGY

### 2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records and a review of SAR habitat requirements and range maps.

Following changes to the MNRF natural heritage information request process, as of 2019, the MNRF is no longer providing responses to these requests. As such, an information request was not submitted for this project. In lieu of a request response, the Natural Heritage Information Request Guide (OMNRF, 2018) was consulted and the data resources listed below were reviewed for relevant natural heritage feature and SAR data relating to the site.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make a Map: Natural Heritage Areas (OMNRF, 2014a)
- Land Information Ontario (OMNRF, 2011);
- City of Ottawa Official Plan (City of Ottawa, 2012a)
- Ontario Geological Survey (OGS, 2019);
- Fisheries and Oceans Canada SAR Maps (DFO, 2019);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007)
- Atlas of Mammals of Ontario (Dobbyn, 1994); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019).

### 2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.2 below. Photographs of site features taken during field investigations are provided in Appendix B.

**Table 2.2 Summary of Field Investigations**

Date	Time	Weather	Purpose
September 12, 2019	12:40-14:00	20°C, no precipitation, clear skies, Beaufort 3	Ecological Land Classification
September 27, 2019	08:30-13:25	8°C, no precipitation, clear skies, Beaufort 2	Tree Inventory
April 7, 2020	10:00-12:00	13°C, no precipitation, partly sunny (3/10 cloud cover), Beaufort 2	Turtle Basking Survey
April 27, 2020	13:00-14:00	12°C, no precipitation, partly sunny (5/10 cloud cover), Beaufort 3	Turtle Basking Survey
April 30, 2020	23:55 – 00:05	15°C, light rain, overcast (10/10 cloud cover), Beaufort 2	Amphibian Breeding Survey
May 5, 2020	14:15-15:15	9°C, no precipitation, sunny (1/10 cloud cover), Beaufort 3	Turtle Basking Survey
May 20, 2020	10:00-11:00	16°C, no precipitation, sunny (0/10 cloud cover), Beaufort 1	Turtle Basking Survey
May 27, 2020	10:00-10:45	22°C, no precipitation, mostly sunny (2/10 cloud cover), Beaufort 1	Turtle Basking Survey
May 28, 2020	17:50-18:25	26°C, light rain, overcast (10/10 cloud cover), Beaufort 4	Turtle Nesting Survey
	22:00-22:45	22°C, light to intermittent rain, overcast (10/10 cloud cover, Beaufort 4	
May 28, 2020	00:25-00:45	25°C, no precipitation, cloudy (9/10 cloud cover), Beaufort 2	Amphibian Breeding Survey
June 16, 2020	00:15-00:30	15C, no precipitation, clear skies (1/10 cloud cover), Beaufort 1	Amphibian Breeding Survey, Turtle Nesting Survey

### 2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on September 12, 2019, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

### **2.2.2 Amphibian Breeding Survey**

Breeding amphibian surveys were conducted on three occasions at one point count location; refer to Figure A.3. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008).

Surveys were conducted no earlier than one half-hour after sunset and concluded by midnight, to encompass peak amphibian calling activity. The first survey was conducted when night air temperatures were a minimum of 5°C, the second survey was conducted when night air temperatures were a minimum of 10°C, and the third when night air temperatures were a minimum of 17°C. Breeding amphibian surveys consisted of 3 minutes of passive listening, in which all amphibians heard within the survey period were recorded, along with an estimation of abundance. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C.

### **2.2.3 Turtle Basking Survey**

In order to address the potential for the site to provide turtle overwintering and to assess the presence or absence of Blanding's turtle, a species at risk, a series of five turtle basking surveys were conducted following the approved protocol for Blanding's turtles established by the MNRF (2015). A list of all turtle species identified on-site is provided in Table C.1 in Appendix C.

### **2.2.4 Turtle Nesting Survey**

In order to address the potential for the site to provide turtle nesting habitat, turtle nesting surveys were conducted following the approved protocol for Blanding's turtles established by the MNRF (2015). A list of all turtle species identified on-site is provided in Table C.1 in Appendix C.

## **2.3 Data Analysis**

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion 6E Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b).

### **3.0 EXISTING ENVIRONMENT**

#### **3.1 Ecoregion**

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C with annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

#### **3.2 Landforms, Soils and Bedrock Geology**

The topography of the site is relatively flat, with a gentle downward slope, from a topographical high of 120 mASL to a topographical low of 116 mASL, towards the pond in the northwest corner of the property. The pond on-site has a significant change in elevation along the banks of the northern, eastern and southern edge of the pond, consistent with mineral extraction practices. The elevation around the north, east and south of the pond drops steeply from 118 mASL to approximately 116 mASL at the waters edge.

A single topographical landform, as mapped by Chapman and Putman (1984) is described on the subject property, the sand plains of the Ottawa Valley Clay Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property. The largest surficial soil unit consists of coarse-textured glaciomarine deposits comprised of littoral deposits and foreshore and basinal deposits that both consist of sand, gravel, minor silt and clay. Glaciomarine deposits occur through the central and western portions of the subject property. The second surficial soil unit on-site consists of stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain, which occurs in the eastern portion of the property, along Carp Road. Site specific studies undertaken in 2019 indicate the site contains areas of thin soil cover, ranging from 0 to 3.3 m deep.

Bedrock at the site is composed of the Ottawa Group, Simcoe Group and Shadow Lake Formation comprised of limestone, dolostone, shale, arkose and sandstone.



### **3.3 Surface Water, Groundwater and Fish Habitat**

Surface water features on-site consist of the man-made pond and based on aerial imagery, an ephemeral watercourse.

According to the property owner, the man-made pond receives surface water inputs from the adjacent agricultural field located to the north. Similarly, during periods of high water within the pond, generally interpreted to occur during the spring freshet, the pond receives discharge from the forested wetland and woodland located west of the site via a drainage ditch.

Based on a review of topography in the vicinity of the site, prior to excavation activities and the creation of the man-made pond, it appears as though a headwater drainage feature originated within the off-site woodland to the west, flowing east towards the pond prior to turning north and ultimately discharging to the Carp River.

Currently, as a result of on-site historical mineral extraction practices and off-site agricultural practices, the on-site pond does not have any connectivity to other surface water features and is considered an isolated man-made surface water feature. It is assumed that outside of the spring freshet, the man-made pond only receives inputs from precipitation and groundwater discharge.

A fisheries assessment was not conducted as part of this EIS, however based on observations made during the site investigation, the pond on-site provides fish habitat for cyprinids and other small-bodied fish species.

Groundwater information at the site is provided in the Hydrogeological Investigation, Terrain Analysis & Impact Assessment report (GEMTEC, 2019a). As part of this investigation, one shallow groundwater monitoring well was advanced from ground surface (120.19 mASL) until practical auger refusal on assumed bedrock at a depth of 3.33 mBGS (116.86 mASL) on September 6, 2019. The well was noted as dry during subsequent water level surveys on September 24, 2019.

It is noted that the surface water elevation in the pond is approximately 116 mASL. As such, surface water in the pond is interpreted to be an expression of the groundwater table which is likely perched atop the underlying bedrock. This interpretation is supported by the site location within an area of low to moderate groundwater recharge as identified in the Carp Road Corridor studies (City of Ottawa, 2004; Dillion, 2004).

### **3.4 Vegetation Communities**

Vegetation communities on-site were characterized by Kilgour (2014) and GEMTEC in 2019, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a cultural meadow, and open water from previous mineral extraction activities. The 2019 ELC findings were consistent with those presented in Kilgour, 2014.

In accordance with the sites previous uses (mineral extraction and construction yard), the cultural meadow on-site is dominated by species typical of wastelands and heavily disturbed areas.

Tree species were primarily confined to the hedgerows along the north property boundary, and surrounding the pond. Tree species on-site primarily consisted of early successional deciduous species including: eastern cottonwood (*Populus deltoides*), Manitoba maple (*Acer negundo*), balsam poplar (*Populus balsamifera*), slender willow (*Salix petiolaris*), green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*), white willow (*Salix alba*), trembling aspen (*Populus tremuloides*), large tooth aspen (*Populus grandidentata*) and white poplar (*Populus alba*).

A tree conservation report was conducted for the property to identify trees to be retained and protected under future development and, where feasible, identify opportunities to offset the loss of trees that cannot be retained or contribute to the City's forest cover targets. The Tree Conservation Report (TRC) completed for the subject property is provided in Appendix D.

### **3.5 Wildlife**

Wildlife observed on-site and within the study area during field investigations completed in 2019 and 2020 are summarized in Table C.1 in Appendix C.

## **4.0 NATURAL HERITAGE FEATURES**

Natural heritage features are defined in the PPS as “features and areas, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

### **4.1 Significant Wetlands**

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands mean “lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* in regards to wetlands means “an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.”

No provincially significant wetlands were identified during the desktop review, nor were any local wetlands identified on-site during the site investigations. A single local wetland was identified adjacent to site during the desktop review. The NHIC and Mississippi Valley Conservation Authority (MVCA) identify a local wetland just west of the subject property, on the neighbouring portion of Lot 11. Local wetlands have not been identified on the subject property. As no

PSW's have been identified on-site or within 120 m for the site, PSW are not present within the study area and are not discussed or evaluated further in this EIS. Potential impacts to local wetlands are discussed in Section 6.

## **4.2 Significant Woodlands**

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) 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; or economically important due to site quality, species composition, or past management history.”

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the natural heritage reference manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values. Furthermore, the City of Ottawa provides a supplementary document *Significant Woodland: Guidelines for Identification, Evaluation, and Impact Assessment* (Ottawa, undated) to evaluate woodlands and ensure compliance with the city's policies.

As outlined in *Significant Woodlands: Guidelines for Identification, Evaluation and Impact Assessment* (Ottawa, undated), rural area woodlands are to be identified and evaluated using all the natural heritage resource manual (OMNR, 2010) criteria. Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. For comparison of woodland criteria used in Table C.2, it is assumed that the woodland coverage within the planning area (City of Ottawa – Rural Planning Area – Ottawa West) is between 30% and 60% of the land area, therefore the minimum woodland size for determining significance is 50 ha or greater, based on the guidance outlined in the natural heritage reference manual (OMNR, 2010).

Based on a review of screening criteria outlined in the natural heritage reference manual (OMNR, 2010), the offsite woodland located west of the pond is considered a significant woodland based on proximity to fish habitat located on-site and based on the presence of a local wetland within the off-site woodland. The on-site hedgerows located along the north side of the pond are connected to the significant woodlands offsite.

Potential impacts to offsite significant woodlands are presented in Section 6.

## **4.3 Significant Valleylands**

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as ‘a natural area that occurs in a valley or other landform depression that has water flowing through or

standing for some period of time”. The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the ‘top-of-bank’ or ‘top-of-slope’ associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

As discussed in Section 3.2, the site is relatively flat, further more no valleylands were identified on-site during the desktop review or the site investigations. As such significant valleylands are not discussed or evaluated further in this EIS.

#### **4.4 Significant Areas of Natural and Scientific Interest**

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario’s biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

#### **4.5 Significant Wildlife Habitat**

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (MNRF, 2000) and the significant wildlife habitat ecoregion criterion schedules (MNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Table C.3, C.4, C.5 and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

##### **4.5.1 Habitats of Seasonal Concentrations of Animals**

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) identify 12 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 12 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why they are or are not assessed further in this EIS.

#### 4.5.1.1 Turtle Overwintering Area

Following consultation with City of Ottawa planning staff, due to the naturalized nature of the pond and the potential for Blanding's turtle to occur on-site a series of five basking turtle surveys were completed for the property. The results of the basking turtle surveys are presented in Table 4.1 below.

**Table 4.1 Summary of Turtle Basking Surveys**

Location	Species / Highest Number Observed / Date	Confirmed SWH
On-site Pond	Midland painted turtle / 22 / May 5 and May 20, 2020	No*
	Snapping turtle / 1 / May 5, 2020	

The basking turtle survey results presented above indicate that the pond meets the defining use criteria established in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (OMNRF, 2015), based on the presence of five or more midland painted turtles and the presence of one or more snapping turtle. However, as outlined in the criteria schedule, man-made ponds should not be considered significant. As such, the site does provide general habitat for overwintering turtles but it is not considered to provide significant wildlife habitat, as defined by the MNRF for overwintering turtles.

Impacts to general turtle wintering habitat from the proposed development are discussed in Section 6.

#### 4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

#### 4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wildlife habitats are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, two specialized habitats for wildlife have been identified on-site or within the study area, turtle nesting habitat and woodland amphibian breeding habitat.

#### 4.5.3.1 Turtle Nesting Habitat

The area surrounding the western side of the pond has the potential to provide *candidate* turtle nesting habitat, due to exposed sand and gravel soils adjacent to the pond in open and sunny areas. Along the northern, eastern and southern sides, the slopes of the banks are generally too steep for turtles to navigate or climb, are highly vegetated and are unlikely to provide suitable turtle nesting habitat, relative to the western portion of the site. Potential impacts to *candidate* turtle nesting area SWH are discussed in Section 6.

#### 4.5.3.2 Woodland Amphibian Breeding Habitat

*Candidate* woodland amphibian breeding habitat was identified within the man-made pond that occurs on-site. To evaluate the potential for the pond to provide *confirmed* woodland breeding amphibian habitat, a series of amphibian breeding surveys were conducted.

Woodland amphibian breeding habitat provides critically important habitat for the following wildlife species: eastern newt, blue-spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog (OMNRF, 2015). The defining criteria for confirmed woodland amphibian breeding significant wildlife habitat is the presence of breeding populations of two or more of the listed frog species with at least 20 individuals, or two or more listed frog species with a call level code of 3. Table 4.2 below provides a summary of the results of the breeding amphibian surveys.

**Table 4.2 Summary of Amphibian Breeding Call Surveys**

Survey Location	Breeding Habitat	Species / Highest Call Code / Date	Confirmed SWH
On-site Pond	Woodland	SPPE / 3 / April 30 & May 28, 2020	Yes
		GRTR / 3 / May 28 & June 16, 2020	
		AMTO / 1* / May 28, 2020	
		GRFR / 1-3 / June 16, 2020	
		**NLFR	

**Notes:** SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green frog, AMTO = American toad, NLFR = Northern leopard frog. Call Codes: the first number indicates the call codes where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping such that estimates of individuals are not reliably estimated. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

\*Species abundance number was not recorded during the survey.

\*\*Species was not detected during targeted amphibian breeding surveys, but through incidental encounters.

Following review of Table 4.2 above, the pond on-site provides *confirmed* woodland amphibian breeding significant wildlife habitat, due to the presence of two indicator species (spring peeper, and gray treefrog) with a call code of 3. Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (MNRF, 2015), woodland amphibian breeding habitat is considered to be the forested wetland to the west of the pond area plus a 230 m radius of woodland area.

SWH for woodland breeding amphibians is illustrated in Figure A.4 in Appendix A. Potential impacts to *confirmed* woodland amphibian breeding SWH are discussed in Section 6.

#### **4.5.4 Habitats of Species of Conservation Concern**

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015a), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015a), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.6 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS.

Following review of Table C.5 in Appendix C, one habitat of species of conservation concern has been identified on-site: habitats of species of special concern and rare wildlife (snapping turtle).

##### **4.5.4.1 Special Concern and Rare Wildlife Species (Snapping Turtle)**

Based on NHIC occurrence data and observations taken during field investigations, one species of special concern or rare wildlife species has been identified as having the potential to occur on-site, snapping turtle.

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) in Ontario. Snapping turtle was observed aqua-basking on-site during a site investigation on May



5, 2020. Snapping turtles are aquatic generalists, found in a variety of wetlands, waterbodies and watercourses. Based on the documented presence of snapping turtles and the availability of suitable aquatic habitat on-site, there is a high chance for snapping turtle or suitable habitat to occur on-site.

Impacts to habitats of species of conservation concern SWH are discussed in Section 6.

#### **4.5.5 Animal Movement Corridors**

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridors: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, no animal movement corridors have been identified on-site. As such they are not discussed or evaluated further in this EIS.

#### **4.6 Fish Habitat**

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means “water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.”

When development is unable to avoid resulting in a harmful alteration, disturbance of the destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

As discussed in Section 3.3, the pond on-site provides fish habitat for cyprinids and other small-bodied fish species. Impacts to fish habitat on-site are discussed in Section 6.3.

#### **4.7 Species at Risk**

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.3 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their regional distribution, their



probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in the Section 6.3.

## **5.0 PROPOSED PROJECT**

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area includes the development of a truck repair facility, including a warehouse building with office space, access roadway, truck and office parking areas, and a new water well and septic system. The building will consist of a slab on grade warehouse building with a footprint of about 874 m<sup>2</sup>. In addition to the new commercial building, an approximately 8,437 m<sup>2</sup> gravel parking lot will be constructed with a paved laneway access to Carp Road.

Stormwater management proposed for the site includes the creation of a stormwater detention area with a bottom area of 636 m<sup>2</sup>. The detention area will have capacity to retain a 5-year flood volume of 110 m<sup>3</sup> and a 100-year volume of 218 m<sup>3</sup>. Two infiltration trenches of 90 m<sup>2</sup> are proposed for the detention area. Two inlet control devices are proposed within the two culverts of the stormwater detention area and will be 'plug' style. An overflow weir is also proposed as a component of the stormwater management for the site. To address overland flow during storm events, new grades are to match existing grades at the property line and all areas shall be graded to ensure adequate drainage towards basins, swales, ditches and approved disposal areas. It should be noted that the proposed stormwater management is located within the pond's buffer area outlined in Section 7; in effort to minimize disturbance within the buffer and to ensure the protection objective of the buffer are maintained, a robust landscaping plan is recommended to naturalize the stormwater management to the extent possible.

Further, to address ongoing erosion and sloughing to the pond rip-rap installation is proposed to stabilize the banks of a localized area where the embankment is being undercut, alongside the access road to the south of the pond. The proposed rip-rap area is illustrated on Figure A.3, is 1.1 m long and is proposed to cover 2/3 of the pond slope. It should be noted that the proposed rip-rap installation is located within the ponds buffer area outlined in Section 7, however it is anticipated that the rip-rap will provide a benefit to the existing environment by reducing shoreline erosion and sloughing into the pond.

Additional components of the development will include: tree clearing and vegetation grubbing, fill placement and elevation grading, drilling of a new groundwater well, septic system installation, and general landscaping activities.

## **6.0 IMPACT ASSESSMENT**

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in

Section 5. Natural heritage features identified in Section 4 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the environment of the site from the proposed development outlined in Section 5 include: an increase in impervious surface, increase in stormwater generation, short-term increases in sedimentation and/or erosion and increased noise generation.

## **6.1 Local Wetlands**

NHIC and MVCA have identified a local wetland located off-site, immediately adjacent to the south west. The local wetland covers approximately 26 ha or 31% of Lot 11, Concession 3 on which it is located. Based on an review of aerial photography, it appears as though the local wetland is comprised of lowland deciduous and moisture tolerant coniferous forest species, indicative of lowland swamps common throughout the National Capital Region.

The extents of the local wetland are well correlated with soil mapping provided by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA, 2020) which identifies this soil unit as the Vaudreuil soil consisting of loamy fine sands which are noted as a slow drainage hydrologic soil group. For comparison, the subject site is located within an area of Oka soils consisting of loamy sand which are noted as high drainage hydrologic soil group. Accordingly, OMAFRA has identified soils within the off-site adjacent local wetland as poorly drained and the on site soils as well drained. The topography of the off-site local wetland ranges from 119 to 120 mASL, approximately three to four meters higher in elevation than the on-site pond (116 mASL).

Based on the information presented in Section 3.3 relating to the geology and hydrogeology of the site, the proposed project outlined in Section 5 and the information summarized above, it is GEMTECs opinion that the proposed project will not negatively effect the hydrologic regime of the off-site local wetland. This conclusion is based on the opinion that the proposed development is unlikely to result in the alteration of the local groundwater table, the fact that the off-site wetland is located at a higher elevation than the pond and that the off-site wetland is likely a result of the poorly drained underlying soils. Accordingly, impacts to off-site local wetlands are not discussed further in this report and no mitigation measures are provided.

## **6.2 Significant Woodlands**

Significant woodlands were identified offsite, immediately adjacent to the on-site pond. Treed vegetation located north of pond, on-site, is connected to the offsite woodlands by a narrow (< 10 m wide) hedgerow. The off-site significant woodlands are considered significant due to their proximity to fish habitat (on-site) and local wetlands (off-site).

Based on a review of Section 3.3 and Section 5, the proposed project is not anticipated to result in any negative impacts to the offsite significant woodlands as the project is unlikely to result in any changes to the hydrological regime of the on-site pond and the offsite local wetlands.

Historical aerial photographs reviewed from 1976, indicate the portion of the offsite woodland located nearest to the site was pasture land which regenerated until sometime between 1991 and 1999 when it was again cleared. Since 1999, the woodland has continued to regenerate. Also present in the 1976, 1991, 1999 and up to 2014 aerial photographs is the existing pond and the historical aggregate extraction activities. Previous aggregate extraction activities occurred within and directly adjacent to the on-site pond and contained no storm water management activities. Despite this significantly more intensive operation, the off-site significant woodland continued to regenerate and encroach on the pond with no apparent impact.

In addition to the above, and as outlined in Section 6.1 above, the local wetlands within the significant woodland offsite are not anticipated to be impacted by the proposed project.

As both components of the significant woodland (local wetlands and fish habitat proximity) are unlikely to be impacted by the proposed project and given the physical separation distance between the woodlands and the development area (~ 225m), no impacts to off-site significant woodlands are anticipated. As such, significant woodlands are not discussed further in this EIS and no mitigation measures are provided in Section 7.

### **6.3 Significant Wildlife Habitat**

The potential presence of *candidate* significant wildlife habitat on-site and within the study area was evaluated in Section 4.5. As a result of this assessment two types of *candidate* significant wildlife habitat were determined to be present on-site or within the study area; woodland amphibian breeding SWH and turtle nesting SWH.

Potential impacts to each type of SWH are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

#### **6.3.1 Confirmed Woodland Amphibian Breeding Habitat**

*Confirmed* woodland amphibian breeding habitat is confined to the pond on-site, and the 230 m radius that extends into the adjacent woodland. Based on the habitat description outlined in the Significant Wildlife Habitat Criteria Schedule (OMNRF, 2015) habitat for woodland breeding amphibians is the wetland area plus a 230 m radius of woodland area. The area of proposed development on-site is not woodland habitat and is therefore not considered a part of the woodland amphibian breeding SWH.

As no in-water work is proposed as part of the development, potential impacts to woodland amphibian breeding SWH are anticipated to be indirect in nature. Indirect impacts may include alterations to water quality due to nutrient and sediment loading as well as alterations to the hydrologic regime due to loss of riparian vegetation and increases in impermeable surfaces and increases in storm water runoff.

Impacts to migrating amphibians are not anticipated to be impacted primarily due to the location of available and suitable habitat on-site during non-breeding life-cycle periods. The north, east and south slopes of the pond bank are considerably steeper than the banks of the west side and present a migration barrier to amphibians, especially east and south of the pond. Furthermore, suitable woodland habitat for amphibians occurs only to the west of the pond. The vegetation to the east is characterized primarily of vegetation indicative of wastelands and areas of high disturbance which provide minimal foraging and shelter habitats for amphibian species. Similarly, the habitat to the north consists of a narrow hedgerow followed by annual row-crop agricultural fields. As such, the proposed development to the east of the pond is unlikely to impact amphibians migrating between breeding and non-breeding habitat, as the only viable woodland amphibian habitat is located west of the pond.

Mitigation measures to protect confirmed woodland amphibian breeding habitat are provided in Section 7.

### **6.3.2 Candidate Turtle Nesting Habitat**

*Candidate* turtle nesting habitat is confined to the area west of the pond, primarily due to the topography of the pond banks and vegetation cover. The north, east and south slopes of the pond banks are considerably steeper presenting a migration barrier. Furthermore, vegetation cover is denser with less exposed sand and gravel soils on the east side of the man-made pond, whereas the west bank has more gentle slopes with exposed substrates in open, sunny areas. As development is not proposed for the area west of the pond, impacts to *candidate* turtle nesting habitat are not anticipated; however, mitigation measures intended to protect migratory and nesting turtles are provided in Section 7.

## **6.4 Fish Habitat**

According to the Provincial Policy Statement (MMAH, 2014), “development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.” Fish habitat as defined in the Fisheries Act (Canada, 1985) means “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

Based on a review of DFO guidelines relating to types of projects where a review isn't required, the project supported by this EIS does not need a DFO as the on-site pond is considered to be disconnected from another fish bearing watercourse and is artificial in nature (exhausted aggregate pit). Furthermore, as no in-water work is anticipated as part of the proposed project, potential impacts to fish habitat are anticipated to be indirect in nature. Potential indirect impacts to water quality and fish habitat from the proposed commercial development may include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, increased nutrient and/or contaminant loading through both overland and subsurface pathways resulting from landscaping practices and septic leachate.

Mitigation measures, intended to protect fish habitat on-site are presented in Section 7.

## **6.5 Species at Risk**

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.7, are discussed on a species-by-species basis in the subsections below.

### **6.5.1 Bank Swallow**

The bank swallow (*Riparia riparia*) is a small-sized, insectivorous bird with brown upperparts, white underparts and a distinctive dark breast band. Bank swallow is the smallest of the North American swallows, it has a chunky body, large head, relatively short pointed wings and a slightly forked tail.

In Canada, the breeding range for bank swallow extends across most of Canada and Alaska, and extends over the northern two-thirds of the United States (COSEWIC, 2013a). In Ontario the bank swallow occurs most commonly in the lower Great Lakes – St. Lawrence Valley region, it is sparsely distributed throughout the Canadian Shield and Hudson Bay Lowlands (COSEWIC, 2013a).

Bank swallow breed in a wide variety of low-elevation natural and anthropogenic habitats including lake and ocean bluffs, stream and river banks, sand and gravel pits, roadcuts and piles of sand, topsoil, sawdust, coal ash and other materials. They are colonial nesters and nest burrows are nearly always in a vertical or near-vertical bank (COSEWIC, 2013a). Vertical banks are typically composed of unconsolidated substrates (e.g. silty fine sands). Breeding sites are typically situated in the vicinity of open foraging sites such as rivers, lakes, oceans, grasslands, agricultural croplands, and wetlands.

Bank swallow were observed foraging over the on-site pond during the site investigations. No suitable nesting sites or nests were observed on-site. The banks of the pit walls are too heavily vegetated to provide suitable habitat for nesting colonies. Based on the MNR General Habitat Description for bank swallow (provided in Appendix E), Category 1 consist of the breeding colony, Category 2 habitat includes the area within 50 m in front of the colony and allows for bank swallows to enter and exit burrows, and category 3 habitat extends 500 m from the edge of the breeding colony and includes all areas of suitable foraging habitat.

During the field investigations, no breeding colony or suitable breeding colony habitat was observed on-site or in the broader study area. Based on observations during the site investigation and of aerial photography of the surrounding area, potentially suitable colony locations (e.g. aggregate pits), are located greater than 500 m from site. As such no regulated bank swallow Category 1, Category 2 or Category 2 habitat has been identified on-site.

Under the City of Ottawa's zoning regulations, a maximum of 25% lot coverage is permitted. Given the fact that, with the exception of the rip-rap shoreline stabilization, there will be no alterations to the pond and maximum of 25% of the open habitat available on-site will be lost, long-term negative impacts to non-regulated, general foraging habitat are not anticipated.

As foraging habitat function is being maintained on-site and no regulated habitat has been identified on-site, no negative impacts are anticipated to occur to bank swallow as a result of the proposed development. As such, no mitigation measures are provided for bank swallow in Section 7 and they are not discussed further in this EIS.

#### **6.5.2 Barn Swallow**

The barn swallow (*Hirondelle rustique*) is a medium-sized, insectivorous bird with a slightly flattened head and broad shoulders that taper to long, pointed wings. The forked tail is long and extends beyond wingtips when perched. Barn swallows have blue-black coloured wings and tail, with a whitish to orange underside and dark rufous throat.

While most abundant in Ontario south of the Shield, the breeding range for barn swallow in Ontario extends from the Carolinian region in extreme southwest Ontario to the Hudson Bay Lowlands (Cadman et al., 2007). In Ontario, breeding bird survey data demonstrated a decline in barn swallow populations of 60-75% between the first and second breeding bird atlas.

Barn swallows typically build their nests out of mud on ledges or walls on barns or other human made structures. Natural sites, including cliffs and caves are not rarely used for nesting (Cadman et al., 2007). Foraging occurs fields and ponds. Barn swallows are less common in highly urban area and areas with higher forest cover (Cadman et al., 2007).

The 2014 EIS completed by Kilgour identified three nests observed on the two barn buildings on-site, following the severance of the original property parcel, the barn buildings now occur on the abutting property to the south. The presence of active nests on the barn structures indicates the presence of Category 1 habitat for barn swallow, which encompasses the nest cup. Category 2 habitat consists of the area within 5 m from the nest cup, and is primarily used for roosting, feeding, rearing and resting. Category 3 habitat consists of the area between 5 m and 200 m from the nest cup and is used for rearing, feeding and resting. While Category 1 and Category 2 habitat no longer occurs on-site, a total of 12.57 ha of Category 3 habitat extends on-site and is primarily composed of the pond and open areas. Regulated barn swallow habitat is identified on Figure A.3 in Appendix A.



Impacts to barn swallow from the proposed development are limited to Category 3 habitat on-site. As outlined in the MNRF General Habitat Description for barn swallow (provided in Appendix E), Category 2 habitat has a moderate tolerance to alteration and Category 3 has a high tolerance to alteration. Impacts to Category 3 habitat will include a minor loss of foraging habitat associated with the open meadow habitat fronting to Carp Road. As Category 3 habitat is more tolerant to alteration and disturbance than Category 1 and 2 habitat, these alterations to the land use are anticipated to minimally impact the nesting and foraging behaviour of barn swallow within the study area.

Given the barn swallows affinity for foraging above water, foraging habitat on-site is primarily associated with the pond, and to a lesser extent, the open habitat surrounding the pond. Under the City of Ottawa's zoning regulations, a maximum of 25% lot coverage is permitted. Given the fact that, with the exception of the rip-rap shoreline stabilization there will be no alterations to the pond and a maximum of 25% of the open habitat available on-site will be lost, long-term negative impacts to foraging habitat on-site are not anticipated.

As outlined in the MNRF General Habitat Description, "*Activities in general habitat can continue as long as the function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed.*" With the exception of the rip-rap shoreline stabilization, no modifications are proposed to occur to the man-made pond located on-site, furthermore a majority of the eastern portion of the property will remain open for the gravel parking lot, maintaining the aerial foraging function both of these areas currently provide. As foraging habitat function is being maintained within the Category 3 habitat and no impacts are proposed to occur to Category 1 or Category 2 habitat, no negative impacts are anticipated to occur to barn swallow as a result of the proposed development. As such, mitigation measures are not provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EIS.

### **6.5.3 Eastern Small-footed Myotis**

Eastern small-footed Myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed Myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed Myotis is very similar in appearance to the little brown Myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed Myotis is found throughout eastern North America. In Ontario the species has been observed in the areas south of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed Myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and

draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2019a).

While there is no woodland habitat on-site to support bat maternity colonies, given the availability of habitat and potentially suitable roosting structures/buildings adjacent to site and within the study area, there is a potential for eastern small-footed *Myotis* to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed *Myotis* are primarily associated with, habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed *Myotis* from impacts of the proposed development are discussed in Section 7.

#### **6.5.4 Little Brown Myotis**

Little Brown *Myotis* (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a Little Brown *Myotis* is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the Little Brown *Myotis* is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, Little Brown *Myotis* occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the Little Brown *Myotis* is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2019b).

Little Brown *Myotis* overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2019b). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little Brown *Myotis* roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clear-cuts are not typically utilized for foraging (COSEWIC, 2013b).

While there is no woodland habitat on-site to support bat maternity colonies, given the availability of habitat and potentially suitable roosting structures/buildings adjacent to site and within the study area, there is a potential for little brown *Myotis* to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown *Myotis* are primarily associated with, habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect little brown *Myotis* from impacts of the proposed development are discussed in Section 7.

#### **6.5.5 Tri-colored Bat**

Tri-colored bat (*Perimyotis subflavus*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip.



The snout of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013b).

Tri-colored bat overwinter in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013b). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013b).

While there is no woodland habitat on-site to support bat maternity colonies, given the availability of habitat and potentially suitable roosting structures/buildings adjacent to site and within the study area, there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss of marginal roadside forest habitat, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

#### **6.5.6 Blanding's Turtle**

Blanding's turtles (*Emydoidea blandingii*) have a highly domed, smooth black carapace with small, irregular tan or yellow flecking. The most distinctive characteristic of this species is the bright yellow chin and throat. Their hinged plastron is yellow with a large dark blotch in the corner of each scute, but may also be entirely black (Oldham and Weller, 2000).

In Canada, Blanding's turtles are found throughout southern and south-central Ontario from south of Manitoulin Island to western Quebec. In Ontario, Blanding's turtles are often observed utilizing eutrophic habitats with clear water (COSEWIC, 2005). This turtle species occurs primarily in shallow water; adults are generally found in open or partially vegetated sites, where as juveniles prefer areas that contain thick aquatic vegetation. Blanding's turtles are known to make large overland journeys between connected lakes, rivers, streams, marshes or ponds, upwards of 6 km in a single active season. Overwintering occurs in permanent pools that average about one metre in depth, or slow flowing streams (COSEWIC, 2005).

The site is located within a greater area of known Blanding's turtle occurrences; correspondence with City of Ottawa planning staff and MECP staff indicates that Blanding's turtles have been observed within the vicinity of the property, along McGee Side Road. However; the exact location of the Blanding's turtle observation was not disclosed. Based on conservative assumptions, the on-site pond is accordingly assumed to provide Category 2

habitat, which consists of the pond and a 30 m radius around the pond as described in the MNRF General Habitat Description (provided in Appendix E). Category 3 habitat on-site consists of the area between 30 m and 250 m around the pond.

While the pond on-site is assumed to provide Category 2 habitat, Blanding's turtles were not observed on-site during turtle basking or nesting surveys. Furthermore, while the pond meets the defining use criteria for turtle wintering habitat, as outlined in the Natural Heritage Reference Manual, it is not considered significant wildlife habitat due to the man-made nature of the pond. The site also contains open, sandy habitat surrounding the northwest side of the pond, which provides *candidate* turtle nesting habitat. Given the occurrence along McGee Side Road, the assumed presence of Category 2 and Category 3 habitat on-site, suitable turtle overwintering and turtle nesting conditions, there is a potential for Blanding's turtles to occur on-site. The pond and surrounding habitat has the potential to be used for migration, dispersal and daily movement, however, based on field investigations and correspondence with the MECP, no Category 1 habitat has been confirmed for the site.

Potential impacts to Blanding's turtles are anticipated to be indirect in nature. Construction is anticipated to occur over multiple months and will primarily impact Category 2 and Category 3 habitat and potential transient Blanding's turtles moving through the development area. Potential impacts from construction are likely to include increased disturbance. Residual impacts from the proposed development following the completion of construction include the loss of approximately 0.07 ha of a total 2.70 ha of Category 2 Blanding's turtle habitat present on-site and 1.09 ha of 4.55 ha of Category 3 Blanding's turtle habitat present on-site. Impacts of increased human-wildlife disturbance is primarily limited to transient turtles contacting people or vehicles. As no in-water work is proposed as part of the development plan, potential impacts to water quality include sediment and nutrient transport from poorly installed septic systems, increased imperviousness and increased stormwater runoff. Impacts to transient Blanding's turtles will be more likely during migratory and nesting periods. Migration and dispersal take place after the start of the active season, following ice-off, and in September when turtles return to their overwintering habitat. Nesting typically take place between late May to early July.

Avoidance and mitigation measures intended to prevent harm to Blanding's turtles who have the potential to occur on-site are presented in Section 7.

#### **6.5.7 Butternut**

Butternut (*Juglans cinerea*) is a short lived, medium-sized tree that can reach up to 30 m in height. Butternut is easily recognized by its compound leaves, made up of 11 to 17 leaflets, each 9 to 15 centimetres long, arranged in a feather-like pattern. The bark is grey and smooth in younger trees, and becomes rigid with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The range of butternut trees in Canada extends from southern Ontario into southern Quebec and New Brunswick (COSEWIC, 2003). It is shade intolerant and prefers riparian habitats or sites with rich, moist, well-drained loams and gravels with limestone origin. Common associates for butternut include: basswood, black cherry, beech, black walnut, elm, hickory, oak, red maple, sugar maple, yellow poplar, white ash and yellow birch.

No butternut trees were observed on-site during any of the site investigations. Furthermore, no butternut observation records were provided by the NHIC for the single 1 km grid square that encompasses the site. As no butternuts were documented on-site no mitigation measures are provided in Section 7 in relation to butternut and they are not discussed or evaluated further in this EIS.

## **6.6 Cumulative Impacts**

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, increases in nutrient loading to adjacent aquatic features and the loss of marginal roadside meadow and thicket habitat, primarily for avian species.

Cumulative impacts to the natural environment at the site due to increased human presence are expected to be negligible given the nature of the development; commercial repair buildings, on a rural lot within a larger rural residential, commercial, light industrial, agricultural and mineral extraction land use area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

## **7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES**

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6. As such, the following avoidance and mitigation measures should be enforced throughout the development through application of Site Plan Controls.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated

with anthropogenic activities in adjacent lands (Beacon, 2012). In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

## **7.1 Significant Wildlife Habitat**

The 20 m setback recommended below, for the protection of fish habitat is sufficient to protect *candidate* turtle nesting habitat and *confirmed* woodland amphibian breeding habitat.

To protect migrating amphibians and turtles associated with SWH on-site, exclusion fencing should be installed around the entire construction area prior to construction commencing to prohibit the movement of turtles and amphibians into the construction area. Following installation of exclusion fencing, a qualified professional should be retained to sweep the construction area to remove any amphibians or reptiles which may be trapped within the exclusion fencing.

To protect potential travel corridors and migrating turtles and amphibians the hedgerow along the north side of the pond should be maintained to the extent as possible to provide protection and cover as well as maintain connection to the woodlands to the west of the property.

To prevent turtles nesting within the construction zone, all stockpiled materials should be covered with a geotextile between May 1 and August 1 of any year.

## **7.2 Fish Habitat**

To protect fish habitat within the pond, a combination of landscape plantings of woody shrubs and herbaceous vegetation to facilitate riparian zone naturalization and a 20 m setback from the edge of the watercourse is recommended. The rationale for the establishment of a 20 m setback is based on the following:

- Osborne and Kovavic (1993 in Beacon Environmental, 2012) have shown grassed buffers 5 to 27 m wide are better at attenuating surface nitrogen and phosphorus than forested buffers;
- Buffers as narrow as 5 m have been shown to be effective in attenuating sediment and phosphorus have been shown to be effective in attenuating sediment and phosphorus in the short term, but buffers of at least 9 m are recommended (Wenger, 1999 in Beacon Environmental, 2012);
- Fisher and Fischenich (2000) recommended a buffer of 10-20 m, Corbett and Lynch (1985) a buffer of 20-30 m and Spence et al. (1996) a buffer of greater than 52 m for the protection of fish habitat. It should be noted that the latter buffer recommendation was the result of a technical study specifically focused on protecting salmonid habitat, which is not present within the study area.

- Numerous studies (Environmental Law Institute, 2008, Castelle et al., 1992, Sheldon et al., 2005, Norman, 1996, Woodard and Rock, 1991 and 1995, Skagen et al., 2008 and Brown et al., 1990, presented in Beacon Environmental, 2012) review of ecological buffers found that buffers of 15 m (or more) were effective in nutrient and sediment attenuation.
- Castelle et al., 1992 and Cooke, 1992 found that buffers of more than 15 m were effective at providing a physical barrier to human disturbance.
- Buffler (2005 in Beacon Environmental, 2012) found buffers from 3 to >10 m were effective in sediment attenuation; and
- 10 m buffers have been shown to be effective at attenuating various pollutants (Castelle and Johnson, 2000 in Beacon Environmental, 2012).

The following general mitigation measures are further recommended for the protection of water quality and fish habitat:

- Buffers should be comprised of a robust mixture of native or non-invasive, self sustaining trees, shrubs and herbaceous plants. Due to the thin soil conditions currently present on-site, importation of topsoil may be required. Consideration should also be given to drought resistant species. Landscaping activities should take place in a concurrent manner with construction to ensure rapid and effective sediment and nutrient retention within the vegetated buffer.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182, and OPSS 805.
- All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- Install and maintain effective sediment and erosion control measures before starting work.
- Schedule work to avoid wet, windy and rainy periods.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to fish habitat.
- Maintain erosion and sediment control measures until all disturbed ground has been permanently stabilized, suspended sediment has resettled and runoff water is clear.
- In order to protect fish habitat from contamination during construction, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the top of bank.

- Best practices for siting of septic systems should be adhered to and be installed by a licensed septic system contractor ensuring all applicable regulations are met and required permits obtained.
- Maintain as much permeable surface area as possible in future development plans to limit the generation of stormwater runoff.
- Stormwater generated from the development is to be managed on-site such that discharge to the pond post-development is equal to pre-development. Site stormwater management should also be treated to achieve a reduction of 80% of TSS prior to discharge.
- To minimize on-going erosion and sloughing into the pond occurring along the southern access road, rip-rap will be installed along the impacted areas. The total area of rip-rap proposed for the shoreline is 1.1 m in length, and will cover 2/3 of the slope. The proposed area of rip-rap placement is illustrated on Figure A.3.

### **7.3 Species at Risk**

#### **7.3.1 Eastern Small-footed Myotis, Little Brown Myotis & Tri-colored Bat**

To protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically May 1 to September 1), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window then a roost survey should be conducted by a qualified professional.

#### **7.3.2 Blanding's Turtle**

As indicated in Section 6.6, Blanding's turtle, a reptilian species at risk, has a moderate potential to occur on-site. Based on the MNRF General Habitat Description (provided in Appendix E), Category 2 and 3 habitat is present on-site, Figure A.3 in Appendix A illustrates the Category 2 and 3 habitat as it relates to the site and proposed development. As the future development outlined in Section 5 is unlikely to avoid regulated Category 2 and Category 3 habitat the following measures are provided to avoid contravention of the Endangered Species Act:

- Prior to any potential disturbance associated with future construction at the site an Information Gathering Form should be submitted to the Kemptville District Ministry of Environment, Conservation and Parks (MECP).
- The Information Gathering Form is required to outline the proposed development details and avoidance and mitigation measures to be enacted to ensure no adverse effects occur to Blanding's turtles or its habitat. The Information Gathering Form should be prepared by a qualified professional with experience in species at risk management.
- With the exception of rip-rap shoreline stabilization, all development on-site should occur outside of the 20 m setback from the pond established in this EIS. The 20 m setback is intended to provide relief from development encroachment, minimize human-wildlife interaction and disturbance, protect category 2 habitat as well as maintain a vegetated

buffer. The maintenance of a vegetated buffer will provide mitigation for impacts associated with sediment and nutrient loading to the wetlands.

- Prior to any site work, exclusion fencing should be installed around the entire development envelope on each lot to prohibit the potential migration of Blanding's Turtles, and other wildlife into the construction area. The exclusion fencing will also provide a visual demarcation of the development envelope for workers during construction. Exclusion fencing should follow the protocols outlined in the Species at Risk Branch: Best Practices Technical Note: Reptile and Amphibian Exclusion Fencing Version 1.1 (MNRF, July 2013).
- Each day of construction a daily pre-work sweep of the construction area should occur to ensure no SAR are present and to remove any wildlife from inside the construction area.
- All staff working on-site should be provided Species at Risk training to identify species at risk which a potential to occur on-site including: Blanding's turtle. Training will also outline the stop work procedures and MECP reporting/consultation prior to resuming work.
- During construction if any SAR is identified on-site all work should stop and a qualified professional and the MECP should be contacted for next steps. Sightings should be reported to the MECP and the NHIC.
- Septic system installation should follow best practices to avoid impacts to water quality. Heavy-duty silt fencing should be installed and maintained during construction and whenever soil is exposed; the incorporation of lot-side swales and gravel laneways are intended to promote infiltration and direct stormwater runoff to road side ditches instead of towards adjacent waterbodies.
- Cover all stockpiled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- To protect aquatic habitat for Blanding's turtles, machinery should be maintained in good working condition and all machinery should be fueled a minimum of 30 m from the high water mark.
- Following construction completion, warehouse occupants will be provided with information and awareness packages for SAR that have the potential to occur on their property. Information and awareness packages will include information on species identification, life-history, and habitat use for all species at risk with a potential to occur on-site, including Blanding's turtle. Information packages will also include contact/reporting options to the MECP and NHIC if species are encountered.

## 7.4 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:



- Vegetation removal should occur outside the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest, survey shall be conducted by a qualified professional.
- Installation of silt fence barriers around the entire construction envelope to prohibit the emigration of wildlife into the construction area.
- Cover all stock piled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district should be contacted immediately and operations modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

## **7.5 Best Practice Measures for Mitigation of Cumulative Impacts**

The following best practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of stormwater runoff.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple, and red oak.



## 8.0 CONCLUSIONS

The proposed project supported by this scoped EIS is the development of an equipment repair/warehouse unit.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual negative impacts are anticipated from the proposed future development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant negative impacts to natural heritage features identified on-site, including significant wildlife habitat, habitat of species at risk and fish habitat, from future commercial construction are anticipated.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed development complies with the natural heritage policies of the City of Ottawa Official Plan.

## 9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Argue Construction Ltd. and is intended for the exclusive use of Argue Construction Ltd.. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Argue Construction Ltd.. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation

Should new information become available during future work or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,



Taylor Warrington, B.Sc.  
Biologist



Drew Paulusse, B.Sc.  
Senior Biologist

## 10.0 REFERENCES

Beacon Environmental. 2012. Ecological Buffer Guideline Review – Prepared for Credit Valley Conservation Authority. December.

Brown, M.T, J. Schaefer and K. Brandt. 1990. Buffer zones for water, wetlands and wildlife in east central Florida. Prepared for the East Central Florida Regional Planning Council.

Buffler, S. 2005. Synthesis of design guidelines and experimental data for water quality function in agricultural landscapes in the intermountain west. Buffer Design Guidelines for Water Quality and Wildlife Habitat Functions of Agricultural Landscapes in the Intermountain West, Appendix C. USDA, National Agroforestry Centre on Agricultural Landscapes in the Intermountain West, Appendix C.

Cadman M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. Toronto.

Canada, Government of (Canada). 1985. Fishers Act. R.S.C. 1985, c. F-14.

Castelle, A.J., and A.W. Johnson. 2000. Wetland and stream buffer size requirements – A Review. Journal of Environmental Quality, Vol. 23, pp. 878-882.

Castelle, A.J., A.W. Johnson, C. Conolly, M. Emers, E.D. Metz., S. Meyer, M. Witter, S. Mauermann, T. Erickson, S.S. Cooke. 1992. Wetland Buffers: Use and Effectiveness. Adolfson Associates Inc., Shorelands and Coastal Zone Management Program, Washington Department of Ecology, Olympia, Pub. No. 92-10. Chapman, L.J., and Putnam, D.F. 1984. The Physiography of Southern Ontario. Ontario Geological Survey, Special Volume 2.

Cooke, S.S. 1992. Wetland Buffers – A Field Evaluation of Buffer Effectiveness in Puget Sound, Appendix A. Adolfson Associates Inc., Shorelands and Coastal Management Program, Washington Department of Ecology, Olympia, Pub. No. 92-10.

COSEWIC. 2013a. COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COSEWIC. 2013b. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-coloured Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.

COSEWIC. 2005. COSEWIC assessment and status report on the Blanding's Turtle *Emydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp.

COSEWIC. 2003. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.

Crins, J., William., P. A. Grey, P. W. Uhlig, and M.C. Wester. 2009. The Ecosystems of Ontario, Part I: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Peterborough, Ontario.

Department of Fisheries and Oceans (DFO). 2019. Aquatic Species at Risk Map. Accessed: October 1, 2019. Available: <http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Toronto.

Environmental Law Institute. 2008. Planner's Guide to Wetland Buffers for Local Governments, ISBN 978-1-58576-137-1, ELI Project No. 0627-07, 25 pp.

Fischer, R.A and J.C. Fishenich. 2000. Design Recommendations for Riparian Corridors and Vegetated Buffer Strips. EMRRP Technical Notes Collections (ERDC TN EMRRP-SR-22), U.S. Army Engineer Research and Development Centre, Vicksburg, MS.

Fraser E., MacKenzie, A., and Davy, C. 2007. Photo Field Guide to the Bats of Ontario. Published by St. Thomas Field Naturalists Club Incorporated.

Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. Vii + 76 pp.

Kilgour & Associates Limited (Kilgour). 2014. Environmental Impact Statement, 3019 Carp Road. November 5.

Lee, H. T. 2008. Draft Southern Ontario Ecological Land Classification. Ministry of Natural Resources: London, Ontario.

Norman, A. J. 1996. The use of vegetative buffer strips to protect wetlands in southern Ontario. Proceedings of the Wetland Symposium on Boundaries, Buffers and Environmental Gradients. Niagara Fall, Ontario, April, 1994.

Oldham, M.J and W.F. Weller. 2000. Ontario Herpetofaunal Atlas.

Ontario, Government of (Ontario). 2019a. Eastern small-footed Myotis, viewed online October 1, 2019. Available online: <https://www.ontario.ca/page/eastern-small-footed-myotis>

Ontario, Government of (Ontario). 2019b. Little Brown Myotis, viewed online October 1, 2019. Available online: <https://www.ontario.ca/page/little-brown-myotis>

Ontario, Government of (Ontario). 2019c. Northern Myotis, viewed online October 1, 2019. Available online: <https://www.ontario.ca/page/northern-myotis>

Ontario, Government of (Ontario). 1990. Conservation Authorities Act. R.S.O. 1990. Chapter C.27. Last amendment: 2011, C.9 Sched. 27, S. 22.

Ontario Legislative Assembly. 2007. Endangered Species Act.

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2014. Provincial Policy Statement – Under Planning Act, Toronto. April.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2018. Natural Heritage Information Request Guide.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2015. Significant Wildlife Habitat Ecoregion 6E Criterion Schedules.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2014a. Make a Map: Natural Heritage Areas.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2014b. Significant Wildlife Habitat Mitigation Support Tool.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2013. Natural Heritage Information Centre (NHIC) Biodiversity Explorer.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2011. Land Information Ontario (LIO).

Ontario Ministry of Natural Resources (OMNR). March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition.

Ontario Ministry of Natural Resources (OMNR). 2005 Natural Heritage Information Centre. Ontario Odonata Atlas.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Technical Guide.

Ontario Geological Survey 2019. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV

Ontario Nature, 2015, Ontario Reptile and Amphibian Atlas, viewed online October 1, 2019. Available: <https://ontarionature.org/oraa/maps/>

Osborne, L.L. and D.A. Kovacic. 1993. Riparian vegetated buffer strips in water quality restoration and stream management. *Freshwater Biology*, Vol. 29, pp. 243-258.

Ottawa, City of (Ottawa). Undated a. City of Ottawa Natural Landscape Linkage Analysis. Document 11.

Ottawa, City of (Ottawa). Undated b. Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment. Draft.

Ottawa, City of (Ottawa). 2012a, City of Ottawa Official Plan.

Ottawa, City of (Ottawa). 2012b, Environmental Impact Statement Guidelines – 2<sup>nd</sup> Edition. April.

Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan T. Granger, S. Stanley, and E. Stockdale. 2005. Wetlands in Washington State, Volume 1: A Synthesis of the Science. Washington State Department of Ecology, Publication #05-06-006. Olympia, WA.

Skagen, S.K., C.P. Melcher, and D.A. Haukos. 2008. Reducing sedimentation of depressional wetlands in agricultural landscapes. *Wetlands*, Vol. 28, Issue 3, pp. 594-604.

Rowe, J.S. 1972. Forest Regions of Canada. Canadian Forestry Service Publication no. 1300. Publishing Division, Information Canada .

Woodard, S.E. and C.A. Rock. 1991. The role of natural buffer strips in controlling phosphorus and sediment runoff. Water Pollution Control Federation, 64<sup>th</sup> Annual Conference Exposition, Toronto, Ontario, October 7-10, 1991.

Woodard, S.E. and C.A. Rock. 1995. Control of residential stormwater by natural buffer strips. *Lake and Reservoir Management*. Volume 11, Issue 1, pp. 37-45.

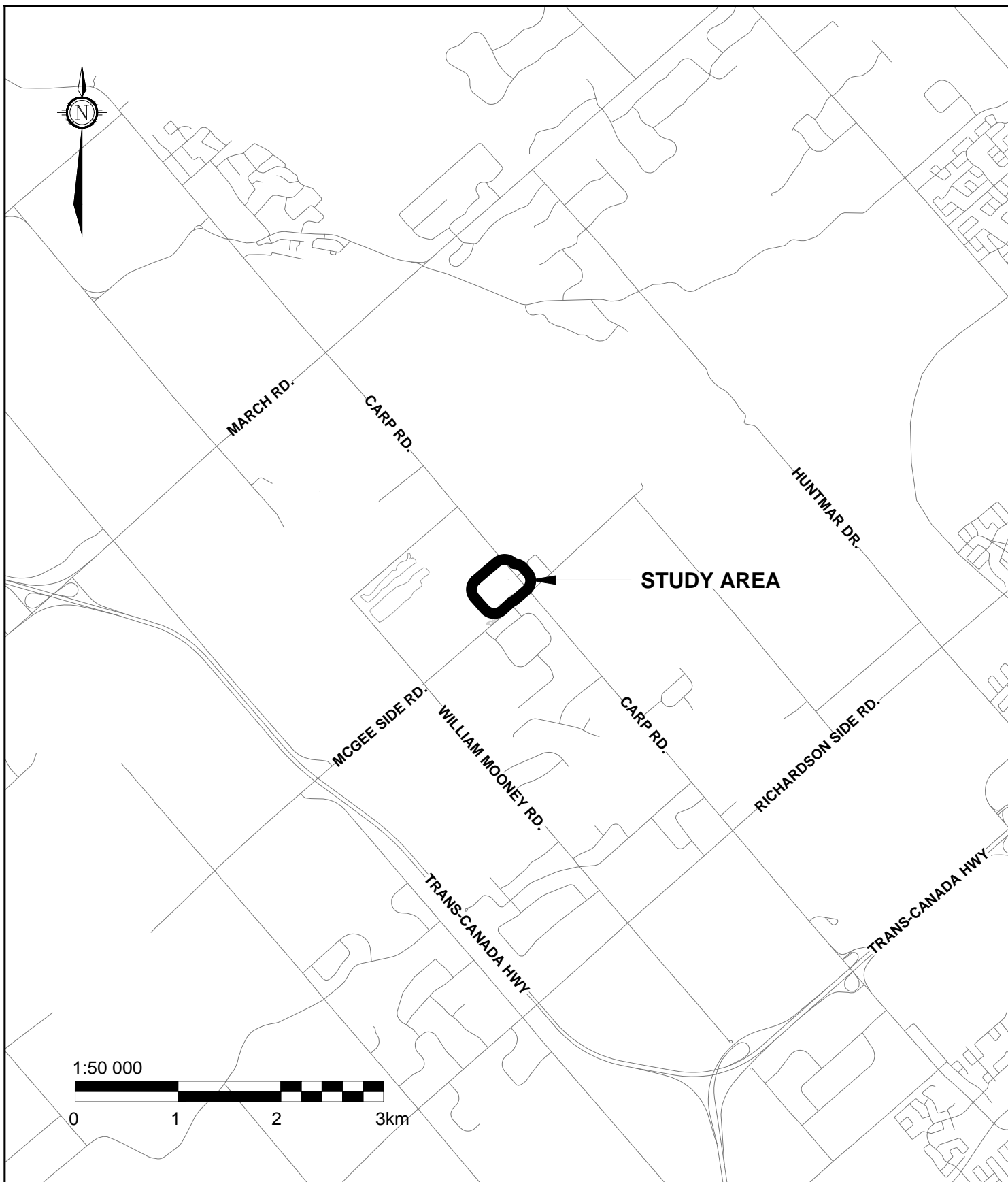
Wenger, S. 1999. A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation. Office of Public Service and Outreach, Institute of Ecology, University of Georgia.



## **APPENDIX A**

### Report Figures





**GEMTEC**

CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive, Ottawa, ON K2K 2A9  
T: (613) 836-1422 | www.gemtec.ca | ottawa@gemtec.ca

Project  
ENVIRONMENTAL IMPACT STATEMENT  
3025 CARP ROAD  
OTTAWA, ONTARIO

Drawing

SITE LOCATION

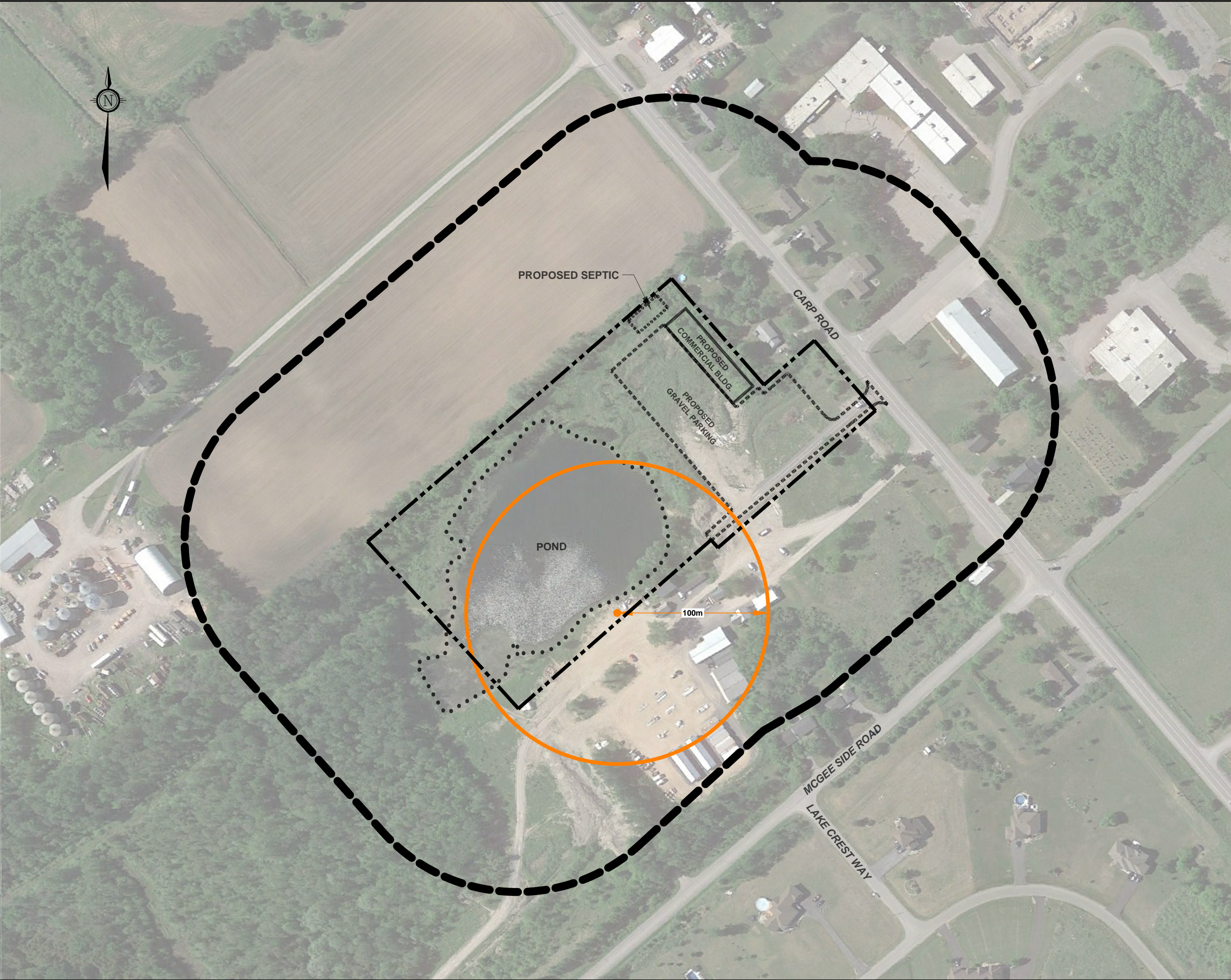
Drwn By	Chkd By	Date
P.C.	T.W.	AUGUST 2020

Project No.
61730.61

Revision No.
2

**FIGURE A.1**





**LEGEND**

----- PROPERTY BOUNDARY

----- STUDY AREA, 120m BUFFER AROUND PROPERTY BOUNDARY

..... WATER BODIES

● AMPHIBIAN BREEDING SURVEY LOCATION

Scale 1:2500

0 50 100 150m



**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

Drawing

SITE LAYOUT

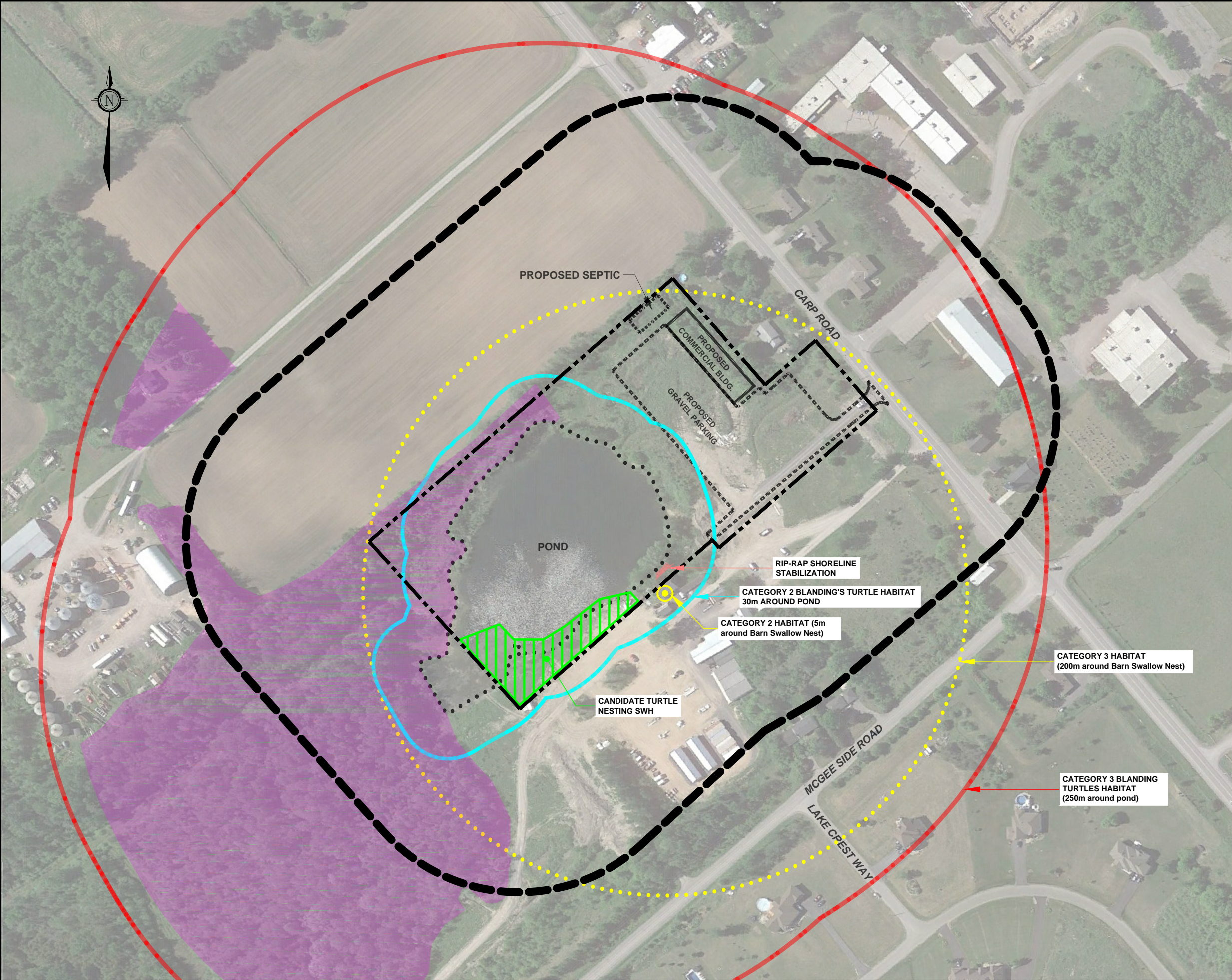
Client

ARGUE CONSTRUCTION LTD.

Project	61730.61	ENVIRONMENTAL IMPACT STATEMENT 3025 CARP ROAD OTTAWA, ONTARIO
Drwn by	P.C.	
Chkd by	T.W.	

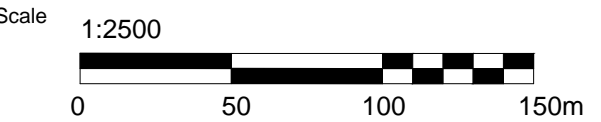
Date	AUGUST 2020	Rev.	2	FIGURE A.2
------	-------------	------	---	------------





**LEGEND**

- PROPERTY BOUNDARY
- STUDY AREA, 120m BUFFER AROUND PROPERTY BOUNDARY
- SIGNIFICANT FISH HABITAT/TURTLE OVERWINTERING HABITAT
- BARN SWALLOW NEST LOCATION (CATEGORY 1 HABITAT)
- CATEGORY 3 HABITAT 200m AROUND BARN SWALLOW NEST
- CATEGORY 2 BLANDING'S TURTLE HABITAT 30m AROUND POND
- CATEGORY 3 BLANDING'S TURTLE HABITAT 250m AROUND POND
- WOODLAND AMPHIBIAN BREEDING HABITAT
- CANDIDATE TURTLE NESTING SWH
- RIP-RAP SHORELINE STABILIZATION





**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

Drawing

NATURAL HERITAGE FEATURES

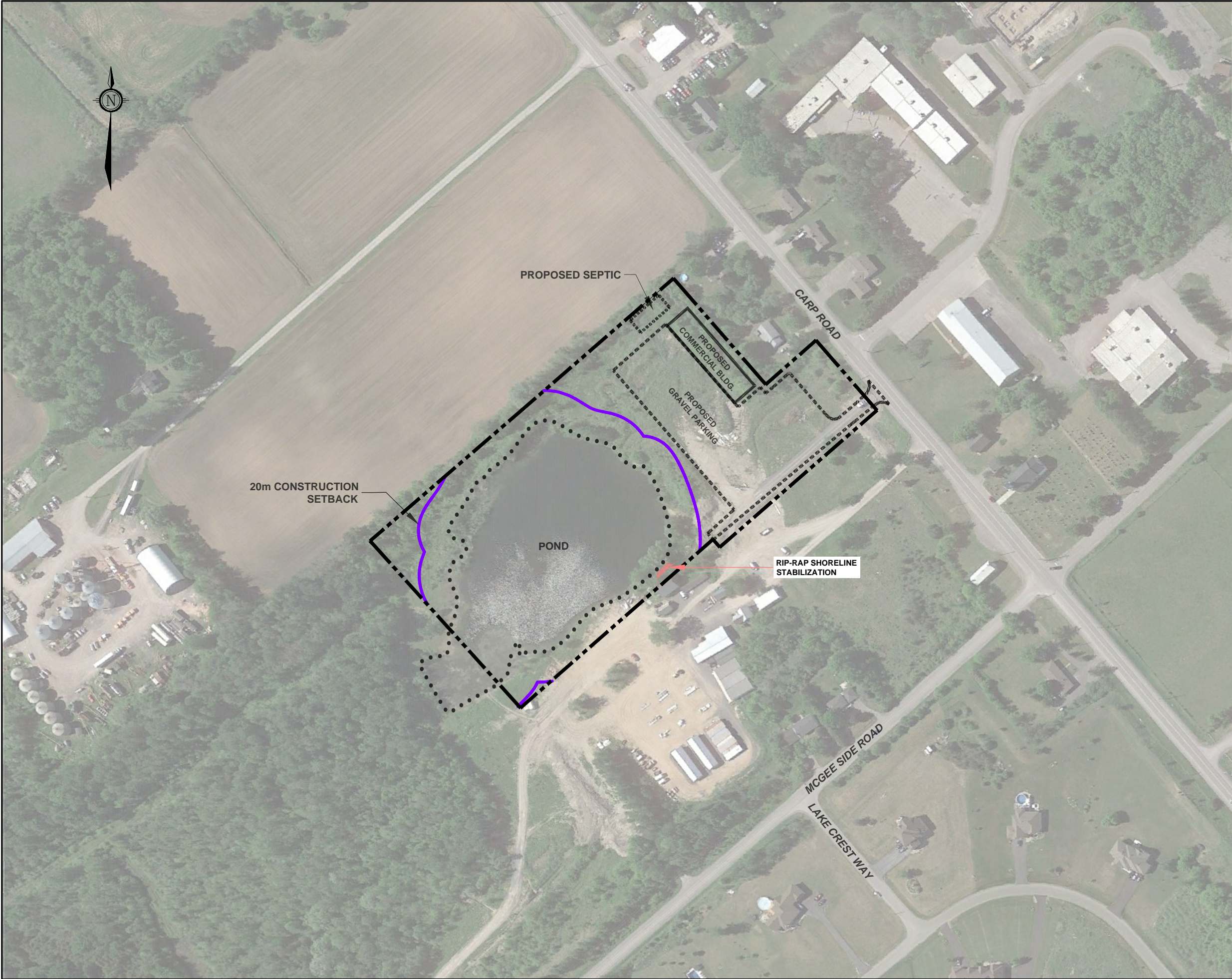
Client

ARGUE CONSTRUCTION LTD.

Project	61730.61	ENVIRONMENTAL IMPACT STATEMENT 3025 CARP ROAD OTTAWA, ONTARIO
Drwn by	P.C.	
Chkd by	T.W.	

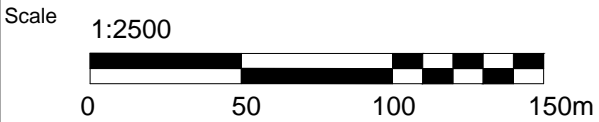
Date	AUGUST 2020	Rev.	2	FIGURE A.3
------	-------------	------	---	------------





LEGEND

- PROPERTY BOUNDARY
- SIGNIFICANT FISH HABITAT/TURTLE OVERWINTERING HABITAT
- 20 METRE SETBACK FROM CONSTRUCTION
- RIP-RAP SHORELINE STABILIZATION





**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

Drawing				MITIGATION MEASURES		
Client				ARGUE CONSTRUCTION LTD.		
Project		61730.61		ENVIRONMENTAL IMPACT STATEMENT 3025 CARP ROAD OTTAWA, ONTARIO		
Drwn by	Chkd by	P.C.	T.W.			
Date		AUGUST 2020		Rev.	2	FIGURE A.4





## **APPENDIX B**

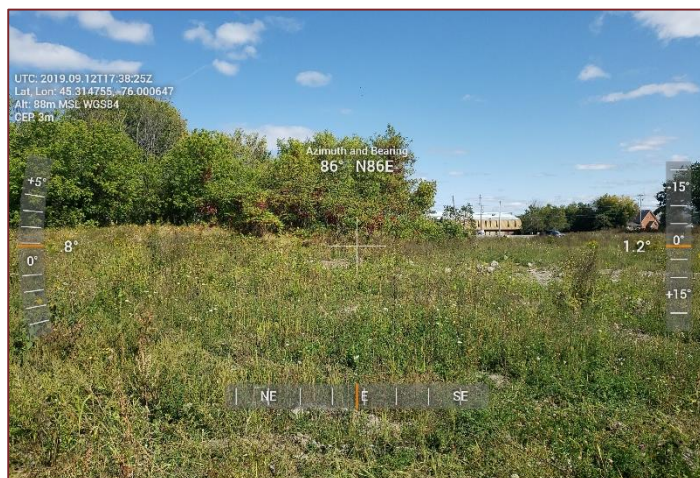
### Site Photographs



Site Photograph 1 – Cultural Meadow Vegetation



Site Photograph 2 – Cultural Meadow Vegetation

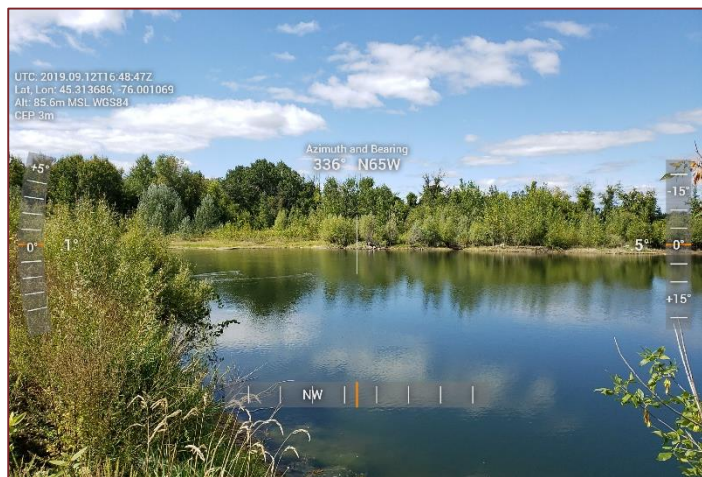


Site Photograph 3 – Cultural Meadow Vegetation, Facing Carp Road



Site Photograph 4 – Vegetation South of the Pond, Adjacent Barn Structures





Site Photograph 5 – North Side of Pond



Site Photograph 6 - Northwest Side of Pond



Site Photograph 7 – West side of Pond



Site Photograph 8 – Northeast Side of Pond





## **APPENDIX C**

### Report Summary Tables

**TABLE C.1**  
**SUMMARY OF WILDLIFE OBSERVED ON-SITE AND WITHIN THE STUDY AREA**

Common Name	Scientific Name	S-Rank	Evidence
<b>Avian Species</b>			
American crow	<i>Corvus brachyrhynchos</i>	S5B	Heard calling
American goldfinch	<i>Spinus tristis</i>	S5B	Heard calling
American robin	<i>Turdus migratorius</i>	S5B	Observed foraging on-site
Barn swallow	<i>Riparia riparia</i>	S4B	Observed foraging on-site
Belted kingfisher	<i>Megaceryle alcyon</i>	S4B	Heard calling
Black-capped chickadee	<i>Poecile atricapillus</i>	S5B	Heard calling
Blue jay	<i>Cyanocitta cristata</i>	S5	Heard calling
Canada goose	<i>Branta canadensis</i>	S5	Observed swimming
Common grackle	<i>Quiscalus quiscula</i>	S5B	Heard calling
Common yellowthroat	<i>Geothlypis trichas</i>	S5B	Heard calling
Eastern phoebe	<i>Sayornis phoebe</i>	S5B	Heard calling
European starling	<i>Sturnus vulgaris</i>	SNA	Observed perched
Field sparrow	<i>Spizella pusilla</i>	S4B	Heard calling
Green heron	<i>Butorides virescens</i>	S4B	Observed on-site
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	Observed on-site, heard calling
Mallard	<i>Anas platyrhynchos</i>	S5	Observed swimming
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	Heard calling
Pied-billed grebe	<i>Podilymbus podiceps</i>	S4B	Heard calling, observed swimming
Ring-billed gull	<i>Larus delawarensis</i>	S5B, S4N	Observed flying over site
Song sparrow	<i>Melospiza melodia</i>	S5B	Heard calling
Tree swallow	<i>Tachycineta bicolor</i>	S4B	Observed foraging on-site
Veery	<i>Catharus fuscenscens</i>	S4B	Heard calling
White-breasted nuthatch	<i>Sitta carolinensis</i>	S5	Heard calling
Wild turkey	<i>Meleagris gallopavo</i>	S5	Observed tracks on-site
Wilson's snipe	<i>Gallinago delicata</i>	S5B	Heard calling
Wood duck	<i>Aix sponsa</i>	S5	Observed swimming
Yellow-rumped warbler	<i>Setophaga coronata</i>	S5B	Heard calling
Yellow warbler	<i>Setophaga petechia</i>	S5B	Heard calling
<b>Mammalian Species</b>			
Northern raccoon	<i>Procyon lotor</i>	S5	Observed tracks
Meadow vole	<i>Microtus pennsylvanicus</i>	S5	Observed foraging on-site
Coyote	<i>Canis latrans</i>	S5	Observed tracks and scat
White-tailed deer	<i>Odocoileus virginiana</i>	S5	Observed tracks and browse
<b>Amphibian Species</b>			
American toad	<i>Anaxyrus americanus</i>	S5	Heard calling
Gray treefrog	<i>Hyla versicolor</i>	S5	Heard calling
Green frog	<i>Lithobates clamitans</i>	S5	Observed on-site
Northern leopard frog	<i>Lithobates pipiens</i>	S5	Observed on-site
Spring peeper	<i>Pseudacris crucifer</i>	S5	Observed on-site
<b>Reptilian Species</b>			
Eastern gartersnake	<i>Thamnophis sirtalis sirtalis</i>	S5	Observed basking on-site
Snapping turtle	<i>Chelydra serpentina</i>	S3	Observed aquabasking on-site
Midland painted turtle	<i>Chrysemys picta marginata</i>	S4	Observed basking on-site

**TABLE C.1**  
**SUMMARY OF WILDLIFE OBSERVED ON-SITE AND WITHIN THE STUDY AREA**

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Imperiled, at very high risk of extirpation, very few populations or occurrences or very steep population decline

S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline

S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline

S4 - Apparently Secure, at a fairly low risk of extirpation, many populations or occurrences, some concern for local population decline

S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline

Qualifiers:

S#B - Conservation status refers to the breeding population of the species

S#N - Conservation status refers to the non-breeding population of the species

S#M - Migrant species, conservation status refers to the aggregating transient population of the species

**TABLE C.2**  
**SCREENING RATIONALE FOR SIGNIFICANT WOODLANDS**

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	No	Woodland's on-site do not meet minimum size criteria.
Ecological Functions		
a) Woodland Interior	No	Woodland's on-site do not contain any interior habitat.
b) Proximity	Yes	Woodland's on-site are adjacent to fish habitat and meet minimum size thresholds.
c) Linkages	No	Woodland's on-site do not provide a connecting link between natural heritage features.
d) Water Protection	No	Woodland's on-site are not located within or adjacent to a sensitive or threatened watershed, sensitive groundwater discharge or recharge or sensitive headwater area.
e) Diversity	No	Species composition within the on-site woodlands is well represented on the landscape and no rare species communities were observed.
Uncommon Characteristics	No	Woodlands on-site do not have a unique species composition, vegetation communities with a tanking of S1, S2, or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical, cultural, or educational value.

**TABLE C.3**  
**SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION OF ANIMALS**

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	No significant stands of mast producing trees, no large coniferous forest stands on-site to provide protection and cover from winter elements.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting (i.e. no eroding banks, cliff faces, sandy hills, swamps, rocky islands/peninsula, etc.).
Waterfowl Stopover and Staging Areas	No	No suitable habitat located on-site or within the study area to meet the defining use criteria for waterfowl use (i.e. no fields with sheet water).
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	No	The site does not contain a suitable mix of forest and upland habitat to meet the defining use criteria for raptor wintering.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	No suitable woodlands are located on-site to provided habitat for bat maternity colonies.
Turtle Wintering Area	No	While the on-site pond may provide suitable turtle wintering habitat, because it is a man made feature it is not considered to provide significant wildlife habitat in accordance with the Significant Wildlife Habitat Criteria Schedules. Furthermore, based on the nature of the pond and review of geotechnical data for the site, it is anticipate the bedrock dominates the pond bottom preventing turtles from burrowing.
Reptile Hibernaculum	No	No structures such as large rock piles, cervices or other karstic features have been identified on-site. The observed bedrock outcrops on-site consist of a pavement like structure with no apparent voids for hibernacula habitat.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

**TABLE C.4**  
**SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS**

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	The site lacks suitable upland habitat adjacent to wetlands necessary to support waterfowl nesting.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	The site lacks suitable forest community adjacent to a riparian area to support nesting, foraging and perching habitat for Bald Eagle and Osprey.
Woodland Nesting Raptor Habitat	No	No suitable forested habitat has been identified on-site.
Turtle Nesting Habitat	Yes	Areas west of the man-made pond may provide suitable conditions to support turtle nesting habitat.
Seeps and Springs	No	No seeps or spring were identified on-site during the preliminary site investigation.
Woodland Amphibian Breeding Habitat	Yes	The man-made pond on-site may provide suitable habitat to support woodland amphibian breeding.
Wetland Amphibian Breeding Habitat	No	No suitable wetland habitat has been identified on-site to support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding habitat	No	No woodlands of adequate size occur on-site to support woodland area-sensitive bird breeding habitat. Needs large mature forest > 30 ha, with interior habitat at least 200 m from forest edge

**TABLE C.5**  
**SCREENING RATIONALE FOR SPECIES OF CONSERVATION CONCERN**

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	No suitable wetlands have been identified on-site or adjacent to site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site to support open country bird breeding due to recent (< 5 years) agricultural disturbances.
Shrub/Early Successional Breeding Bird Habitat	No	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are > 10 ha but have not been actively used for farming. Habitat on-site does not meet the defining use criteria to support shrub/early successional breeding bird habitat.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	Snapping turtle, a species of special concern, were observed on-site during the site investigations. No other special concern or rare wildlife species were observed on-site during the site investigations. Observation data from the NHIC indicates that no other species of special concern or rare wildlife species have been observed on-site.



**TABLE C.6**  
**SCREENING RATIONALE FOR ANIMAL MOVEMENT CORRIDORS**

Animal Movement Corridor	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No wetland amphibian breeding habitat has been identified on-site or within the study area.
Deer Movement Corridor	No	While the natural landscape linkage is likely to provide a corridor for deer and other small mammals, a deer-specific movement corridor has not been identified on-site, furthermore, no Stratum I or Stratum II deer yards have been identified in the area.

TABLE C.7  
SCREENING RATIONALE FOR POTENTIAL SPEICES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
<b>Avian</b>					
Bald Eagle	Special Concern	Confirmed nest at Shirley's bay since 2012.	Nest in mature forests near open water.	Low	Site lacks suitable forest habtiat adjacent to suitable open water and foraging area to suppoly Bald Eagle activity.
Bank Swallow	Threatened	12 confirmed, 2 probable and 8 possible nests in recent OBBA.	Colonial nester, burrows in eroding silt, to sand banks, sand pit walls, etc.	High	The banks of the pit walls are too heavily vegetated to provide suitable habitat for nesting colonies. No colonies were noted during the site investingations. A pair of bank swallow were observed foraging over the pond during the site investigation
Barn Swallow	Threatened	33 confirmed, 2 probable, and 3 possible nests in recent OBBA.	Nests in barns and other semi-open structures. Forages over open fields and meadows.	High	Suitable nesting habitat or structures located on-site. Potentially suitable nesting habitat/structures located within study area. Potentially suitable foraging habitat located on-site. Species was observed nesting on-site in 2014.
Bobolink	Threatened	Widespread in the Ottawa region, confirmed and probable nests found in 39 or 40 local atlas squares during recent OBBA.	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Low	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable tall grass habitat on-site to support Bobolink.
Canada Warbler	Special Concern	1 confirmed, 2 probable, 6 possible nests during recent OBBA. No critical habitat identified in region.	Prefers wet forests with dense shrub layers	Low	Preferred wet forest habitat is not present on-site.
Cerulean Warbler	Threatened	No nests reported during recent OBBA. SARO and SARA range maps include part of Ottawa.	Prefers mature deciduous forest habitat.	Low	Preferred mature deciduous forest habtiat is not present on-site or within study area.
Chimney Swift	Threatened	3 confirmed, 2 probable, and 11 possible nests in recent OBBA.	Nests in traditional-style open brick chimneys.	Low	Suitable nesting structures are not present on-site or within the broader study area.
Common Nighthawk	Special Concern	6 probable, 5 possible nests reported in recent OBBA. No critical habitat identified in Ottawa region.	Nests in a variety of open sites: beaches, fields and grave rooftops.	Moderate	Species known to nest in gravel and rocky areas such as quarries, gravel pits and bedrock outcrops. Species was not observed during the site invsetigation.
Eastern Meadowlark	Threatened	Sporadic occurrences in Ottawa region, more common in rural areas with pasture or fallow fields.	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Low	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable tall grass habitat on-site to support Eastern Meadowlark.
Eastern Whip-poor-will	Threatened	Primary breeding range located east, west and south of the Precambrian shield. 7 probable and 10 possible nests in recent OBBA. Critical habitat tentatively identified in 4 squares in western Ottawa.	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Low	No suitable woodland habitat occurs on-site or within study area.
Eastern Wood-Pewee	Special Concern	4 possible, 15 probable and 19 confirmed nests in recent OBBA for Ottawa area	Woodland species, often found near clearings and edge habitat.	Moderate	Woodland habtiat on adjacent properties may provide suitable habtiat for eastern wood-pewee.
Golden Eagle	Endangered	Migrant only in Ottawa area.	Nests on remote, bedrock cliffs, overlooking large burns, lakes or tundras	Low	Suitable nesting habitat is not present on-site.
Golden-winged Warbler	Special Concern	1 confirmed, 1 probable nest in recent OBBA. Critical habtiat identified in Quebec, northwest of Ottawa.	Ground nesting, edge species. Breeds in successional scrub habitats surrounded by forests.	Low	Preferred scrub habtiat is not present on-site or within the study area.
Evening Grosbeak	Special Concern	5 confirmed, 6 probable, 8 possible nests in recent OBBA.	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Low	Suitable habtiat does not occur on-site.
Henslow's Sparrow	Endangered	No nests in recent OBBA.	Prefers open, moist, tallgrass fields.	Low	Preferred graassland habitat is not present on-site or within the study area.
Loggerhead shrike	Endangered	1 possible nest in recent OBBA. Critical habitat in Montague Township, however no confirmed nests from MNRF since 2002.	Preferes grazed pastures with short grass and scattered shrubs, especially hawthorn.	Low	Preferred pasture habitat and shrub vegetation does not occur on-site.
Olive-sided Flycatcher	Special Concern	1 probable, 1 possible nest in recent OBBA.	Forest edge species, forages in open areas from high vantage points in trees. Nests on cliffs near water and on more anthropogenic structures such as tall buildings, bridges, and smokestacks.	Low	Preferred grassland habitat is not present on-site or within study area.
Peregrine Falcon	Special Concern	1 confirmed nest in recent OBBA and second nest established in 2011 in the Ottawa downtown.	Nests in the far north, migrant along the shorelines and lagoons of the Ottawa River.	Low	Site lacks suitable nesting structure for peregrine falcon.
Red Knot	Endangered	Migrant only in region, found along Ottawa River shorelines, and area lagoons,		Low	Site does not provide suitable habitat for migrant red knot.
Red-headed Woodpecker	Special Concern	1 confirmed, 1 probable and 1 possible during recent OBBA. Nesting pair reported from village of Constance Bay in recent years.	Prefers open deciduous woodlands.	Low	Preferred woodland habtiat is not present on-site.
Rusty Blackbird	Special Concern	No nests in recent OBBA. Primarily observed during migration only.	Wet wooded or shrubby areas (nests at edges of Boreal wetlands)	Low	Suitable habitat does not occur on-site.
Short-eared Owl	Special Concern	1 confirmed, 2 probable, 2 possible nests in recent OBBA.	Ground nester, prefers open habitats, fields and marshes.	Low	No suitable open field or open marsh habitat on-site.
Wood Thrush	Special Concern	5 possible, 15 probable, and 16 confirmed nests in recent OBBA for Ottawa area.	Prefers deciduous or mixed woodlands.	Low	The site lacks suitable deciduous or mixed woodland habitat to support Wood Thrush.
<b>Mammalian</b>					
Eastern small-footed Myotis	Endangered	Rare throughout its range. Historical records in downtown Ottawa.	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic stuctures adjacent to site. Potential summer habitat present within study area.
Little Brown Myotis	Endangered	Various sites in central and western parts of the Ottawa area. No critical habitat (hibernacula) identified in Ottawa to date.	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic stuctures adjacent to site. Potential summer habitat present within study area.

TABLE C.7  
SCREENING RATIONALE FOR POTENTIAL SPEICES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Northern myotis (Northern Long-eared Bat)	Endangered	Historical records in downtown Ottawa, more recently in sites to east (Orleans, Clarence-Rockland). No critical habitat (hibernacula) identified in Ottawa to date. Ottawa and region is at southern most limit of range.	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and species rarely rosots in anthropogenic structures.
Tri-colored Bat	Endangered	Provincially Uncommon, only 26 documented occurrences in Ontario from pre-1980 to present (MNRF, 2016). Unknown distribution in Ottawa; historical records from sites in urban Ottawa and Lanark County.	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic stuctures adjacent to site. Potential summer habitat present within study area.
Reptilian					
Blanding's Turtle	Threatened	Provincial range extends from Manitoulin Island south and east. Scattered occurrence records in central Ontario. Scattered throughout Ottawa and National Capital Region, with numerous sites in western hald of region. Critical habitat present in Ottawa.	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	No historic occurrence data for species on NHIC database for the site, however species has occurred in broader study area. No critical habtiat has been identified on-site.
Snapping Turtle	Special Concern	Widespread and abundant in Ottawa and surrounding region.	Highly aquatic species, found in a wide variety of wetlands, water bodies and watercourses.	High	According to the NHIC, Snapping Turtle is known to occur within the general area. Snapping turtle were observed aqua-basking on-site during the site investigaitons.
Plants					
American Ginseng	Endangered	Critical habitat broadly identified in the Ottawa area. Specific locations are confidential.	Rich, moist, relatively mature deciduous forests.	Low	Suitable habtiat does not occur on-site.
Butternut	Endangered	Range is confined to eastern and southern Ontario. Widespread in Ottawa and region.	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	Majority of the site is open and in a regenerative state.
Lichens					
Pale-bellied Frost Lichen	Endangered	Historical records in downtown area (extirpated locally). No critical or regulated habtiat identified in Ottawa.	Grows on the bark of hardwood trees such as white ash, black walnut, American elm and ironwood. Can also be found growing on fence posts and boulders.	Low	Species believed to be extirpated from the Ottawa area.
Insects					
Bogbean Buckmoth	Endangered	Richmond Fen	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Historic occurrences only. Range in Ontario uncertain.	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known population is in Pinery Provincial Park
Monarch Butterfly	Special Concern	Widespread in the region	Caterpillars require milkweed plants confined to meadow and open areas. Adult butterflies use more diverse habitat with a variety of wildflowers	Moderate	Potentially suitable foraging habitat for monarch butterflies occurs on-site.
Mottled Duskywing	Endangered	Constance Bay area, Burnt Lands Alvar	Larval food plant (New Jersey Tea) found in sandy areas and alvars.	Low	Sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Historically present but no reports in Ontario since mid-1990s	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rusty-patched Bumble Bee	Endangered	Historic records in Ottawa and Gatineau	Habitat generalist	Low	Currently the only known population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Unknown in Ottawa region. No southern Ontario records since 1985	Habitat generalist	Low	No new records of traverse lady beetle in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Unknown. No NESS or NHIC records. SARO range map includes Ottawa.	Requires mature moist deciduous woods with larval host plant toothwort.	Low	Necessary vegetation and toothwort plant not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Unknown. Historic occurrences and a few recent occurrences in Eastern Ontario/Western Quebec region.	Habitat generalist; mixed woodlands, variety of open habitat	Moderate	Potentially suitable foraging habitat for yellow-banded bumble bee occurs on-site.



## **APPENDIX D**

### Tree Conservation Report



# GEMTEC

[www.gemtec.ca](http://www.gemtec.ca)

**Tree Conservation Report  
Proposed Commercial Development  
Part Lot 11, Concession 3  
Geographic Township of Huntley  
Ottawa, Ontario**





# GEMTEC

[www.gemtec.ca](http://www.gemtec.ca)

Submitted to:

Argue Construction Ltd.  
2900 Carp Road  
Ottawa, Ontario  
K0A 1L0

**Tree Conservation Report  
Proposed Commercial Development  
Part Lot 11, Concession 3  
Geographic Township of Huntley  
Ottawa, Ontario**

October 28, 2019  
Project: 61730.61

## TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Purpose .....	1
1.2	Definitions .....	1
2.0	METHODOLOGY .....	2
2.1	Desktop Review .....	2
2.2	Field Investigations .....	2
3.0	RESULTS.....	3
3.1	Existing Conditions .....	3
3.2	Tree Inventory Summary.....	4
4.0	CONCLUSIONS AND RECOMMENDATIONS .....	5
4.1	Tree Conservation Recommendations .....	5
4.2	Recommended Mitigation Measures .....	5
5.0	CLOSURE.....	7
6.0	REFERENCES.....	8

## LIST OF TABLES

Table 1.1	Summary of Natural Features Present On-site or Adjacent to Site .....	3
-----------	---	---

## LIST OF APPENDICES

Appendix A	Report Figures
Appendix B	Site Photographs
Appendix C	Tree Inventory Summary Table
Appendix D	CVs for Key Personnel



## 1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Argue Construction Ltd., to carry out a Tree Conservation Report (TCR) for the property located on Part Lot 11, Concession 3, Geographic Township of Huntley, in Ottawa, Ontario, hereafter referred to as the “subject property”. The property is municipally addressed as 3025 Carp Road. The site location is provided in Figure A.1 in Appendix A.

### 1.1 Purpose

The proponent is seeking to develop a 4.2 hectare (ha) parcel, for future commercial development. In accordance with the City of Ottawa’s Urban Tree Conservation By-Law (No. 2009-200), a Tree Conservation Report (TCR) is required to identify trees to be retained and protected under future development scenarios and, where feasible, identify opportunities to offset the loss of trees that cannot be retained or contribute to the City’s forest cover targets.

The proposed development concept includes the creation of a 874 m<sup>2</sup> commercial building, with an approximately 9,700 m<sup>2</sup> gravel parking lot and laneway and associated landscaping. The existing site layout and proposed development plan is provided in Figure A.2 in Appendix A.

### 1.2 Definitions

Terms and abbreviations used throughout the remainder of this report are summarized below.

*Diameter at Breast Height (DBH)*, is defined as the diameter of the tree trunk measured at a height of 1.2 metres above ground surface for trees of 10 centimeters in diameter and greater.

*Critical Root Zone (CRZ)*, is defined as the ground area within a circumference around the tree trunk calculated as 10 centimetres from the trunk of the tree for every one centimetre of tree trunk diameter at breast height.

*Distinctive Tree*, a distinctive tree within the City of Ottawa is defined as any tree with a trunk calculated as 10 centimetres in diameter at breast height.

## **2.0 METHODOLOGY**

### **2.1 Desktop Review**

To complete the TCR, digital colour air photos of the site available from GeoOttawa were reviewed from 1976 to 2017 to identify natural features, including historical trees, present on-site and in the vicinity of the site.

### **2.2 Field Investigations**

In addition to the completion of a desktop review of historical air photos, a site visit was conducted on September 27, 2019, from 08:30 to 13:25, to document and identify all trees on-site with a DBH greater than 10 cm. The site investigation utilized transects bisecting the property to document the health of each tree greater than 10 cm in DBH, the trees location and the tree species.

Site conditions during the site investigation were as follows: 8°C, clear skies, Beaufort wind 2 and no precipitation.

Site photographs taken during the field investigations are provided in Appendix B.

## 3.0 RESULTS

### 3.1 Existing Conditions

The site is currently vacant and consists of cultural meadow habitat, treed hedgerows and a pond resulting from previous resource extraction activities. Other existing features on the property include road access to Carp Road. No impermeable surfaces occur on the property, aside from exposed bedrock surfaces.

The proposed development is to take place within the vacant eastern portion of the site, the existing vegetation communities in this area are illustrated on Figure A.2 in Appendix A. Numerous trees are present on the property, a summary of all trees on-site is provided in Section 3.2 below.

The land use in the vicinity of the site is characterized by commercial, rural-residential and agricultural properties. On-site, only one natural environmental feature is present, an open water pond from previous resource extraction activities. There are no other natural environmental features in the vicinity of the project, as summarized in Table 3.1 below.

**Table 1.1 Summary of Natural Features Present On-site or Adjacent to Site**

Natural Feature	Present On-site or Adjacent
Surface water or wetlands present	Open water pond from previous resource extraction activities
Steep slopes, valleys or escarpments	None
Urban Natural Features or Natural Environment Areas	None
Significant Woodlands	None
Greenspace Linkages	None
High Quality Specimen Trees	None
Rare plant communities or unique environmental features	None
Presence of Species at Risk	None

Based on a review of historical air photos, the site and surrounding area has undergone significant alteration since 1976. The following alterations were noted during review:

- 1976: resource extraction had begun on the subject property, but the pond was much smaller than its current configuration. The barn buildings were present on-site and surrounding property included rural-residential and agricultural. The large resource extraction operations northwest of the site begun.

- 1991: On-site resource extraction extent same as 1976. Commercial development east of site and Carp Road. Resource extraction northwest of site at current extent. Resource extraction south of site begun.
- 1999: On-site resource extraction extent larger than 1991. Extraction on west side of lot beginning, roadways present to back of property.
- 2002: On-going resource extraction on-site and west of site at rear of lot.
- 2005: On-going resource excavation on-site.
- 2008: On-going resource excavation on-site. Residential development south of property beginning.
- 2011: On-site resource extraction at current extent. Residential development south of property on-going.
- 2014 and 2017: Site and surrounding area at current extent.

### 3.2 Tree Inventory Summary

A tree inventory was conducted on September 27, 2019. Trees on-site were identified, enumerated and assessed for visual signs of distress and disease. Table C.1 in Appendix C provides a summary of all tree specimens on-site whose DBH was greater than 10 cm. CRZ values for trees with DBH greater than 10 cm are also present in Table C.1 in Appendix C. Critical Root Zones were not calculated for dead trees. For trees with multiple stems greater than 10 cm DBH, the largest DBH was used to calculate the CRZ. All trees with a DBH greater than 10 cm and their CRZ are illustrated on Figure A.3 and A.4, in Appendix A. In general, the tree community assemblage can be described as containing a few semi-mature and immature opportunistic trees.

Per the City of Ottawa By-law No. 2009-200, three distinctive trees (DBH > 50 cm) were identified on-site. Tree number 34, a Green Ash (*Fraxinus pennsylvanica*), tree number 86, a *Prunus* sp., and tree number 95 a white willow (*Salix alba*) all had DBH greater than 50 cm.

None of the trees identified on-site are listed under the provincial Endangered Species Act.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on a review of the information summarized in Section 3.2, Table C.1 in Appendix C and the proposed development concept illustrated on Figure A.2, the following conclusions are provided:

- 36 trees were identified as non-retainable, 4 trees were identified as possible conflict, and 1 tree was identified as having a conflict with the CRZ, under the proposed development concept;
- Three distinctive trees, meeting the City of Ottawa By-Law No. 2009-200 requirements, were identified on-site, all trees are retainable under the proposed development concept, however a potential conflict may occur with the CRZ of tree 95 under the proposed development concept;
- No wildlife trees were identified within the development area;
- Trees on-site are of a typical urban and opportunistic or early successional species;
- 138 trees are in good/healthy condition and 10 trees are dead, dying or poor condition; and
- None of the 299 trees present on-site are protected under the Endangered Species Act, Ontario 2007, represent exceptional native tree specimens, or provide any significant conservation value.

### 4.1 Tree Conservation Recommendations

Opportunities exist along the perimeter of the proposed development, along Carp Road and along the pond edge to offset the loss of trees that are not retainable under the proposed development concept. In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple and red oak.

### 4.2 Recommended Mitigation Measures

The following mitigation measures and best practice recommendations are provided by GEMTEC in order to minimize and eliminate negative impacts to trees identified in Appendix C as retainable. Construction contractors shall apply the following measures outlined below to prevent damage to trees identified to be retained in the redevelopment plan for the site;

- All trees identified to be retained should be clearly marked and the CRZ delineated with fencing to prevent encroachment and damage during construction;
- If trees to be removed overlap with the CRZ of trees to be retained, cut roots at the edge of the retained CRZ and grind down stumps after tree removal, do not pull out stumps. If roots must be cut, roots 20 cm or larger should be cut at right angles with clean, sharp, horticultural tools, without tearing, crushing, or pulling;
- Do not place any material or equipment within the CRZ of any tree identified to be retained;

- Do not attach any signs, notices or posters to any tree identified to be retained;
- Do not damage the root system, trunk, or branches or any tree identified to be retained;
- Ensure that exhaust fumes from all equipment are directed away from tree canopy; and
- Tree removal shall occur outside of the key breeding bird period (typically April 15 to August 15) as identified by Environment Canada for the protection of migratory birds and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place outside of the aforementioned timing window then a nest survey shall be conducted by a qualified professional.

## 5.0 CLOSURE

This letter and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd. (GEMTEC), and was prepared for Argue Construction Ltd. and is intended for the exclusive use of Argue Construction Ltd. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Argue Construction Ltd. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This letter has been prepared for the application notes and it is based in part, on visual observations made at the site, all as described in the report. Unless otherwise states, the findings contained in this report cannot be extrapolates or extended to previous or future site conditions or for portions of the site that were unavailable for direct investigation.

Should new information become available during future work, or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions present herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,



Taylor Warrington, B.Sc.  
Biologist



Drew Paulusse, B.Sc.  
Senior Biologist



## 6.0 REFERENCES

Ottawa, City of (Ottawa). 2003. City of Ottawa Official Plan. May

Ottawa, City of (Ottawa), By-law No. 2009-200, *Tree Conservation – Urban* (Updated June 2018).



## **APPENDIX A**

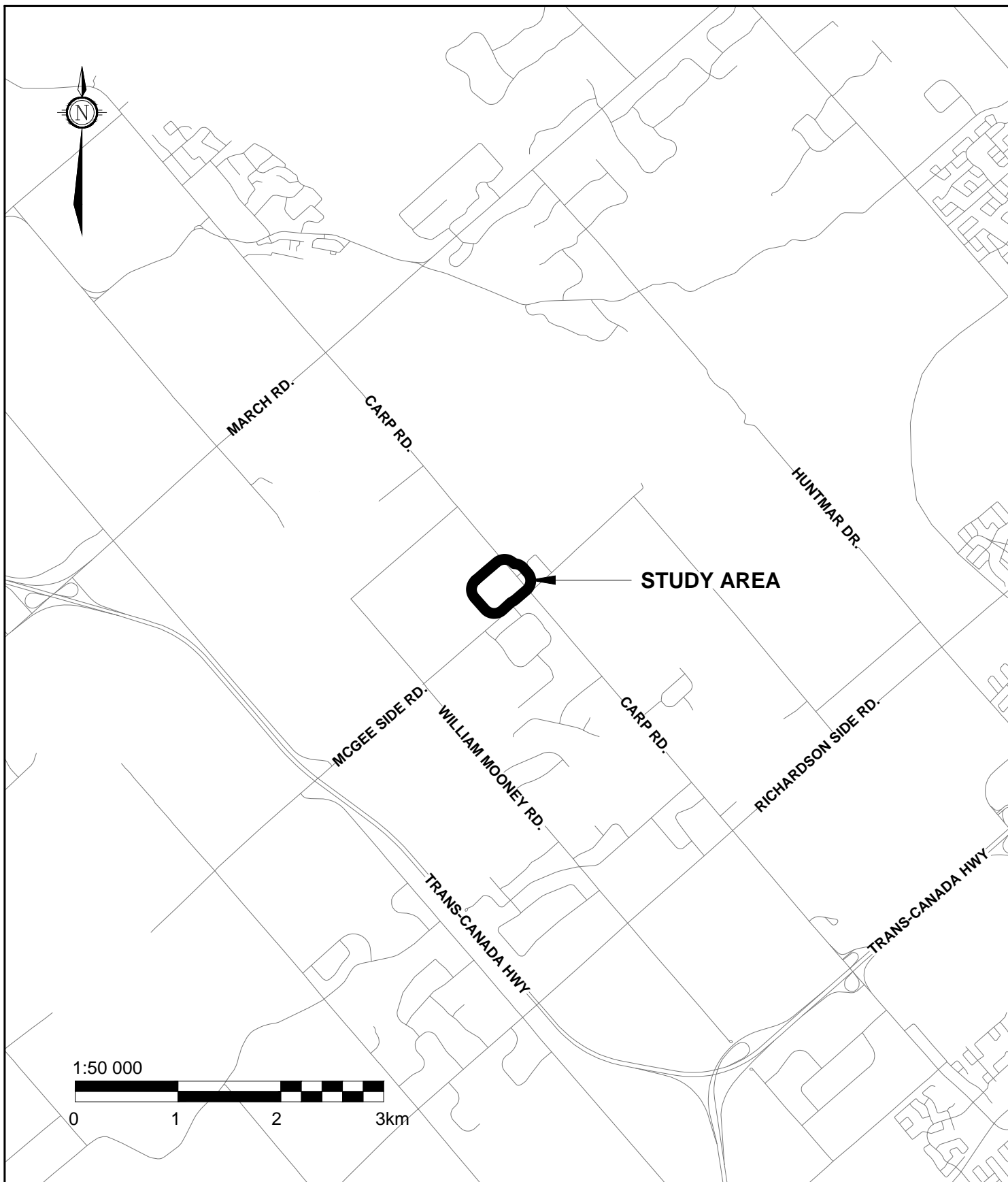
### Report Figures

Figure A.1 – Site Location

Figure A.2 – Site Layout

Figure A.3 – Tree Inventory – North

Figure A.4 – Tree Inventory - South



**GEMTEC**

CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive, Ottawa, ON K2K 2A9  
T: (613) 836-1422 | www.gemtec.ca | ottawa@gemtec.ca

Project  
TREE CONSERVATION REPORT  
3025 CARP ROAD  
OTTAWA, ONTARIO

Drawing

SITE LOCATION

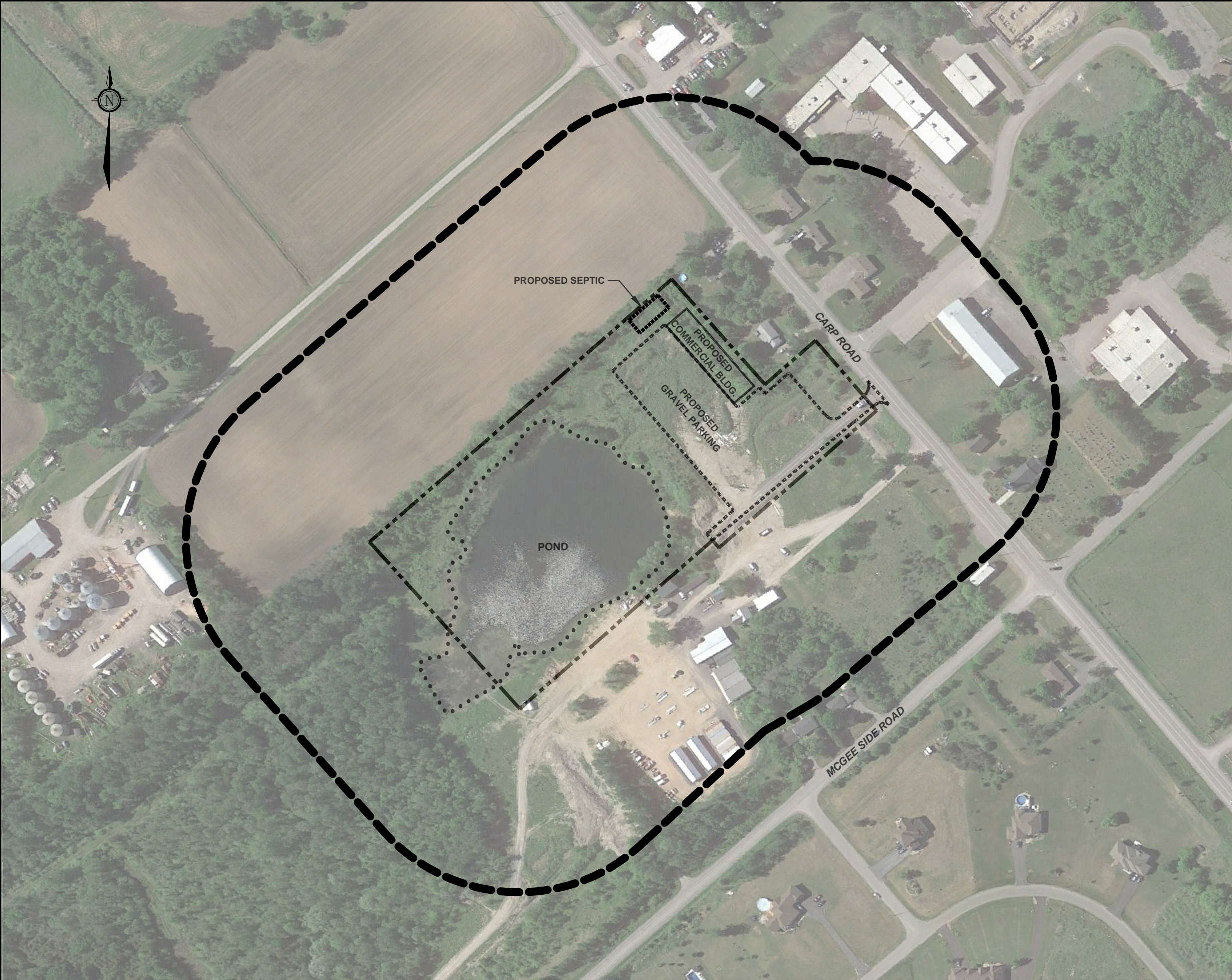
Drwn By	Chkd By	Date
P.C.	T.W.	JULY 2020

Project No.
61730.61




Revision No.
1

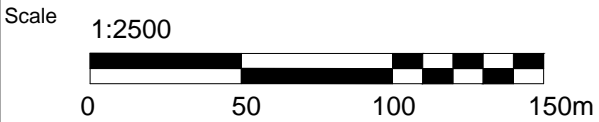
**FIGURE A.1**





**LEGEND**

-  PROPERTY BOUNDARY
-  STUDY AREA, 120m BUFFER AROUND PROPERTY BOUNDARY
-  WATER BODIES

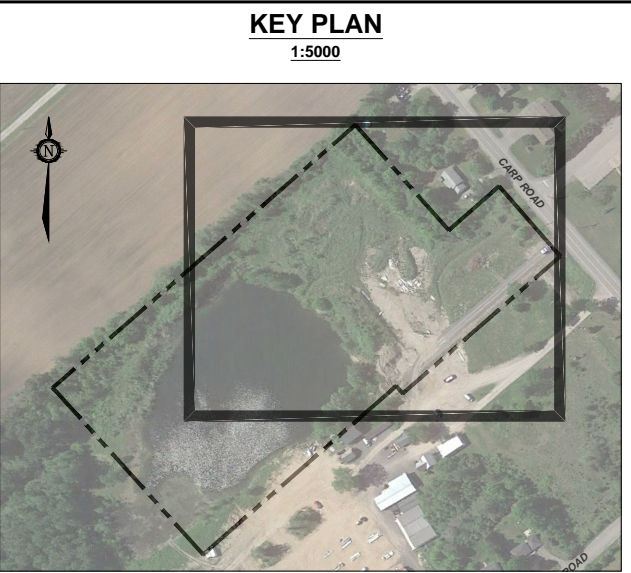


**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

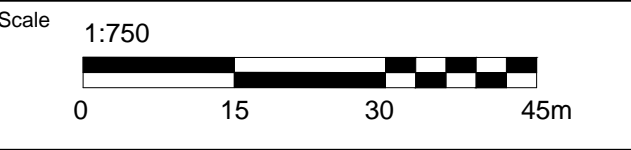
Drawing		SITE LAYOUT	
Client ARGUE CONSTRUCTION LTD.			
Project 61730.61		TREE CONSERVATION REPORT 3025 CARP ROAD OTTAWA, ONTARIO	
Drwn by P.C.	Chkd by T.W.		
Date JULY 2020		Rev. 1	FIGURE A.2





**LEGEND**

- PROPERTY BOUNDARY
- PROPOSED GRAVEL PARKING AREA
- WATER BODY
- 101 TREE ID
- CRITICAL ROOT ZONE
- DEAD TREE



**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

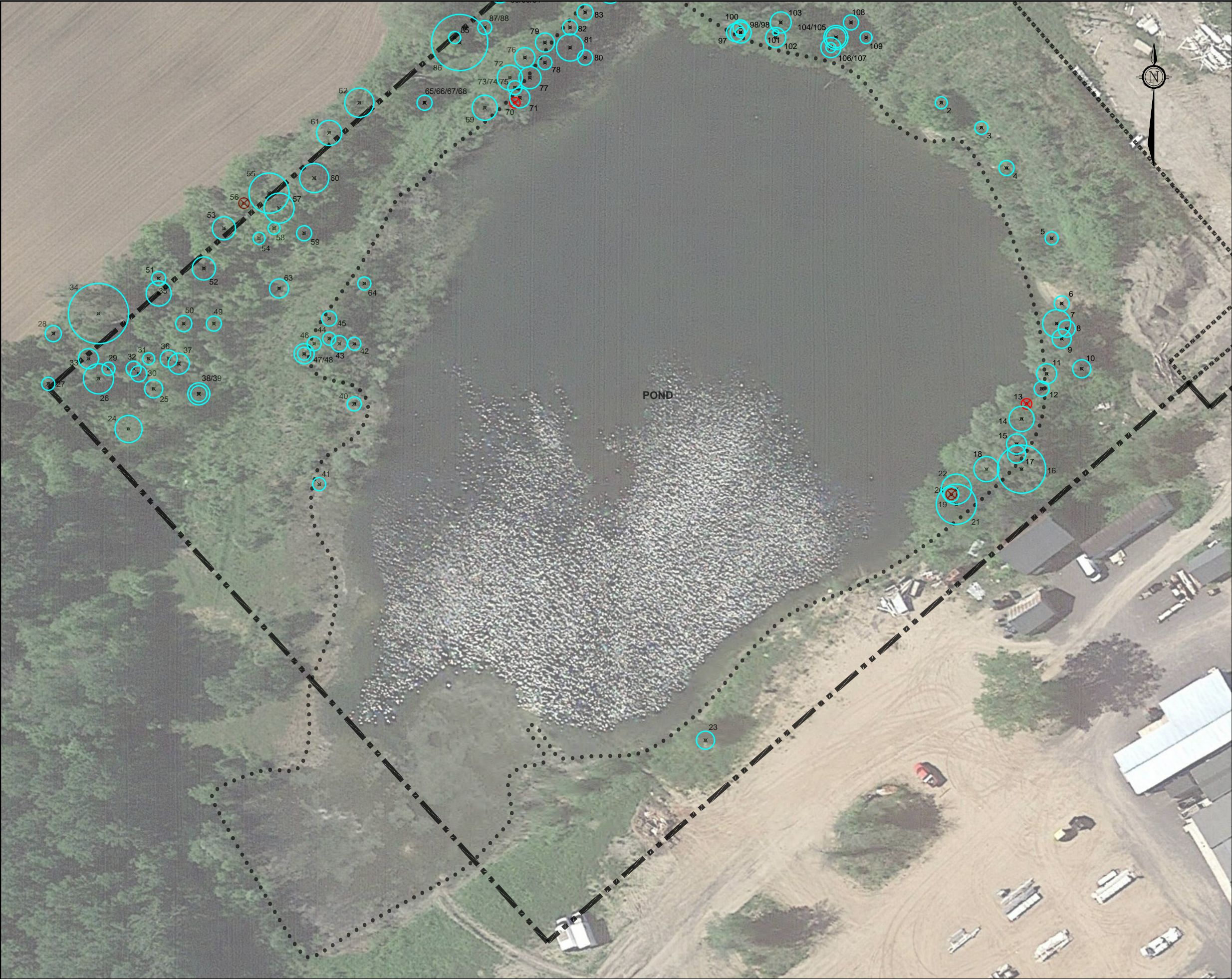
Drawing  
**TREE INVENTORY DEVELOPMENT  
(NORTH)**

Client  
**ARGUE CONSTRUCTION LTD.**

Project 61730.61	TREE CONSERVATION REPORT 3025 CARP ROAD OTTAWA, ONTARIO
Drwn by P.C.	
Chkd by T.W.	

Date JULY 2020	Rev. 1	<b>FIGURE A.3</b>
-------------------	-----------	-------------------





**KEY PLAN**  
1:5000



**LEGEND**

- PROPERTY BOUNDARY
- PROPOSED GRAVEL PARKING AREA
- WATER BODY
- 101 TREE ID
- CRITICAL ROOT ZONE
- DEAD TREE

Scale 1:750  
0 15 30 45m



**GEMTEC**  
CONSULTING ENGINEERS  
AND SCIENTISTS

32 Steacie Drive  
Ottawa, ON K2K 2A9  
Tel: (613) 836-1422  
www.gemtec.ca  
ottawa@gemtec.ca

Drawing  
TREE INVENTORY DEVELOPMENT  
(SOUTH)

Client  
ARGUE CONSTRUCTION LTD.

Project 61730.61	TREE CONSERVATION REPORT 3025 CARP ROAD OTTAWA, ONTARIO
Drwn by P.C.	

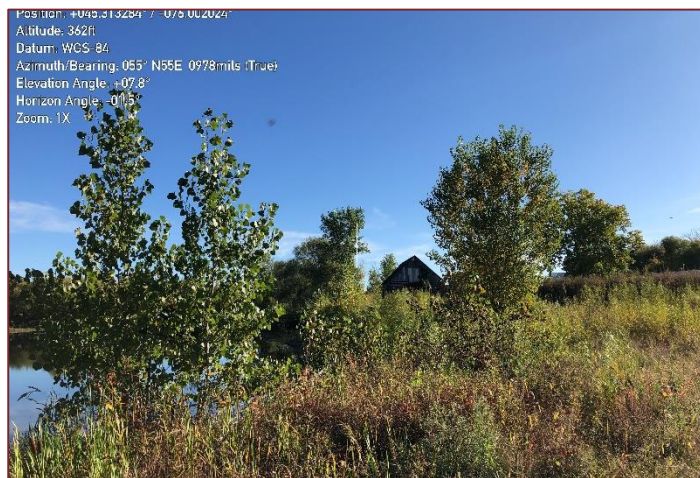
Date JULY 2020	Rev. 1	<b>FIGURE A.4</b>
-------------------	-----------	-------------------





## **APPENDIX B**

### Site Photographs



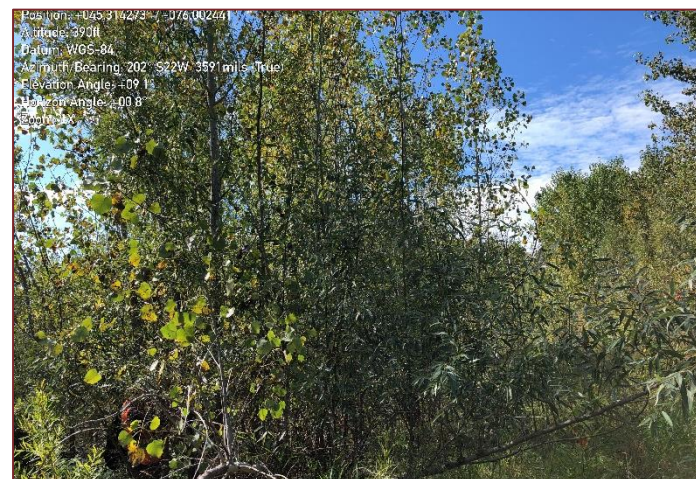
Site Photograph 1 – Tree Vegetation Along Southern Edge of Pond



Site Photograph 2 – Tree Vegetation Along Northern Edge of Pond Property Boundary



Site Photograph 3 – Tree Vegetation along North and East Pond Edge



Site Photograph 4 – Tree Vegetation along Northern Property Boundary





## **APPENDIX C**

### Tree Inventory Summary Table

Table C.1  
Summary of Tree Inventory Results

Tree Number	Common Name	Scientific Name	Diameter (cm DBH)	Critical Root Zone (cm)	Condition	Retainable or Conflict	Significant Tree (> 50 cm)	Wildlife Tree
1	American Elm	<i>Ulmus americana</i>	37 & 36	370	Good	Retainable	No	No
2	Manitoba Maple	<i>Acer negundo</i>	12	120	Good	Retainable	No	No
3	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
4	Manitoba Maple	<i>Acer negundo</i>	15	150	Good	Retainable	No	No
5	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
6	Balsam Poplar	<i>Populus balsamifera</i>	15	150	Good	Retainable	No	No
7	Eastern Cottonwood	<i>Populus deltoides</i>	28	280	Good	Retainable	No	No
8	Trembling Aspen	<i>Populus tremuloides</i>	17	170	Good	Retainable	No	No
9	Slender Willow	<i>Salix petiolaris</i>	19	190	Good	Retainable	No	No
10	Slender Willow	<i>Salix petiolaris</i>	18	180	Good	Retainable	No	No
11	Slender Willow	<i>Salix petiolaris</i>	20, 21, 17, 16, 14 & 12	200	Good	Retainable	No	No
12	American Elm	<i>Ulmus americana</i>	15	150	Dying/poor	Retainable	No	No
13	American Elm	<i>Ulmus americana</i>	--	--	Dead	Retainable	No	No
14	Slender Willow	<i>Salix petiolaris</i>	25	250	Good	Retainable	No	No
15	Slender Willow	<i>Salix petiolaris</i>	20	200	Good	Retainable	No	No
16	Slender Willow	<i>Salix petiolaris</i>	48	480	Good	Retainable	No	No
17	Slender Willow	<i>Salix petiolaris</i>	18, 15, 12	180	Good	Retainable	No	No
18	Slender Willow	<i>Salix petiolaris</i>	25	250	Good	Retainable	No	No
19	Slender Willow	<i>Salix petiolaris</i>	15 & 15	150	Good	Retainable	No	No
20	Ash sp.	<i>Fraxinus</i> sp.	--	--	Dead	Retainable	No	No
21	Eastern Cottonwood	<i>Populus deltoides</i>	40	400	Good	Retainable	No	No
22	Slender Willow	<i>Salix petiolaris</i>	30, 20 & 15	300	Good	Retainable	No	No
23	Eastern Cottonwood	<i>Populus deltoides</i>	18, 18, 15, 13 & 10	180	Good	Retainable	No	No
24	Eastern Cottonwood	<i>Populus deltoides</i>	27	270	Good	Retainable	No	No
25	Eastern Cottonwood	<i>Populus deltoides</i>	18	180	Good	Retainable	No	No
26	American Elm	<i>Ulmus americana</i>	30 & 25	300	Good	Retainable	No	No
27	American Elm	<i>Ulmus americana</i>	13	130	Good	Retainable	No	No
28	American Elm	<i>Ulmus americana</i>	16	160	Good	Retainable	No	No
29	American Elm	<i>Ulmus americana</i>	13	130	Good	Retainable	No	No
30	Manitoba Maple	<i>Acer negundo</i>	16	160	Good	Retainable	No	No
31	American Elm	<i>Ulmus americana</i>	12	120	Good	Retainable	No	No
32	American Elm	<i>Ulmus americana</i>	15	150	Good	Retainable	No	No
33	American Elm	<i>Ulmus americana</i>	20	200	Good	Retainable	No	No
34	Green Ash	<i>Fraxinus pennsylvanica</i>	60	600	Good	Retainable	Yes	No
35	Manitoba Maple	<i>Acer negundo</i>	25	250	Good	Retainable	No	No
36	Manitoba Maple	<i>Acer negundo</i>	17	170	Good	Retainable	No	No
37	Eastern Cottonwood	<i>Populus deltoides</i>	21	210	Good	Retainable	No	No
38	Eastern Cottonwood	<i>Populus deltoides</i>	16	160	Good	Retainable	No	No
39	Eastern Cottonwood	<i>Populus deltoides</i>	22	220	Good	Retainable	No	No
40	Eastern Cottonwood	<i>Populus deltoides</i>	14	140	Good	Retainable	No	No
41	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
42	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
43	Eastern Cottonwood	<i>Populus deltoides</i>	16, 14 & 13	160	Good	Retainable	No	No
44	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
45	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
46	Eastern Cottonwood	<i>Populus deltoides</i>	14	140	Good	Retainable	No	No
47	Eastern Cottonwood	<i>Populus deltoides</i>	13	130	Good	Retainable	No	No
48	Slender Willow	<i>Salix petiolaris</i>	20	200	Good	Retainable	No	No

Table C.1  
Summary of Tree Inventory Results

Tree Number	Common Name	Scientific Name	Diameter (cm DBH)	Critical Root Zone (cm)	Condition	Retainable or Conflict	Significant Tree (> 50 cm)	Wildlife Tree
49	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
50	Manitoba Maple	<i>Acer negundo</i>	16 & 14	160	Good	Retainable	No	No
51	Manitoba Maple	<i>Acer negundo</i>	14	140	Good	Retainable	No	No
52	Manitoba Maple	<i>Acer negundo</i>	23	230	Good	Retainable	No	No
53	Manitoba Maple	<i>Acer negundo</i>	23 & 19	230	Good	Retainable	No	No
54	Manitoba Maple	<i>Acer negundo</i>	12	120	Good	Retainable	No	No
55	Manitoba Maple	<i>Acer negundo</i>	40, 26, 24 & 14	400	Good	Retainable	No	No
56	Poplar sp.	<i>Populus</i> sp.	--	--	Dead	Retainable	No	No
57	Manitoba Maple	<i>Acer negundo</i>	30	300	Good	Retainable	No	No
58	Manitoba Maple	<i>Acer negundo</i>	12	120	Good	Retainable	No	No
59	Manitoba Maple	<i>Acer negundo</i>	15	150	Good	Retainable	No	No
60	Black Cherry	<i>Prunus serotina</i>	29	290	Good	Retainable	No	No
61	Black Cherry	<i>Prunus serotina</i>	25	250	Good	Retainable	No	No
62	Black Cherry	<i>Prunus serotina</i>	29 & 27	290	Poor	Retainable	No	No
63	Eastern Cottonwood	<i>Populus deltoides</i>	19	190	Good	Retainable	No	No
64	Eastern Cottonwood	<i>Populus deltoides</i>	13 & 13	130	Good	Retainable	No	No
65	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
66	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
67	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
68	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
69	Manitoba Maple	<i>Acer negundo</i>	25	250	Good	Retainable	No	No
70	Ash sp.	<i>Fraxinus</i> sp.	--	--	Dead	Retainable	No	No
71	Slender Willow	<i>Salix petiolaris</i>	20, 20, 16 & 15	200	Good	Retainable	No	No
72	Slender Willow	<i>Salix petiolaris</i>	25, 17, 17, 13, 13 & 12	250	Good	Retainable	No	No
73	Slender Willow	<i>Salix petiolaris</i>	12	120	Good	Retainable	No	No
74	Eastern Cottonwood	<i>Populus deltoides</i>	14	140	Good	Retainable	No	No
75	Slender Willow	<i>Salix petiolaris</i>	13 & 13	130	Good	Retainable	No	No
76	Slender Willow	<i>Salix petiolaris</i>	20	200	Good	Retainable	No	No
77	Eastern Cottonwood	<i>Populus deltoides</i>	22	220	Good	Retainable	No	No
78	Slender Willow	<i>Salix petiolaris</i>	14	140	Good	Retainable	No	No
79	Eastern Cottonwood	<i>Populus deltoides</i>	19	190	Good	Retainable	No	No
80	Slender Willow	<i>Salix petiolaris</i>	15 & 13	150	Good	Retainable	No	No
81	Eastern Cottonwood	<i>Populus deltoides</i>	27	270	Good	Retainable	No	No
82	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
83	Eastern Cottonwood	<i>Populus deltoides</i>	16	160	Good	Retainable	No	No
84	Eastern Cottonwood	<i>Populus deltoides</i>	22	220	Good	Possible Conflict	No	No
85	Manitoba Maple	<i>Acer negundo</i>	12, 12 & 12	120	Good	Retainable	No	No
86	Prunus sp.	<i>Prunus</i> sp.	56 & 50	560	Good	Retainable	Yes	No
87	Manitoba Maple	<i>Acer negundo</i>	14	140	Good	Retainable	No	No
88	Manitoba Maple	<i>Acer negundo</i>	14	140	Good	Retainable	No	No
89	Manitoba Maple	<i>Acer negundo</i>	13 & 10	130	Good	Retainable	No	No
90	Manitoba Maple	<i>Acer negundo</i>	21	210	Good	Retainable	No	No
91	Manitoba Maple	<i>Acer negundo</i>	15	150	Good	Retainable	No	No
92	Black Cherry	<i>Prunus serotina</i>	30	300	Good	Retainable	No	No
93	White Ash	<i>Fraxinus americana</i>	29	290	Good	Possible Conflict	No	No
94	White Ash	<i>Fraxinus americana</i>	25 & 21	250	Good	Retainable	No	No
95	White Willow	<i>Salix alba</i>	80, 45, 44 & 26	800	Good	Critical Root Zone Conflict	Yes	No
96	Eastern Cottonwood	<i>Populus deltoides</i>	24	240	Good	Non-retainable	No	No
97	Eastern Cottonwood	<i>Populus deltoides</i>	18	180	Good	Retainable	No	No
98	Eastern Cottonwood	<i>Populus deltoides</i>	21 & 16	210	Good	Retainable	No	No
99	Slender Willow	<i>Salix petiolaris</i>	10	100	Good	Retainable	No	No

Table C.1  
Summary of Tree Inventory Results

Tree Number	Common Name	Scientific Name	Diameter (cm DBH)	Critical Root Zone (cm)	Condition	Retainable or Conflict	Significant Tree (> 50 cm)	Wildlife Tree
100	Eastern Cottonwood	<i>Populus deltoides</i>	15	150	Good	Retainable	No	No
101	Eastern Cottonwood	<i>Populus deltoides</i>	16	160	Good	Retainable	No	No
102	Eastern Cottonwood	<i>Populus deltoides</i>	20, 12, 12 & 11	200	Good	Retainable	No	No
103	Eastern Cottonwood	<i>Populus deltoides</i>	21	210	Good	Retainable	No	No
104	White Poplar	<i>Populus alba</i>	24, 15, 14 & 13	240	Good	Retainable	No	No
105	Eastern Cottonwood	<i>Populus deltoides</i>	20	200	Good	Retainable	No	No
106	Eastern Cottonwood	<i>Populus deltoides</i>	20	200	Good	Retainable	No	No
107	White Poplar	<i>Populus alba</i>	10	100	Good	Retainable	No	No
108	White Poplar	<i>Populus alba</i>	15	150	Good	Retainable	No	No
109	Large Tooth Aspen	<i>Populus grandidentata</i>	12 & 10	120	Good	Retainable	No	No
110	Ironwood	<i>Ostrya virginiana</i>	11	110	Good	Non-retainable	No	No
111	White Ash	<i>Fraxinus americana</i>	27, 13 & 11	270	Good	Non-retainable	No	No
112	Trembling Aspen	<i>Populus tremuloides</i>	12 & 12	120	Good	Non-retainable	No	No
113	Trembling Aspen	<i>Populus tremuloides</i>	10	100	Good	Non-retainable	No	No
114	Trembling Aspen	<i>Populus tremuloides</i>	14	140	Good	Non-retainable	No	No
115	White Ash	<i>Fraxinus americana</i>	20	200	Good	Non-retainable	No	No
116	Ash Sp.	<i>Fraxinus</i> sp.	-	--	Dead	Retainable	No	No
117	White Ash	<i>Fraxinus americana</i>	13, 13 & 12	130	Good	Non-retainable	No	No
118	White Ash	<i>Fraxinus americana</i>	15	150	Good	Non-retainable	No	No
119	White Ash	<i>Fraxinus americana</i>	25	250	Good	Non-retainable	No	No
120	White Ash	<i>Fraxinus americana</i>	12	120	Good	Non-retainable	No	No
121	Ash sp.	<i>Fraxinus</i> sp.	20	200	Dead	Non-retainable	No	No
122	Buckthorn	<i>Rhamnus cathartica</i>	14	140	Good	Non-retainable	No	No
123	White Ash	<i>Fraxinus americana</i>	19	190	Poor	Non-retainable	No	No
124	Manitoba Maple	<i>Acer negundo</i>	15	150	Poor	Non-retainable	No	No
125	Manitoba Maple	<i>Acer negundo</i>	17	170	Good	Non-retainable	No	No
126	Manitoba Maple	<i>Acer negundo</i>	17 & 17	170	Good	Non-retainable	No	No
127	Rock elm	<i>Ulmus thomasii</i>	22	220	Good	Non-retainable	No	No
128	White Ash	<i>Fraxinus americana</i>	10	100	Good	Non-retainable	No	No
129	Manitoba Maple	<i>Acer negundo</i>	14 & 11	140	Good	Non-retainable	No	No
130	Manitoba Maple	<i>Acer negundo</i>	15 & 15	150	Good	Non-retainable	No	No
131	Manitoba Maple	<i>Acer negundo</i>	20 & 15	200	Good	Non-retainable	No	No
132	Manitoba Maple	<i>Acer negundo</i>	15	150	Good	Non-retainable	No	No
133	Manitoba Maple	<i>Acer negundo</i>	14 & 12	140	Good	Non-retainable	No	No
134	Manitoba Maple	<i>Acer negundo</i>	20 & 20	200	Good	Non-retainable	No	No
135	Manitoba Maple	<i>Acer negundo</i>	20	200	Good	Non-retainable	No	No
136	Manitoba Maple	<i>Acer negundo</i>	13	130	Good	Non-retainable	No	No
137	Manitoba Maple	<i>Acer negundo</i>	10	100	Good	Non-retainable	No	No
138	Manitoba Maple	<i>Acer negundo</i>	15 & 15	150	Good	Non-retainable	No	No
139	Manitoba Maple	<i>Acer negundo</i>	20, 20, 15, 15 & 14	200	Good	Non-retainable	No	No
140	Manitoba Maple	<i>Acer negundo</i>	20 & 20	200	Good	Non-retainable	No	No
141	Manitoba Maple	<i>Acer negundo</i>	25 & 23	250	Good	Non-retainable	No	No
142	Manitoba Maple	<i>Acer negundo</i>	20	200	Good	Non-retainable	No	No
143	Manitoba Maple	<i>Acer negundo</i>	22 & 15	220	Good	Non-retainable	No	No
144	Manitoba Maple	<i>Acer negundo</i>	15 & 12	150	Good	Non-retainable	No	No
145	Manitoba Maple	<i>Acer negundo</i>	20 & 15	200	Good	Non-retainable	No	No
146	Trembling Aspen	<i>Populus tremuloides</i>	20	200	Good	Possible Conflict	No	No
147	Manitoba Maple	<i>Acer negundo</i>	30	300	Good	Possible Conflict	No	No
148	Manitoba Maple	<i>Acer negundo</i>	21 & 18	210	Good	Retainable	No	No



## **APPENDIX D**

### CVs for Key Personnel

## **Drew Paulusse, B.Sc.**

Senior Biologist / Manager of Environmental Services

Mr. Paulusse has over 12 years of experience in the environmental consulting industry, providing private industry and municipal and federal government clients with cost effective solutions to manage environmental constraints associated with land development proposals and infrastructure projects. Mr. Paulusse's expertise, as it relates to land development proposals and infrastructure projects is field assessment and regulatory permitting associated with species at risk, fish habitat and wetlands.

### **Education**

- B.Sc., Biology, Trent University, 2007
- Environmental Technician, Fleming College, 2004

### **Professional Experience**

<b>2018-date</b>	<b>GEMTEC Consulting Engineers and Scientists Limited</b> <i>Manager of Environmental Services</i>	<b>Ottawa, Ontario</b>
<b>2011-2018</b>	<b>Geofirma Engineering Limited</b> <i>Senior Biologist</i>	<b>Ottawa, Ontario</b>
<b>2007-2011</b>	<b>INTERA Engineering Limited</b> <i>Biologist</i>	<b>Ottawa, Ontario</b>
<b>2007</b>	<b>Canadian Wildlife Service, Environment Canada</b> <i>Wetland Conservation Officer</i>	<b>Burlington, Ontario</b>
<b>2005</b>	<b>Centre for Inland Waters, Environment Canada</b> <i>Junior Marine Technologist</i>	<b>Burlington, Ontario</b>

### **Professional Affiliations and Technical Training**

- Canadian Society of Environmental Biologists
- Ontario Association for Impact Assessment
- MTO/DFO/MNRF Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings. Ministry of Transportation. 2018
- Ontario Wetland Evaluation System Certification Course. Ministry of Natural Resources and Forestry. 2017
- Headwater Drainage Feature Assessment Training Course. Rideau Valley Conservation Authority. 2017







# GEMTEC

- Ecological Land Classification System Certification Course. Ministry of Natural Resources and Forestry. 2015
- Ontario Benthic Biomonitoring Network Certification Course. Ministry of Environment, Conservation and Parks. 2011

## Project Highlights

- ***DFO Self-Assessment and Preparation of Tender Special Provisions, Osceola Culvert Replacement, County of Renfrew, Ontario (2019):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat and species at risk, and completion of a DFO self-assessment. Work included aquatic habitat assessments, pathway of effects evaluation, culvert design recommendations and reporting.
- ***Biological Inventory, Ontario Power Generation Incorporated, Bath, Ontario (2018):*** Project manager and technical lead responsible for conducting a three-season inventory of avian and amphibian species at the Lennox Provincially Significant Wetland. Work included conducting presence and abundance surveys following the Canadian Wildlife Service marsh monitoring protocol and Bird Studies Canada breeding bird surveys, statistical analysis of species data trends and reporting.
- ***Wetland Management Plan, Ontario Power Generation Incorporated, Bath, Ontario (2018):*** Project manager and technical lead responsible for the development of an adaptive wetland management plan for the Lennox Provincially Significant Wetland. Work included a synthesis of historical data, statistical analysis of data trends, vegetation assessment, air photo interpretation, development of short-term and long-term management objectives and development of a standardized monitoring program.
- ***Environmental Compliance Monitoring, Petrie Island Causeway Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Causeway Rehabilitation Project within the Ottawa River. Work included species at risk surveys, fish salvage, exclusion fence inspection, monitoring of sediment and erosion control measures, turbidity monitoring, regulatory agency consultation and weekly reporting.
- ***Wetland Delineation and Wetland Function Assessment, National Capital Commission, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for the delineation of wetland pockets within the LeBreton Flats Redevelopment Area and the assessment of wetland function for the purpose of evaluating compensation requirements. Work was completed following both the federal and provincial wetland evaluation frameworks.





- ***Environmental Impact Statement, Code Drive Development, Smiths Falls, Ontario (2018):*** Project manager and technical lead responsible for the completion of an Environmental Impact Statement in support of a severance application for the creation of eight residential lots within a significant woodland and adjacent to a large local wetland. Work included targeted surveys for species at risk, breeding amphibians and marsh birds, impact assessment, development of lot-specific mitigation measures and agency consultations.
- ***Tree Conservation Report, Royal LePage Team Realty, Ottawa, Ontario (2018):*** Mr. Paulusse completed an inventory of all trees located on an urban commercial lot for the purpose of identify significant retainable trees and trees in conflict with the proposed site redevelopment. Work included, site inventory, tree removal permit preparation and reporting.
- ***Environmental Compliance Monitoring, Airport Parkway Culvert Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with Ministry of Natural Resources and Conservation Authority permit conditions. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures and weekly reporting.
- ***Tier I and II Natural Environment Report, Crain's Construction, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for completing an inventory of site flora and fauna, completion of species at risk surveys, regulatory agency consultation, impact assessment and reporting.
- ***Species at Risk Assessment, National Capital Commission, Gatineau, Quebec (2018):*** Project manager responsible for the completion of avian species at risk surveys to determine the presence or absence of chimney swift and barn swallows at a contaminated site. Work was undertaken to support an Ecological Risk Assessment.
- ***Fish Habitat Assessment, Various Culvert Replacements, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat at three culvert crossings in rural Ottawa. Work included aquatic habitat assessments, pathway of effects evaluation, culvert design recommendations and reporting.
- ***Environment Effects Evaluation Assessment, Britannia Wall Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for completing a comprehensive tree inventory, wetland boundary delineation, significant wildlife habitat assessment and evaluation of effects associated with the rehabilitation of the Britannia Wall, a 600-metre-long community flood protection structure.
- ***Environmental Compliance Monitoring, Petrie Island Beach Head Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island







Beach Head Rehabilitation Project within the Ottawa River. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures, and reporting.

- ***Provincially Significant Wetland Boundary Evaluation and Mitigation Plan, Town and County Chrysler, Smiths Falls, Ontario (2018):*** Project manager and technical lead responsible for revising the wetland boundary associated with a provincially significant wetland and development of a mitigation plan to enable the redevelopment of an adjacent commercial lot. Work included wetland vegetation delineation, regulatory technical document submissions, agency consultations, mitigation measure development and reporting.
- ***Environmental Impact Statement and Headwater Drainage Feature Assessment, Swank Construction Limited, Morrisburg, Ontario (2017-2018):*** Project manager and technical lead responsible for the completion of an Environmental Impact Statement with Headwater Drainage Feature Assessment for a 100-lot residential subdivision. Work included ecological land classification, breeding bird surveys, impact assessment and a three season assessment of hydrological conditions and their contributions to downstream fish habitat.
- ***Natural Heritage Inventory and Environmental Impact Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Project manager and technical lead responsible for the completion of a Natural Heritage Inventory and Environmental Impact Assessment completed in support of a 54-lot condominium development located in an environmentally sensitive area. Work included wetland boundary delineation, identification of significant wildlife habitat, application of the significant wildlife habitat mitigation support tool, completion of a two-year survey of site flora and fauna, impact assessment and town hall presentations.
- ***Lake Capacity Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Project manager and technical lead responsible for the predictive assessment of septic effluent impacts relating to the operation of a 54-lot condominium development on three adjacent waterbodies. Work included limnological investigations over two seasons, application of the provincial lakeshore capacity model, hydrogeological investigations, mass flux analysis, mitigation measure development and reporting.
- ***Detailed Quantitative Ecological Risk Assessment, National Capital Commission, Gatineau, Quebec (2016 to 2018):*** Project manager and technical lead for the completion of a Detailed Quantitative Ecological Risk Assessment completed for a former landfill property located adjacent to the Ottawa River. Work included aquatic habitat assessment, benthic community characterization, species at risk surveys, terrestrial wildlife surveys and analysis of site-specific aquatic toxicity data.
- ***Environmental Compliance Monitoring, Carp Snow Dump, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for monitoring constructor compliance with a Ministry of Natural Resources overall benefit permit for blanding's turtle associated with the





construction of the Carp Snow Dump. Work included weekly exclusion fence inspection and weekly reporting to the contract administrator.

- ***Fish Habitat Assessment, Little Bark Bay Properties, Barry's Bay, Ontario (2017):*** Project manager and technical lead responsible for the identification and evaluation of significance of fish habitat within and adjacent to a proposed plan of subdivision. Work included aquatic habitat assessments, pathway of effects evaluation, application of the Department of Fisheries and Oceans self-assessment process and reporting.
- ***Species at Risk and Migratory Bird Screening Assessment, City of Ottawa, New Edinburg Park Redevelopment Project, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the completion of a species at risk and migratory bird screening assessment to assist in bid tender package preparation for the re-development of New Edinburg Park. Work included a general habitat assessment, a probability of occurrence assessment, follow-up pre-construction surveys and reporting.
- ***Fish Habitat Assessment, Highway 417 Culvert Replacement Project, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat at two culvert crossings Ottawa. Work included aquatic habitat assessments, pathway of effects evaluation, application of the Department of Fisheries and Oceans self-assessment process and reporting.
- ***Fish Habitat and Headwater Drainage Feature Assessment, Private Landowner, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the completion of a two-season hydrological assessment of on-site water courses and assessment of fish habitat. Work completed in support of a permit required to develop an unopened road allowance.
- ***Environmental Impact Statement and Wetland Boundary Assessment, Town and Country RV, Perth, Ontario (2016-2017):*** Project manager and technical lead responsible for delineation of a provincially significant wetland and impact assessment associated with the expansion of an existing commercial enterprise. Work included ecological land classification, identification of significant wildlife habitat, species at risk surveys, wetland vegetation assessment, impact assessment and development of site-specific mitigation measures.
- ***Environmental Impact Statement, Blueberry Creek Veterinary Clinic, Perth, Ontario (2016):*** Project manager and technical lead responsible for delineation of a provincially significant wetland and impact assessment associated with the development of a commercial lot. Work included ecological land classification, identification of significant wildlife habitat, species at risk surveys, wetland vegetation assessment, impact assessment and development of site-specific mitigation measures.



**Taylor Warrington, B.Sc.****Junior Biologist**

---

Ms. Warrington has 3 years of experience in the environmental consulting industry, providing private industry and municipal and federal government clients with cost effective solutions to manage environmental constraints associated with land development proposals and infrastructure projects.

**Education**

- B.Sc., Life Sciences, McMaster University, 2015
- Graduate Certificate, Ecosystem Restoration, Niagara College, 2016

**Professional Experience**

<b>2019-date</b>	<b>GEMTEC Consulting Engineers and Scientists Limited</b> <i>Junior Biologist</i>	<b>Ottawa, Ontario</b>
<b>2017-2019</b>	<b>Geofirma Engineering Limited</b> <i>Junior Biologist/Scientist</i>	<b>Ottawa, Ontario</b>
<b>2016</b>	<b>Dillon Consulting</b> <i>Junior Field Biologist</i>	<b>Little Current, Ontario</b>
<b>2014</b>	<b>McMaster University</b> <i>Laboratory-Research Assistant; URBAN Project Coordinator</i>	<b>Hamilton, Ontario</b>

**Professional Affiliations and Technical Training**

- Ontario Reptile and Amphibian Survey Course. Blazing Star Environmental, Natural Resource Solutions Inc., and Ontario Nature. 2018
- Ontario Benthic Biomonitoring Network Certification Course. Ministry of Environment, Conservation and Parks. 2016

**Project Highlights**

- **Surface Water Impact Assessment, Green Lake Development, Barry's Bay, Ontario (2019):** Biologist responsible for the completion of a surface water impact assessment supporting two residential lot severances. Work included a review of existing data on Green Lake, application of the provincial lakeshore capacity model, mitigation measure development and reporting.
- **Biological Inventory, Ontario Power Generation Incorporated, Bath, Ontario (2018):** Field Biologist responsible for conducting a three-season inventory of avian and amphibian species at the Lennox Provincially Significant Wetland. Work included conducting presence



and abundance surveys following the Canadian Wildlife Service marsh monitoring protocol and Bird Studies Canada breeding bird surveys, statistical analysis of species data trends and reporting.

- ***Environmental Compliance Monitoring, Petrie Island Causeway Rehabilitation Project, Ottawa, Ontario (2018):*** Field biologist responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Causeway Rehabilitation Project within the Ottawa River. Work included species at risk surveys, fish salvage, exclusion fence inspection, monitoring of sediment and erosion control measures, turbidity monitoring, regulatory agency consultation and weekly reporting.
- ***Environmental Impact Statement, Code Drive Development, Smiths Falls, Ontario (2018):*** Field Biologist responsible for the completion of an Environmental Impact Statement in support of a severance application for the creation of eight residential lots within a significant woodland and adjacent to a large local wetland. Work included targeted surveys for species at risk, breeding amphibians and marsh birds, impact assessment, development of lot-specific mitigation measures and agency consultations.
- ***Tier I and II Natural Environment Report, Crain's Construction, Ottawa, Ontario (2018):*** Field biologist responsible for completing an inventory of site flora and fauna, completion of species at risk surveys, regulatory agency consultation, impact assessment and reporting.
- ***Species at Risk Assessment, National Capital Commission, Gatineau, Quebec (2018):*** Field biologist responsible for the completion of avian species at risk surveys to determine the presence or absence of chimney swift and barn swallows at a contaminated site. Work was undertaken to support an Ecological Risk Assessment.
- ***Environment Effects Evaluation Assessment, Britannia Wall Rehabilitation Project, Ottawa, Ontario (2018):*** Field Biologist responsible for completing a comprehensive tree inventory, wetland boundary delineation, significant wildlife habitat assessment and evaluation of effects associated with the rehabilitation of the Britannia Wall, a 600-metre-long community flood protection structure.
- ***Environmental Compliance Monitoring, Petrie Island Beach Head Rehabilitation Project, Ottawa, Ontario (2018):*** Field biologist responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Beach Head Rehabilitation Project within the Ottawa River. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures, and reporting.

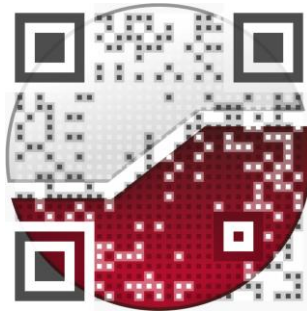




- ***Natural Heritage Inventory and Environmental Impact Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Field biologist responsible for the completion of a Natural Heritage Inventory and Environmental Impact Assessment completed in support of a 54-lot condominium development located in an environmentally sensitive area. Work included wetland boundary delineation, identification of significant wildlife habitat, application of the significant wildlife habitat mitigation support tool, completion of a two-year survey of site flora and fauna, and impact assessments.
- ***Detailed Quantitative Ecological Risk Assessment, National Capital Commission, Gatineau, Quebec (2017 to 2018):*** Field biologist for the completion of a Detailed Quantitative Ecological Risk Assessment completed for a former landfill property located adjacent to the Ottawa River. Work included aquatic habitat assessment, species at risk surveys, and terrestrial wildlife surveys.
- ***Environmental Compliance Monitoring, Carp Snow Dump, Ottawa, Ontario (2017):*** Field biologist responsible for monitoring constructor compliance with a Ministry of Natural Resources overall benefit permit for blanding's turtle associated with the construction of the Carp Snow Dump. Work included weekly exclusion fence inspection and weekly reporting to the contract administrator.
- ***Species at Risk and Migratory Bird Screening Assessment, City of Ottawa, New Edinburg Park Redevelopment Project, Ottawa, Ontario (2017):*** Field biologist responsible for the completion of a species at risk and migratory bird screening assessment to assist in bid tender package preparation for the re-development of New Edinburg Park. Work included a general habitat assessment, a probability of occurrence assessment, follow-up pre-construction surveys and reporting.
- ***Post-Construction Windfarm Monitoring for Wildlife Impacts, Little Current, Ontario (2016):*** Field biologist responsible for the completion of post-construction monitoring of a windfarm for avian and mammalian fatalities. Work included fatality surveys, vegetation surveys, and wildlife scavenger surveys.
- ***Long-term Changes in Ecosystem Health, Frenchman's Bay, Pickering, Ontario (2015):*** Field biologist responsible for evaluating the long-term changes in ecosystem health of Frenchman's Bay. Work included: data review, analysis of data trends, watershed and land-use mapping, digitization of wetland vegetation cover and analysis of changes over time, reporting and symposium presentation.



experience • knowledge • integrity



civil  
geotechnical  
environmental  
field services  
materials testing

civil  
géotechnique  
environnementale  
surveillance de chantier  
service de laboratoire des matériaux

expérience • connaissance • intégrité





## **APPENDIX E**

### **MNRF General Habitat Descriptions**

- i. Bank Swallow
- ii. Blanding's Turtle

# General Habitat Description for the Bank Swallow (*Riparia riparia*)

July 2015

*A general habitat description is a technical document that provides greater clarity on the area of habitat protected for a species based on the general habitat definition found in the Endangered Species Act, 2007. General habitat protection does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry out their life processes. A general habitat description also indicates how the species' habitat has been categorized, as per the policy "Categorizing and Protecting Habitat under the Endangered Species Act", and is based on the best scientific information available.*

## HABITAT CATEGORIZATION

- |   |  |
|---|--|
| 1 | The Bank Swallow breeding colony, including the congregation of burrows and the substrate between and around them            |
| 2 | The area within 50 m in front of the breeding colony bank face <sup>1</sup> to allow Bank Swallows to enter and exit burrows |
| 3 | The area of suitable foraging habitat within 500 m of the outer edge of the breeding colony                                  |

1. The breeding colony bank face is the vertical face that is directly associated with, and supports, the Category 1 habitat (i.e., the Bank Swallow breeding colony).

### Category 1

The Bank Swallow breeding colony, including the congregation of burrows and the substrate between and around them, will be considered to have the lowest level of tolerance to alteration. Breeding colonies represent key areas used by members of the colony for reproduction including egg laying, incubation, feeding, resting, and rearing young.

The three main habitat types occupied by Bank Swallows include coastal cliffs, riverbanks, and active sand and gravel pits (Hickling 1959). Breeding colonies occur at discrete locations in vertical banks. Preferred banks are vertical (90 degrees) or slightly inclined (75 degrees) to slightly reclined (105 degrees) (Hjertaas 1984) although Bank Swallows will also use banks with steeper angles from 70 degrees to 110 degrees (M. Cadman pers comm. 2014). Sites with low tree and shrub cover on the tops of the banks and talus slopes are also preferred (Hjertaas 1984). The breeding colony is composed of multiple burrows, with nesting chambers constructed at the end of the burrows. Males use their feet and beaks to dig burrows in vertical faces composed of firm but friable soils composed mostly of silt, sand and loamy substrates, which may also contain clay or gravel (Garrison 1999). Burrows that are located higher on cliff faces have greater reproductive success (Garrison 1999).



Burrows are usually excavated 60-90 cm deep, generally over a period of five days, although burrow excavation may take as long as 14 days (Garrison 1999). Males that fail to attract a mate to the burrow will relocate and dig a new burrow to establish a new territory (Kuhnen 1985). It is important to note that approximately 50% of burrows within a breeding colony are occupied during a given breeding season due to a surplus of excavated burrows (Garrison 1999, Cadman and Lebrun-Southcott 2013). Burrows are constructed until an average distance of 27-30 cm between burrows within the colony is reached (Sieber 1980 in Jones 1987). The Bank Swallow is non-territorial, although the burrow and the area immediately in front of the burrow are actively defended (Kuhnen 1985, Garrison 1999).

Once a pair is established, they expand the end of the burrow upwards and on both sides to create the nesting chamber, in which they construct the nest (Hickman 1979 in Garrison 1999). Nests in Ontario are usually flat, constructed from grasses, straw, and sometimes twigs, other plant stalks, leaves, and rootlets (Peck and James 1987).


Some of the largest breeding colonies with high bird densities are found in bluffs along the shoreline of Lakes Erie and Ontario and the banks along the Saugeen River (COSEWIC 2013). Based on burrow counts and Breeding bird survey data, the Ontario population of Bank Swallows has been estimated at 150,000. The largest known colony in Ontario consists of 3,000 pairs on the north shore of Lake Erie (Sandilands 2007). Although a pair of Bank Swallows may nest solitarily, nesting colonies contain 45 pairs on average (Hoogland and Sherman 1976, Peck and James 1987).

A high proportion of breeding colonies in southern Ontario can be found in anthropogenic environments such as sand and gravel pits (Peck and James 1987). Preliminary results of recent research suggest that approximately 50% of sand and gravel pits in southern Ontario have Bank Swallows nesting in them (M. Cadman and M. Browning unpubl. data 2014). Bank Swallows are not as common in sand and gravel pits in other parts of Ontario and appear to decline in abundance with an increase in latitude (M. Browning pers. comm. 2014).

Studies investigating adult nest site fidelity show a range from 56 to 92% of adult birds returning to former breeding colonies (Petersen and Mueller 1979, Szep 1990 in COSEWIC 2013). Swallows may have adapted to the unstable and ephemeral nature of their nesting sites by remaining flexible in the specific colony site they select, while maintaining fidelity to a general breeding area, usually within a few kilometers of the original colony site (Mead 1979). Burrows constructed in relatively stable soils are sometimes reused although Bank Swallows generally prefer to dig new burrows, possibly due to the potential for infection by ectoparasites (Turner and Rose 1989, Garrison 1999, Hopkins 2001, Alves 2008).

An area around the breeding colony is required to ensure bank stability and prevent collapse of the nesting substrate. Disturbance of soils (e.g., through excavation or operation of heavy machinery) adjacent to the breeding colony has the potential to result in collapse of the nesting substrate (Ghent 2001a, M. Browning unpub. data 2014). The susceptibility to collapse is site-specific and could depend on a variety of factors such as bank age, substrate composition, slope angle, presence of an overhang, and density of burrows. Colonies excavated in loose sand may be subject to higher risk of collapse due to rainfall or nearby activities that disturb the soils in the nesting face (Ghent 2001a).

Mortality caused by substrate collapses impacts Bank Swallows, with 3.6% of mortalities from known causes being attributed to bank collapse in one study (Mead 1979). Another study documented collapse of approximately 5% of Bank Swallow tunnels examined (Hoogland and Sherman (1976) in Ghent 2001a). Freer (1979) found that Bank Swallows did not return to nesting sites if the colony produced few or no young due to substrate collapse or predation; however, new Bank Swallow pairs that were not at the site during one of these events may colonize the site in subsequent years, provided the banks remain suitable (Freer 1979). Conversely, successful breeding at a site increases the probability that adult Bank Swallows will return to a nesting site (Freer 1979).



In natural habitats, mechanisms such as erosion and undercutting of stream banks maintain vertical faces suitable for Bank Swallow nesting (Ghent 2001a). In anthropogenic sites such as sand and gravel pits, Bank Swallows use vertical faces that are maintained by human activities. Without active maintenance, the faces often slump within a few years and become unsuitable for nesting (Freer 1979, Garrison 1999, Ghent 2001b). Hickling (1959) (in Silver and Griffin 2009) found that Bank Swallows preferred a newly eroded vertical face for nesting even though new burrows were required to be dug every year. Therefore, it is recognized that in anthropogenic sites (e.g., sand or gravel pits), certain activities that occur in the non-breeding season could help maintain the bank face as suitable nesting habitat, provided that the important features of the bank, such as slope, height and substrate composition, are maintained for Bank Swallows for future breeding seasons.

## **Category 2**

The area within 50 m in front of the breeding colony bank face (i.e., the vertical face directly associated with, and supporting, the Category 1 habitat) will be considered to have a moderate tolerance to alteration. This area is required to enable unobstructed entry and exit of burrows.

Bank Swallows rely on open spaces in front of the colonies to provide them with sufficient flying space. In one study, Bank Swallows from most colonies were required to climb less than 1 m as they flew 60 m out from the colony. The same study also found that in other instances, 40 m of open space was required. Sites that required Bank Swallows to climb more than 1 m within 40 m or 2 m within 60 m of the bank face were found to be unsuitable for nesting (Hjertass 1984). The area in front of the nesting face must not be obstructed to ensure that Bank Swallows have sufficient horizontal flying space for entry and exit of the burrows.

## **Category 3**

Category 3 habitat includes suitable foraging habitat from the outer edge of the colony to 500 m and will be considered to have a high tolerance to alteration. Bank Swallows depend on open areas within this distance for foraging on insects, which compose 99.8% of their diet (Garrison 1999). Nearby open areas such as rivers, lakes, wetlands, grasslands, and open fields provide good sources of flying insects. Open terrestrial habitats such as grasslands are preferred for foraging, and forested areas are avoided (COSEWIC 2013, Garrison 1999). Foraging during the breeding season frequently takes place between 200 m and 500 m from the colony (Turner 1980, Garrison 1999, COSEWIC 2013), although Bank Swallows may occasionally range more widely in their search for food (Mead 1979, Andrews and Kinsman 1990).

Temperature plays an important role in the variation of food availability and influences foraging distance. Turner (1980) found that distances traveled by Bank Swallows during the breeding season were greater when temperatures were cooler (i.e., 502 m  $\pm$  197 m at 16°C or less), as insect activity drops at lower temperatures.

## Activities in Bank Swallow habitat

Activities in general habitat can continue as long as the *function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed.*

### Generally Compatible Activities

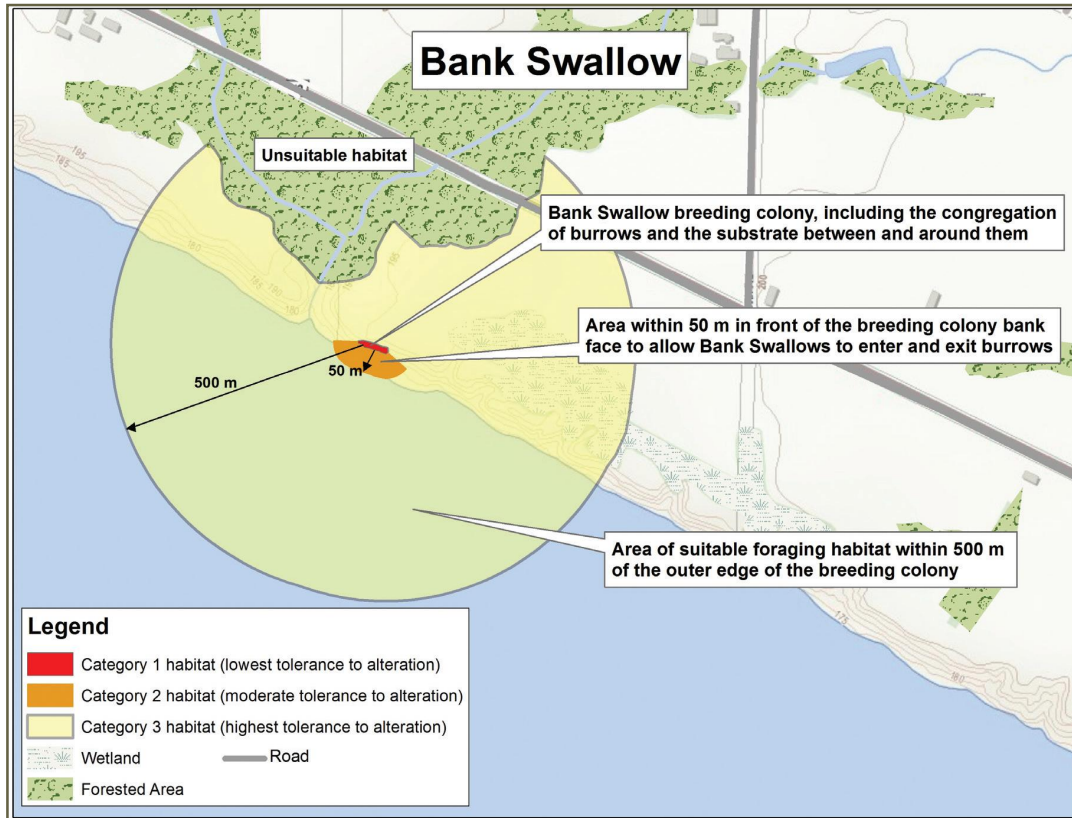
- General recreational use of existing trails such as hiking and cycling.
- General recreational lake, river, and beach use such as boating and fishing.
- Normal use of existing roads.
- Removal or disturbance of substrate that does not result in soil instability and/or collapse of Bank Swallow burrows.
- In anthropogenic sites such as sand and gravel pits, activities (e.g., excavation) in the non-breeding season that maintain the function of the breeding colony bank face as suitable Bank Swallow nesting habitat for future breeding seasons (e.g., maintain features such as slope, height and substrate composition).

### Generally Incompatible Activities\*:

- Recreational activities such as climbing in sensitive habitat areas (e.g., in or adjacent to Category 1 habitat).
- Removal or disturbance of substrate in the breeding season that is likely to result in soil instability and/or collapse of Bank Swallow burrows.
- Development activities that result in removal of large tracts of suitable foraging habitat.
- Obstruction of the open space within 50 m in front of a breeding colony bank face that results in insufficient flying space for Bank Swallows to enter and exit burrows.

\* If you are considering an activity that may not be compatible with general habitat, please contact your local MNRF office for more information.

## Sample application of the general habitat protection for Bank Swallow



## References

- Alves, M.A.S. 2008. Effects of ectoparasites on the Sand Martin *Riparia riparia* nestlings. *Ibis* 139:494-496.
- Andrews, J. and D. Kinsman. 1990. Gravel pit restoration for wildlife. Royal Society for the Protection of Birds, Sandy, Bedfordshire, U.K.
- Browning, M., Research Biologist, Ontario Ministry of Natural Resources. Personal communication. June 4, 2014.
- Cadman, M., Songbird Biologist, Canadian Wildlife Service, Environment Canada. Personal communication. November 12, 2014.
- Cadman, M. and M. Browning. Canadian Wildlife Service and Ministry of Natural Resources and Forestry. Unpublished data. September 11, 2014.
- Cadman, M. and Z. Lebrun-Southcott. 2013. Bank Swallow colonies along the Saugeen River, 2009-2013. *Ontario Birds* 31(3):136-147.
- COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm)).
- Freer V.M. 1979. Factors affecting site tenacity in New York Bank Swallows. *Bird-Banding* 50(4):349-357.
- Garrison, B.A. 1999. Bank Swallow (*Riparia riparia*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu.cat1.lib.trentu.ca:8080/bna/species/414doi:10.2173/bna.4> 14 [accessed 14 May 2014].
- Ghent, A.W. 2001a. Regular spatial patterns of Bank Swallow (*Riparia riparia*) tunnel entrances, with some possible evolutionary implications. *American Midland Naturalist* 146:414-423.
- Ghent, A.W. 2001b. Importance of low talus in location of Bank Swallow (*Riparia riparia*) colonies. *American Midland Naturalist* 146:447-449.
- Hickling, R.A.O. 1959. The burrow-excavation phase in the breeding cycle of the Sand Martin *Riparia riparia*. *Ibis* 101:497-500.
- Hickman, G. R. 1979. Nesting ecology of Bank Swallows in interior Alaska. Master's Thesis. Univ. of Alaska, Fairbanks, 78 pp.
- Hjertaas, D. G. 1984. Colony site selection in Bank Swallows. Master's Thesis. Univ. of Saskatchewan, Saskatoon, 129 pp.
- Hoogland, J.L. and P.W. Sherman. 1976. Advantages and Disadvantages of Bank Swallow (*Riparia riparia*) Coloniality. *Ecological Monographs* 46:33-58.

- Hopkins, L. 2001. Best practice guidelines. Artificial bank creation for Sand Martins and Kingfishers. (<http://www.lbp.org.uk/londonpriority.html#SAPs>) [accessed May 30, 2014].
- Jones, G. 1987. Colonization patterns in Sand Martins (*Riparia riparia*). *Bird Study* 34(1):20-25.
- Kuhnen, K. 1985. On pair-formation in the Sand Martin, *Riparia riparia*. *Journal of Ornithology* 126:1-13.
- Mead, C.J. 1979. Colony fidelity and interchange in the Sand Martin. *Bird Study* 26(2): 99-106.
- Peck, G.K. and R.D. James. 1987. Breeding birds of Ontario: nidology and distribution, Vol. 2: passerines. Royal Ontario Museum. Life Sciences Misc. Publication. Toronto, 387 pp.
- Petersen, C. and A.J. Mueller. 1979. Longevity and Colony Loyalty in Bank Swallows. *Bird-Banding* 50(1): 69-70.
- Sandilands, A.P. 2007. Bank Swallow, pp. 394-395 in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier, eds. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii +706 pp.
- Sieber, O. 1980. Causal and functional aspects of brood distribution in Sand Martins (*Riparia riparia* L.). *Zeitschrift für Tierpsychologie* 52:19-56.
- Silver, M. and C.R. Griffin. 2009. Nesting habitat characteristics of Bank Swallows and Belted Kingfishers on the Connecticut River. *Northeastern Naturalist* 16(4):519-534.
- Szep, T. 1990. Estimation of abundance and survival rate from capture-recapture data of Sand Martin (*Riparia riparia*) ringing. *Ring* 13:205-214.
- Turner, A.K. 1980. The use and time and energy by aerial feeding birds. Ph.D. dissertation, University of Stirling, Stirling, United Kingdom. 347 pp.
- Turner, A.K. and C. Rose. 1989. Swallows and martins an identification guide and handbook. Houghton Mifflin Co., Boston, 258 pp.

# General Habitat Description for the Blanding's Turtle (*Emydoidea blandingii*)

A general habitat description is a technical document that provides greater clarity on the area of habitat protected for a species based on the general habitat definition found in the Endangered Species Act, 2007. General habitat protection does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry out their life processes. A general habitat description also indicates how the species' habitat has been categorized, as per the policy "Categorizing and Protecting Habitat Under the Endangered Species Act", and is based on the best scientific information available.

## HABITAT CATEGORIZATION

1	Nest and the area within 30 m or Overwintering sites and the area within 30 m
2	The wetland complex (i.e. all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies
3	Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

### Category 1

Nest sites and overwintering sites are essential features and along with the 30 m area surrounding them are considered to have the lowest tolerance to alteration. Blanding's Turtles depend on these areas for sensitive life processes including egg-laying, incubation, hatching of young, and hibernation. A 30 m radius (average tree height) buffer around nesting and overwintering sites is important to maintain the microclimate conditions (e.g., thermal, vegetative and lighting features). These areas are habitually used and may support concentrations of individuals.

### Nesting Sites

Blanding's Turtle nests are created in open habitats with low vegetation cover and high sun exposure such as in forest clearings, meadows, shorelines, beaches, rock outcrops, cornfields, gravel roads, road shoulders, ploughed fields, gardens, powerline rights-of-ways, yards and abandoned railroad beds ( Linck et al. 1989, Ross and Anderson 1990, Kiviat 1997, Standing et al. 1999, Joyal et al. 2001, Congdon et al. 2008, Downing et al. 2010, Refsnider and Linck 2012). Females often show high fidelity to the same general nesting areas (Congdon et al. 1983, McNeil 2002, Congdon et al. 2011).



### **Overwintering Sites**

Overwintering sites are typically occupied for at least six months during the overwintering period in Ontario (Edge *et al.* 2009, Edge *et al.* 2010, Davy 2011 unpublished data, Paterson unpublished data 2013, NHIC 2013). Blanding's Turtles display overwintering site fidelity, using some sites year after year (Power 1989, McNeil 2002, Caverhill 2006 in Newton and Herman 2009, Edge *et al.* 2009). Many individuals may aggregate at one site while overwintering (Anderson 1990, St-Hilaire 2003 in COSEWIC 2005, Ross and, Congdon *et al.* 2008, Edge *et al.* 2009).

Suitable Blanding's Turtle overwintering habitat typically includes permanent bogs, fens, marshes, ponds, channels or other habitats with free (unfrozen) shallow water (Joyal *et al.* 2001, Edge 2010, Seburn 2010). Blanding's Turtles studied in Algonquin Provincial park overwintered in wetlands with free water depths of 7 cm - 50 cm (Edge *et al.* 2009). This species may also hibernate within graminoid shallow marsh areas of larger marsh complexes by burying into substrates in areas of pooled water (Gillingwater unpublished data 2013). Blanding's Turtle's may also overwinter in seasonal pools or small excavated areas with standing water (Joyal *et al.* 2001, Rouse unpublished data 2012).

### **Category 2**

The wetland complex that extends up to 2 km from an occurrence and 30 m around these suitable wetlands/waterbodies (Category 2) will be considered to have a moderate level of tolerance to alteration before their function is compromised. For the purpose of general habitat protection for Blanding's Turtle, a wetland complex is defined as all wetlands that are within 500 m of each other. This definition is based on the biology of the species and its documents movement patterns between adjacent suitable wetlands/waterbodies. In cases where an occurrence is not within suitable aquatic habitat, the nearest wetland should be considered the starting point for delineating the wetland complex.

Blanding's Turtles depend on these wetlands and the surrounding habitat throughout their home range for life processes including feeding, mating, thermoregulation, movement, and protection from predators.

Blanding's Turtle home range sizes and lengths in Ontario vary significantly between individuals within the same population and between different populations. In Algonquin Provincial Park, the average range length of radio-tracked Blanding's Turtles was 1.8 km (1.2 standard deviation), with a maximum of 4.3 km (Edge 2013 unpublished data). Recent Ontario studies documented a 90th percentile home range length of radio-tracked Blanding's Turtles in Parry Sound District and Bancroft District of 2.0 and 2.3 km, respectively (Rouse unpublished data 2013, Cameron unpublished data 2013). Average range length of a population on Grenadier Island, Ontario, was 813 m, with a maximum range length just over 2 km. In a Minnesota population, average range length was just over 1.6 km, with a maximum range length just over 5 km (Pappas *et al.* 2000).

Blanding's Turtles regularly move between wetlands or other aquatic areas in order to access mates, overwintering sites, nesting sites, other seasonally required resources and thermoregulation sites (Congdon *et al.* 2008, Edge *et al.* 2010). In a study from Algonquin Provincial Park, Blanding's Turtles made an average of four movements between wetlands each year with an average movement distance of 231 m for males and 497 m for females (Edge *et al.* 2010). Average interwetland movement distances of a population in Maine was  $680 \pm 550$  m (Joyal *et al.* 2001). Rouse and Cameron (unpublished data 2013) found that Blanding's Turtles primarily moved through wetlands and other water and were rarely located more than 200 m from water. Since interwetland movements tend to average about 500 m, wetlands that are separated by more than 500 m from other suitable wetlands have a lower likelihood of being occupied.



A 30 m radius (average tree height) buffer around suitable wetlands helps to maintain microclimate conditions. Buffers of 30 m are widely recognized as providing a range of functional benefits to aquatic features and wetlands such as maintaining water quality by filtering sediment and nutrients, input of woody debris, and cooling water temperatures by shading and infiltrating surface runoff (OMNR 2010). Blanding's Turtles have also been shown to generally bask within 30 m of wetlands (Joyal *et al.* 2001).

Suitable habitat for Blanding's Turtles during the active season includes a variety of wetlands such as marsh, swamps, ponds, fens, bogs, slow-flowing streams, shallow bays of lakes or rivers, as well as graminoid shallow marsh and slough forest habitats that are adjacent to larger marsh complexes (Joyal *et al.* 2001, Gillingwater 2001, Gillingwater and Piraino 2004, 2007, Congdon *et al.* 2008, Edge *et al.* 2010; Seburn 2010). Suitable wetlands used during the active season are typically eutrophic (mineral or organic nutrient-rich), shallow with a soft substrate composed of decomposing materials, and often have emergent vegetation, such as water lilies and cattails (COSEWIC 2005, Congdon *et al.* 2008).

### **Category 3**

The area between 30 m and 250 m around suitable Category 2 wetlands/waterbodies will be considered to have the highest tolerance to alteration. Blanding's Turtles depend on these areas as movement corridors between wetlands, which are essential for carrying out life processes associated with Category 1 and 2 habitats.

Blanding's Turtle nests are typically close to permanent wetlands and reported average distances between nests and the nearest wetland range from 99.5 to 242 m, with maximum distances of 256 m to just over 400 m (Joyal *et al.* 2001, Beaudry *et al.* 2010, Congdon *et al.* 2011, Paterson *et al.* 2012, Refsnider and Linck 2012). Consequently, the area within 250 m of suitable aquatic habitat provides critical movement corridors through which hatchling Blanding's Turtles access wetlands after hatching. This habitat is also used by some hatchlings as overwintering habitat in their first year (Paterson *et al.* 2012).

Although Blanding's Turtles nest close to water, they often travel considerable distances from their wetland of origin during nesting migrations, with movements of 6 km being documented in some Ontario populations (Edge *et al.* 2010). Although wetlands and ponds are used as movement corridors when available, females make extensive movements through upland habitat to access nesting sites (Congdon *et al.* 2008). As mentioned in the previous section (see Category 2), Blanding's Turtles also make regular overland movements between wetlands throughout the active season in order to access Category 1 and 2 habitats within their home range. Category 3 habitat provides essential movement corridors of up to 500 m between wetlands, which will encompass the areas that are most likely to be used for overland movement.

## Activities in Blanding's Turtle habitat

Activities in general habitat can continue as long as the *function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed*.

### *Generally compatible:*

- Recreational use of the water such as swimming, boating, and fishing.
- Small-scale alterations to land cover that do not impede overland movements or impair nesting sites.

### *Generally not compatible\*:*

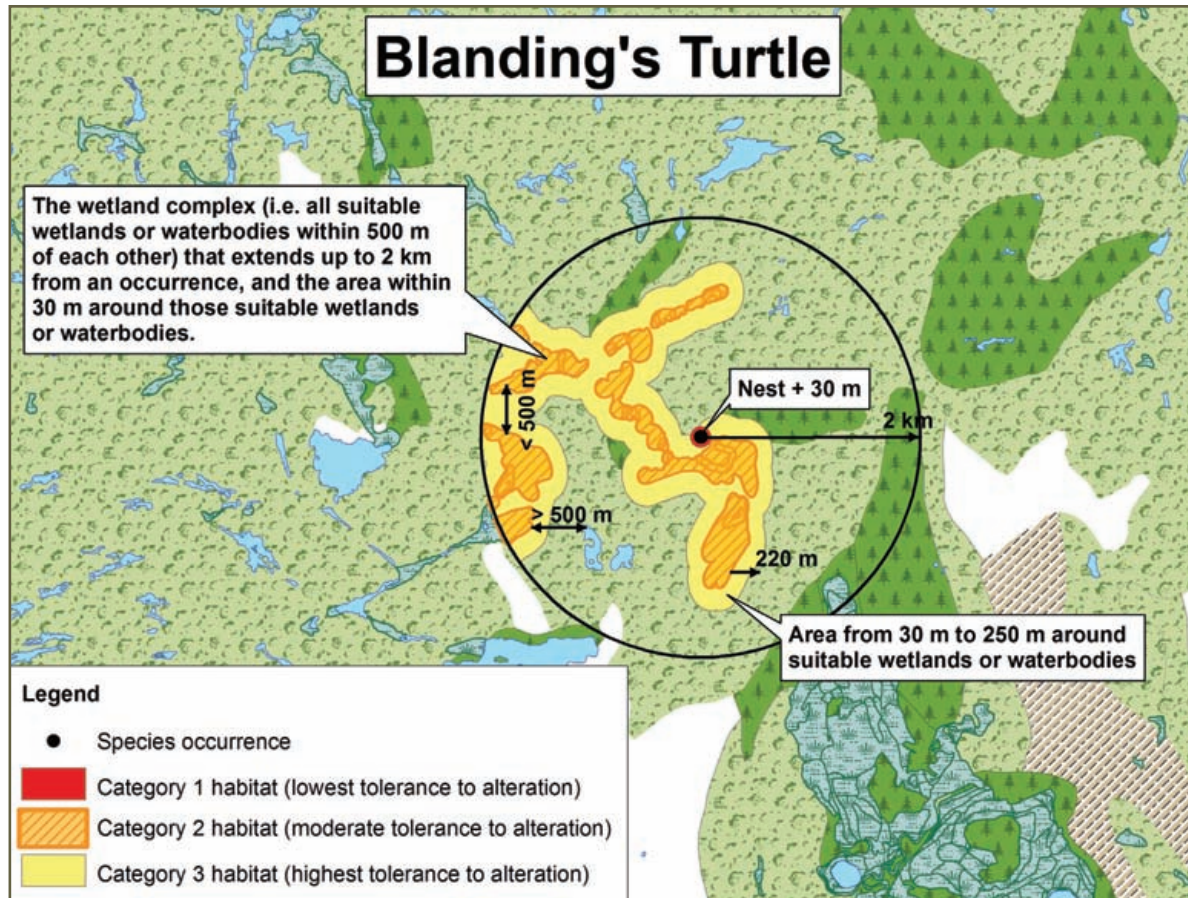
- Significant draining, infilling, dredging, or other significant alteration of wetlands or other suitable waterbodies.
- Significant alteration of shorelines, especially hardening (e.g. the use of gabion baskets, rip-rap, and rock armour).

\* If you are considering an activity that may not be compatible with general habitat, please contact your local MNR office for more information.

## Key terms:

- **Thermoregulation:** Some animals, such as turtles, use thermoregulation to alter their internal body temperature through behavioural patterns, such as basking in the sun to increase body temperature or seeking out cool areas to lower body temperature.

## Sample application of the general habitat protection for Blanding's Turtle



## References

- Beaudry, F., P.G. DeMaynadier and M.L. Hunter Jr. 2010. Nesting movements and the use of anthropogenic nesting sites by Spotted Turtle (*Clemmys guttata*) and Blanding's Turtle (*Emydoidea blandingii*). *Herpetological Conservation and Biology* 5 (1): 1-8
- Cameron, G. 2013. Unpublished data. Species at Risk Biologist, Ontario Ministry of Natural Resources.
- Caverhill, B.P. 2006. Blanding's turtle conservation in Nova Scotia: linking science and stewardship through public education. M.Sc. thesis, Department of Biology, Acadia University, Wolfville, N.S.
- Congdon, J.D., D.W. Twinkle, G.L. Breitenbach and R.C. Van Loben Sels. 1983. Nesting ecology and hatching success in the turtle *Emydoidea blandingii*. *Herpetologica* 39(4):417-429.
- Congdon, J.D., Graham, T.E., Herman, T.B., Lang, J.W., Pappas, M.J., and Brecke, B.J. 2008. *Emydoidea blandingii* (Holbrook 1838) – Blanding's Turtle. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., and Iverson, J.B. (Eds.). *Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. Chelonian Research Monographs No. 5, pp. 015.1-015.12, doi:10.3854/crm.5.015. blandingii.v12008, <http://www.iucn-tftsg.org/cbftt/>.
- Congdon, J.D., O.M. Kinney and R.D. Nagle. 2011. Spatial ecology and core-area protection of Blanding's Turtle (*Emydoidea blandingii*). *Canadian Journal of Zoology* 89: 1098-1106
- COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle *Emydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 32 pp.
- Davy, C. 2011. Unpublished data from survey and monitoring work at Rondeau Provincial Park. University of Toronto, Ontario.
- Dowling, Z. Hartwig, T. Kiviat, E. and Keesing, F. 2010. Experimental Management of Nesting Habitat for Blanding's Turtle (*Emydoidea blandingii*). *Ecological Restoration* 28:2.
- Edge, C.B., Steinberg, B.D., Brooks, R.J., and Litzgus, J.D. 2010. Habitat Selection by Blanding's Turtles (*Emydoidea blandingii*) in relatively pristine landscape. *Ecoscience* 17(1):90-99.
- Edge, C.B., Steinberg, B.D., Brooks, R.J., and Litzgus, J.D. 2009. Temperature and site selection by Blanding's Turtles (*Emydoidea blandingii*) during hibernation near the species northern range. *Canadian Journal of Zoology* 87:825-834.
- Edge, C.B. 2013 Unpublished data from MSc. Research in Algonquin Provincial Park, Ontario.
- Gillingwater, S. D. 2001. A Selective Herpetofaunal Survey Inventory and Biological Research Study of Rondeau Provincial Park. Report submitted to ESRF, World Wildlife Fund. 94 pp.
- Gillingwater, S.D. 2013. Unpublished data from long-term survey and monitoring work provided through e-mail correspondence to Joe Crowley. Species at Risk Biologist, Upper Thames River Conservation Authority.

- Gillingwater, S.D. and T.J. Piraino. 2004. Chelonian Survey and Research Study of the Big Creek National Wildlife Area (2003) and Selective Herpetofaunal Survey, Inventory and Research Study of the Long Point National Wildlife Area (1996-1999, 2003). Final report submitted to the Canadian Wildlife Service. 65+pp.
- Gillingwater, SD and TJ Piraino. 2007. Turtle Research and Herpetofaunal Survey of the Long Point National Wildlife Area Update Report 2007. Report submitted to Canadian Wildlife Service
- Joyal, L.A., M. McCollough and M.L. Hunter Jr. 2001. Landscape ecology approaches to wetland species conservation: a case study of two turtle species in southern Maine. *Conservation Biology* 15(6): 1755-1762
- Kiviat, E., G. Stevens, R. Brauman, S. Hoeger, P.J. Petokas and G.G. Hollands. 2000. Restoration of wetland and upland habitat for the Blanding's turtle, *Emydoidea blandingii*. *Chelonian Conservation Biology* 3:650-657.
- Natural Heritage Information Centre (NHIC). 2013. Biodiversity Explorer: Species Lists, Element Occurrence and Natural Areas databases. Natural Heritage Information Centre, Ontario Ministry of Natural Resources, Peterborough, Ontario.
- Newton, E.J. and Herman, T.B. 2009. Habitat, movements, and behaviour of overwintering Blanding's Turtles (*Emydoidea blandingii*) in Nova Scotia. *Canadian Journal of Zoology* 87:299-309.
- OMNR. 2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Toronto: Queen's Printer for Ontario. 211 pp.
- Paterson, J. 2013. Unpublished data from M.Sc. research. Laurentian University, Sudbury, Ontario.
- Paterson, J.E., B.D. Steinberg and J.D. Litzgus. 2012. Revealing a cryptic life-history stage: difference in habitat selection and survivorship between hatchlings of two turtle species at risk (*Glyptemys insculpta* and *Emydoidea blandingii*).
- Power, T. 1989. Seasonal movements and nesting ecology of a relict population of Blanding's turtle (*Emydoidea blandingii* (Holbrook)) in Nova Scotia. M.Sc. thesis, Department of Biology, Acadia University, Wolfville, N.S.
- Piepgas, S. A., and J. W. Lang. 2000. Spatial ecology of Blanding's Turtle in central Minnesota. *Chelonian Conservation and Biology* 3(4):589-601.
- Refsnider, J.M. and M. H. Linck. 2012. Habitat use and movement patterns of Blanding's Turtles (*Emydoidea blandingii*) in Minnesota, USA: a landscape approach to species conservation. *Herpetological Conservation and Biology* 7(2): 185-192.
- Ross, D.A. and R.K. Anderson. 1990. Habitat use, movements, and nesting of *Emydoidea blandingii* in central Wisconsin. *Journal of Herpetology* 24:6-12.
- Rouse, J. 2013. Unpublished data. Species at Risk Biologist, Ontario Ministry of Natural Resources.
- Seburn, D.C. 2010. Blanding's Turtle, *Emydoidea blandingii*, Habitat Use During Hibernation in Eastern Ontario. *The Canadian Field-Naturalist* 124(3): 263-265.
- Standing, K.L., T.B. Herman and I.P. Morrison. 1999. Nesting ecology of Blanding's turtle (*Emydoidea blandingii*) in Nova Scotia, the northeastern limit of the specie's range. *Canadian Journal of Zoology* 77:1609-1614.



## **APPENDIX F**

CVs for Key Personnel

## **Drew Paulusse, B.Sc.**

Senior Biologist / Manager of Environmental Services

---

Mr. Paulusse has over 12 years of experience in the environmental consulting industry, providing private industry and municipal and federal government clients with cost effective solutions to manage environmental constraints associated with land development proposals and infrastructure projects. Mr. Paulusse's expertise, as it relates to land development proposals and infrastructure projects is field assessment and regulatory permitting associated with species at risk, fish habitat and wetlands.

### **Education**

- B.Sc., Biology, Trent University, 2007
- Environmental Technician, Fleming College, 2004

### **Professional Experience**

<b>2018-date</b>	<b>GEMTEC Consulting Engineers and Scientists Limited</b> <i>Manager of Environmental Services</i>	<b>Ottawa, Ontario</b>
<b>2011-2018</b>	<b>Geofirma Engineering Limited</b> <i>Senior Biologist</i>	<b>Ottawa, Ontario</b>
<b>2007-2011</b>	<b>INTERA Engineering Limited</b> <i>Biologist</i>	<b>Ottawa, Ontario</b>
<b>2007</b>	<b>Canadian Wildlife Service, Environment Canada</b> <i>Wetland Conservation Officer</i>	<b>Burlington, Ontario</b>
<b>2005</b>	<b>Centre for Inland Waters, Environment Canada</b> <i>Junior Marine Technologist</i>	<b>Burlington, Ontario</b>

### **Professional Affiliations and Technical Training**

- Canadian Society of Environmental Biologists
- Ontario Association for Impact Assessment
- MTO/DFO/MNRF Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings. Ministry of Transportation. 2018
- Ontario Wetland Evaluation System Certification Course. Ministry of Natural Resources and Forestry. 2017
- Headwater Drainage Feature Assessment Training Course. Rideau Valley Conservation Authority. 2017







# GEMTEC

- Ecological Land Classification System Certification Course. Ministry of Natural Resources and Forestry. 2015
- Ontario Benthic Biomonitoring Network Certification Course. Ministry of Environment, Conservation and Parks. 2011

## Project Highlights

- ***DFO Self-Assessment and Preparation of Tender Special Provisions, Osceola Culvert Replacement, County of Renfrew, Ontario (2019):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat and species at risk, and completion of a DFO self-assessment. Work included aquatic habitat assessments, pathway of effects evaluation, culvert design recommendations and reporting.
- ***Biological Inventory, Ontario Power Generation Incorporated, Bath, Ontario (2018):*** Project manager and technical lead responsible for conducting a three-season inventory of avian and amphibian species at the Lennox Provincially Significant Wetland. Work included conducting presence and abundance surveys following the Canadian Wildlife Service marsh monitoring protocol and Bird Studies Canada breeding bird surveys, statistical analysis of species data trends and reporting.
- ***Wetland Management Plan, Ontario Power Generation Incorporated, Bath, Ontario (2018):*** Project manager and technical lead responsible for the development of an adaptive wetland management plan for the Lennox Provincially Significant Wetland. Work included a synthesis of historical data, statistical analysis of data trends, vegetation assessment, air photo interpretation, development of short-term and long-term management objectives and development of a standardized monitoring program.
- ***Environmental Compliance Monitoring, Petrie Island Causeway Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Causeway Rehabilitation Project within the Ottawa River. Work included species at risk surveys, fish salvage, exclusion fence inspection, monitoring of sediment and erosion control measures, turbidity monitoring, regulatory agency consultation and weekly reporting.
- ***Wetland Delineation and Wetland Function Assessment, National Capital Commission, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for the delineation of wetland pockets within the LeBreton Flats Redevelopment Area and the assessment of wetland function for the purpose of evaluating compensation requirements. Work was completed following both the federal and provincial wetland evaluation frameworks.







- ***Environmental Impact Statement, Code Drive Development, Smiths Falls, Ontario (2018):*** Project manager and technical lead responsible for the completion of an Environmental Impact Statement in support of a severance application for the creation of eight residential lots within a significant woodland and adjacent to a large local wetland. Work included targeted surveys for species at risk, breeding amphibians and marsh birds, impact assessment, development of lot-specific mitigation measures and agency consultations.
- ***Tree Conservation Report, Royal LePage Team Realty, Ottawa, Ontario (2018):*** Mr. Paulusse completed an inventory of all trees located on an urban commercial lot for the purpose of identify significant retainable trees and trees in conflict with the proposed site redevelopment. Work included, site inventory, tree removal permit preparation and reporting.
- ***Environmental Compliance Monitoring, Airport Parkway Culvert Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with Ministry of Natural Resources and Conservation Authority permit conditions. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures and weekly reporting.
- ***Tier I and II Natural Environment Report, Crain's Construction, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for completing an inventory of site flora and fauna, completion of species at risk surveys, regulatory agency consultation, impact assessment and reporting.
- ***Species at Risk Assessment, National Capital Commission, Gatineau, Quebec (2018):*** Project manager responsible for the completion of avian species at risk surveys to determine the presence or absence of chimney swift and barn swallows at a contaminated site. Work was undertaken to support an Ecological Risk Assessment.
- ***Fish Habitat Assessment, Various Culvert Replacements, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat at three culvert crossings in rural Ottawa. Work included aquatic habitat assessments, pathway of effects evaluation, culvert design recommendations and reporting.
- ***Environment Effects Evaluation Assessment, Britannia Wall Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for completing a comprehensive tree inventory, wetland boundary delineation, significant wildlife habitat assessment and evaluation of effects associated with the rehabilitation of the Britannia Wall, a 600-metre-long community flood protection structure.
- ***Environmental Compliance Monitoring, Petrie Island Beach Head Rehabilitation Project, Ottawa, Ontario (2018):*** Project manager and technical lead responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island





Beach Head Rehabilitation Project within the Ottawa River. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures, and reporting.

- ***Provincially Significant Wetland Boundary Evaluation and Mitigation Plan, Town and County Chrysler, Smiths Falls, Ontario (2018):*** Project manager and technical lead responsible for revising the wetland boundary associated with a provincially significant wetland and development of a mitigation plan to enable the redevelopment of an adjacent commercial lot. Work included wetland vegetation delineation, regulatory technical document submissions, agency consultations, mitigation measure development and reporting.
- ***Environmental Impact Statement and Headwater Drainage Feature Assessment, Swank Construction Limited, Morrisburg, Ontario (2017-2018):*** Project manager and technical lead responsible for the completion of an Environmental Impact Statement with Headwater Drainage Feature Assessment for a 100-lot residential subdivision. Work included ecological land classification, breeding bird surveys, impact assessment and a three season assessment of hydrological conditions and their contributions to downstream fish habitat.
- ***Natural Heritage Inventory and Environmental Impact Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Project manager and technical lead responsible for the completion of a Natural Heritage Inventory and Environmental Impact Assessment completed in support of a 54-lot condominium development located in an environmentally sensitive area. Work included wetland boundary delineation, identification of significant wildlife habitat, application of the significant wildlife habitat mitigation support tool, completion of a two-year survey of site flora and fauna, impact assessment and town hall presentations.
- ***Lake Capacity Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Project manager and technical lead responsible for the predictive assessment of septic effluent impacts relating to the operation of a 54-lot condominium development on three adjacent waterbodies. Work included limnological investigations over two seasons, application of the provincial lakeshore capacity model, hydrogeological investigations, mass flux analysis, mitigation measure development and reporting.
- ***Detailed Quantitative Ecological Risk Assessment, National Capital Commission, Gatineau, Quebec (2016 to 2018):*** Project manager and technical lead for the completion of a Detailed Quantitative Ecological Risk Assessment completed for a former landfill property located adjacent to the Ottawa River. Work included aquatic habitat assessment, benthic community characterization, species at risk surveys, terrestrial wildlife surveys and analysis of site-specific aquatic toxicity data.
- ***Environmental Compliance Monitoring, Carp Snow Dump, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for monitoring constructor compliance with a Ministry of Natural Resources overall benefit permit for blanding's turtle associated with the





construction of the Carp Snow Dump. Work included weekly exclusion fence inspection and weekly reporting to the contract administrator.

- ***Fish Habitat Assessment, Little Bark Bay Properties, Barry's Bay, Ontario (2017):*** Project manager and technical lead responsible for the identification and evaluation of significance of fish habitat within and adjacent to a proposed plan of subdivision. Work included aquatic habitat assessments, pathway of effects evaluation, application of the Department of Fisheries and Oceans self-assessment process and reporting.
- ***Species at Risk and Migratory Bird Screening Assessment, City of Ottawa, New Edinburg Park Redevelopment Project, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the completion of a species at risk and migratory bird screening assessment to assist in bid tender package preparation for the re-development of New Edinburg Park. Work included a general habitat assessment, a probability of occurrence assessment, follow-up pre-construction surveys and reporting.
- ***Fish Habitat Assessment, Highway 417 Culvert Replacement Project, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the evaluation of the significance of fish habitat at two culvert crossings Ottawa. Work included aquatic habitat assessments, pathway of effects evaluation, application of the Department of Fisheries and Oceans self-assessment process and reporting.
- ***Fish Habitat and Headwater Drainage Feature Assessment, Private Landowner, Ottawa, Ontario (2017):*** Project manager and technical lead responsible for the completion of a two-season hydrological assessment of on-site water courses and assessment of fish habitat. Work completed in support of a permit required to develop an unopened road allowance.
- ***Environmental Impact Statement and Wetland Boundary Assessment, Town and Country RV, Perth, Ontario (2016-2017):*** Project manager and technical lead responsible for delineation of a provincially significant wetland and impact assessment associated with the expansion of an existing commercial enterprise. Work included ecological land classification, identification of significant wildlife habitat, species at risk surveys, wetland vegetation assessment, impact assessment and development of site-specific mitigation measures.
- ***Environmental Impact Statement, Blueberry Creek Veterinary Clinic, Perth, Ontario (2016):*** Project manager and technical lead responsible for delineation of a provincially significant wetland and impact assessment associated with the development of a commercial lot. Work included ecological land classification, identification of significant wildlife habitat, species at risk surveys, wetland vegetation assessment, impact assessment and development of site-specific mitigation measures.



**Taylor Warrington, B.Sc.****Biologist**

---

Ms. Warrington has 4 years of experience in the environmental consulting industry, providing private industry and municipal and federal government clients with cost effective solutions to manage environmental constraints associated with land development proposals and infrastructure projects.

**Education**

- B.Sc., Life Sciences, McMaster University, 2015
- Graduate Certificate, Ecosystem Restoration, Niagara College, 2016

**Professional Experience**

<b>2020-date</b>	<b>GEMTEC Consulting Engineers and Scientists Limited</b> <i>Biologist</i>	<b>Ottawa, Ontario</b>
<b>2019-2020</b>	<b>GEMTEC Consulting Engineers and Scientists Limited</b> <i>Junior Biologist</i>	<b>Ottawa, Ontario</b>
<b>2017-2019</b>	<b>Geofirma Engineering Limited</b> <i>Junior Biologist/Scientist</i>	<b>Ottawa, Ontario</b>
<b>2016</b>	<b>Dillon Consulting</b> <i>Junior Field Biologist</i>	<b>Little Current, Ontario</b>
<b>2014</b>	<b>McMaster University</b> <i>Laboratory-Research Assistant; URBAN Project Coordinator</i>	<b>Hamilton, Ontario</b>

**Professional Affiliations and Technical Training**

- Ottawa Conservation Partners Workshop: How to Prepare and Environmental Impact Statement. 2020.
- Class 2 Backpack Electrofishing Crew Leader Certification Course. June, 2019.
- Ontario Reptile and Amphibian Survey Course. Blazing Star Environmental, Natural Resource Solutions Inc., and Ontario Nature. 2018
- Ontario Benthic Biomonitoring Network Certification Course. Ministry of Environment, Conservation and Parks. 2016

**Project Highlights**

- ***Tier I and II Natural Environment Report, Crain's Construction, Lanark County, Ontario.*** Biologist responsible for completing on-going surveys in support of a proposed







quarry application. Surveys include winter mammal and ungulate use surveys, bat maternity roost surveys, ecological land classification, breeding bird surveys, turtle basking surveys, amphibian breeding surveys and targeted species at risk surveys for American ginseng and eastern whip-poor-will.

- ***Botanical Surveys, Ontario Power Generation Incorporated, Hydroelectric Generating Stations throughout Central and Eastern Ontario.*** Biologist responsible for completing on-going botanical surveys at 12 hydroelectric generating stations to update existing records. Botanical surveys will include a combination of field survey protocols including random meander, transects and quadrant sampling methods to identify vascular plant species present at each site.
- ***Foresters Falls Dam Removal, Renfrew County, Ontario.*** Biologist responsible for conducting a species at risk screening assessment to identify the presence of species at risk within the project area and evaluate the potential impacts on SAR and their habitat if the dam is removed. On-going surveys including targeted turtle basking surveys, and terrestrial wildlife and vegetation surveys.
- ***Environmental Impact Statement, Subdivision Development, Lanark County, Ontario.*** Biologist responsible for the completion of an Environmental Impact Statement for a proposed 25-lot subdivision application. Work included ecological land classification surveys, targeted surveys for species at risk, breeding amphibians and birds, basking turtle surveys, bat maternity roost surveys, headwater drainage feature assessment, butternut health assessment, impact assessment, development of lot-specific mitigation measures and agency consultation.
- ***Wetland Evaluation and Significant Wildlife Habitat Surveys, Ontario Power Generation Incorporated, Bath, Ontario (2019).*** Biologist responsible for conducting a wetland evaluation and significant wildlife habitat surveys at the Lennox Provincially Significant Wetland. Work included conducting turtle basking surveys, reptile hibernacula surveys, targeting species at risk surveys for Least Bittern and a wetland evaluation following the MNRF's Ontario Wetland Evaluation System.
- ***Environmental Impact Statement, Proposed Subdivision Development, Hawksbury, Ontario (2019).*** Biologist responsible for the completion of an Environmental Impact Statement in support of a proposed 272-lot subdivision application. Work included ecological land classification surveys, targeted surveys for breeding birds, bat maternity roost surveys, headwater drainage feature assessment, impact assessment and development of lot-specific mitigation measures.
- ***Surface Water Impact Assessment, Green Lake Development, Barry's Bay, Ontario (2019):*** Biologist responsible for the completion of a surface water impact assessment supporting two residential lot severances. Work included a review of existing data on Green



Lake, application of the provincial lakeshore capacity model, mitigation measure development and reporting.

- ***Biological Inventory, Ontario Power Generation Incorporated, Bath, Ontario (2018):*** Field Biologist responsible for conducting a three-season inventory of avian and amphibian species at the Lennox Provincially Significant Wetland. Work included conducting presence and abundance surveys following the Canadian Wildlife Service marsh monitoring protocol and Bird Studies Canada breeding bird surveys, statistical analysis of species data trends and reporting.
- ***Environmental Compliance Monitoring, Petrie Island Causeway Rehabilitation Project, Ottawa, Ontario (2018):*** Field biologist responsible for monitoring constructor compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Causeway Rehabilitation Project within the Ottawa River. Work included species at risk surveys, fish salvage, exclusion fence inspection, monitoring of sediment and erosion control measures, turbidity monitoring, regulatory agency consultation and weekly reporting.
- ***Environmental Impact Statement, Code Drive Development, Smiths Falls, Ontario (2018):*** Field Biologist responsible for the completion of an Environmental Impact Statement in support of a severance application for the creation of eight residential lots within a significant woodland and adjacent to a large local wetland. Work included targeted surveys for species at risk, breeding amphibians and marsh birds, impact assessment, development of lot-specific mitigation measures and agency consultations.
- ***Tier I and II Natural Environment Report, Crain's Construction, Ottawa, Ontario (2018):*** Field biologist responsible for completing an inventory of site flora and fauna, completion of species at risk surveys, bat exit surveys, regulatory agency consultation, impact assessment and reporting.
- ***Species at Risk Assessment, National Capital Commission, Gatineau, Quebec (2018):*** Field biologist responsible for the completion of avian species at risk surveys to determine the presence or absence of chimney swift and barn swallows at a contaminated site. Work was undertaken to support an Ecological Risk Assessment.
- ***Environment Effects Evaluation Assessment, Britannia Wall Rehabilitation Project, Ottawa, Ontario (2018):*** Field Biologist responsible for completing a comprehensive tree inventory, wetland boundary delineation, significant wildlife habitat assessment and evaluation of effects associated with the rehabilitation of the Britannia Wall, a 600-metre-long community flood protection structure.
- ***Environmental Compliance Monitoring, Petrie Island Beach Head Rehabilitation Project, Ottawa, Ontario (2018):*** Field biologist responsible for monitoring constructor



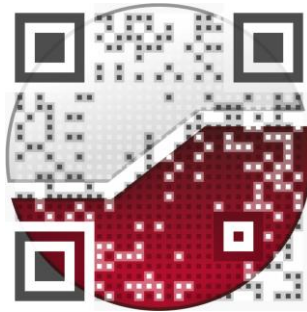


compliance with various Department of Fisheries and Oceans, Ministry of Natural Resources and Conservation Authority permit conditions during the Petrie Island Beach Head Rehabilitation Project within the Ottawa River. Work included species at risk surveys, exclusion fence inspection, monitoring of sediment and erosion control measures, and reporting.

- ***Natural Heritage Inventory and Environmental Impact Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Field biologist responsible for the completion of a Natural Heritage Inventory and Environmental Impact Assessment completed in support of a 54-lot condominium development located in an environmentally sensitive area. Work included wetland boundary delineation, identification of significant wildlife habitat, application of the significant wildlife habitat mitigation support tool, completion of a two-year survey of site flora and fauna, and impact assessments.
- ***Species at Risk and Migratory Bird Screening Assessment, City of Ottawa, New Edinburg Park Redevelopment Project, Ottawa, Ontario (2017):*** Field biologist responsible for the completion of a species at risk and migratory bird screening assessment to assist in bid tender package preparation for the re-development of New Edinburg Park. Work included a general habitat assessment, a probability of occurrence assessment, follow-up pre-construction surveys and reporting.
- ***Post-Construction Windfarm Monitoring for Wildlife Impacts, Little Current, Ontario (2016):*** Field biologist responsible for the completion of post-construction monitoring of a windfarm for avian and mammalian fatalities. Work included fatality surveys, vegetation surveys, and wildlife scavenger surveys.
- ***Long-term Changes in Ecosystem Health, Frenchman's Bay, Pickering, Ontario (2015):*** Field biologist responsible for evaluating the long-term changes in ecosystem health of Frenchman's Bay. Work included: data review, analysis of data trends, watershed and land-use mapping, digitization of wetland vegetation cover and analysis of changes over time, reporting and symposium presentation.



experience • knowledge • integrity



civil  
geotechnical  
environmental  
field services  
materials testing

civil  
géotechnique  
environnementale  
surveillance de chantier  
service de laboratoire des matériaux

expérience • connaissance • intégrité

