



GEMTEC

www.gemtec.ca

**Environmental Impact Statement
Proposed Subdivision Development
Part of Lot 17, Concession 10 (Ramsey)
Almonte, Ontario**



GEMTEC

www.gemtec.ca

Submitted to:

Menzie Almonte 2 Inc. (c/o Regional Group)
1737 Woodward Drive
Ottawa, Ontario
K2C 0P9

**Environmental Impact Statement
Proposed Subdivision Development
Part of Lot 17, Concession 10 (Ramsey)
Almonte, Ontario**

July 18, 2024
Project: 100436.004

EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Menzie Almonte 2 Inc. (c/o Regional Group) to complete a Phase 1 Environmental Impact Assessment (EIS) for a subdivision development located on Lot 17, Concession 10 (Ramsey), collectively referred to as Mill Run Extension, in Almonte, Municipality of Mississippi Mills, Lanark County, Ontario. This EIS has been completed in support of a proposed residential development and was completed in accordance with all provincial and county policies and guidelines, as applicable.

In support of this EIS a desktop review and field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. The field investigations were completed between June 2021 and August 2022. The focus of the site investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: local wetlands, fish habitat, significant wildlife habitat for *confirmed* wetland amphibian breeding habitat, *candidate* marsh breeding bird habitat, special concern and rare wildlife habitat (*candidate* eastern ribbonsnake and *confirmed* snapping turtle) and *candidate* animal movement corridor.

The following SAR and their habitat were identified as having a potential to occur on-site: barn swallow, bobolink, eastern meadowlark, red-headed woodpecker, eastern small-foot myotis, little brown myotis, tri-colored bat, Blanding's turtle and butternut. No SAR species were identified during site investigations. No regulated habitat was identified for barn swallow, bobolink, eastern meadowlark or red-headed woodpecker on-site. No regulated category 1 habitat was identified on-site for Blanding's turtles, however Category 2 and 3 habitat was identified on-site. Category 1, 2 and 3 habitat for Blanding's turtle is present within the study area. No butternut were observed on-site.

Potential impacts to the natural heritage features within the study area includes the loss of local wetland habitat, primarily for amphibian and reptile species and the loss of regulated Category 2 and 3 Blanding's turtle habitat. Blanding's turtle habitat impacted by the proposed development includes the loss of approximately 0.24 ha of Category 2 habitat and 6.80 ha of Category 3 habitat on-site. Furthermore, impact and alteration of Category 1 habitat off-site adjacent is anticipated as a result of the proposed expansion of the off-site stormwater management pond proposed in conjunction with the Mills Land development. Due to the presence of regulated habitat for Blanding's turtle on-site, an Information Gathering Form will be required to be submitted to the MECP to determine whether the project requirements under the *Endangered Species Act, 2007*.

Direct impacts to local unevaluated wetlands on-site from the proposed development include the loss of approximately 3.42 ha of local unevaluated wetlands. Potential indirect impacts to aquatic habitat within Spring Creek are primarily associated with water quality through increased nutrient and sediment loading.

Potential impacts to natural heritage features and Blanding's turtle habitat are to be mitigated and/or compensated through the implementation of a 15 m setback from the Spring Creek Municipal Drain, a 30 m setback from the northern local wetlands and through the creation of off-site wetlands to compensate for the loss of on-site wetlands.

To provide protection to potential SAR and their habitat on-site, reptile and amphibian exclusion fencing should be installed around all future construction areas prior to any development or site alteration, to prevent the immigration of SAR turtles and other wildlife into the construction area. Should any SAR be discovered throughout the course of any development on-site, operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with applicable legislation, all best management practices and adherence to vegetation clearing for reptiles, birds and bats, outlined in Section 7 should be followed to ensure no negative impacts occur to natural heritage features on-site.

The proposed residential development application complies with the natural heritage policies of the Provincial Policy Statement, the Lanark County Official Plan and the Municipality of Mississippi Mills Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed development as long as all recommendation outlined in Section 7 are enacted and best management practices followed.

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Purpose	1
1.2	Objective.....	1
1.3	Physical Setting.....	2
1.4	Land Use Context.....	2
2.0	METHODOLOGY.....	3
2.1	Desktop Review.....	3
2.2	Field Investigations.....	3
2.2.1	Preliminary Constraints Assessment.....	4
2.2.2	Ecological Land Classification.....	4
2.2.3	Breeding Bird Surveys.....	5
2.2.4	Breeding Amphibian Surveys	5
2.2.5	Turtle Basking Surveys	5
2.3	Data Analysis.....	6
3.0	EXISTING ENVIRONMENT.....	7
3.1	Ecoregion	7
3.2	Landforms, Soils and Bedrock Geology	7
3.3	Surface Water, Groundwater and Fish Habitat.....	7
3.4	Vegetation Communities	8
3.5	Wildlife	9
4.0	NATURAL HERITAGE FEATURES.....	10
4.1	Significant Wetlands	10
4.1.1	Unevaluated Wetlands	10
4.2	Significant Woodlands	11
4.3	Significant Valleylands.....	12
4.4	Significant Areas of Natural and Scientific Interest.....	12
4.5	Significant Wildlife Habitat	12
4.5.1	Habitats of Seasonal Concentrations of Animals	12
4.5.2	Rare Vegetation Communities	14
4.5.3	Specialized Habitats for Wildlife	14
4.5.4	Habitats of Species of Conservation Concern.....	17
4.5.5	Amphibian Movement Corridor.....	20
4.6	Fish Habitat	20
4.7	Species at Risk.....	21
5.0	PROPOSED PROJECT.....	22

6.0	IMPACT ASSESSMENT	23
6.1	Local Wetlands	23
6.2	Significant Wildlife Habitat	24
6.2.1	<i>Confirmed</i> Wetland Amphibian Breeding Habitat	24
6.2.2	<i>Candidate</i> Marsh Breeding Bird Significant Wildlife Habitat.....	25
6.2.3	Habitats of Special Concern and Rare Wildlife Species SWH	25
6.2.4	Animal Movement Corridors	26
6.3	Fish Habitat	28
6.4	Species at Risk.....	28
6.4.1	Barn Swallow.....	29
6.4.2	Bobolink.....	29
6.4.3	Eastern Meadowlark.....	30
6.4.4	Red-headed Woodpecker	31
6.4.5	Eastern Small-footed Myotis	31
6.4.6	Little Brown Myotis	32
6.4.7	Tri-Colored Bat.....	33
6.4.8	Blanding’s Turtle.....	33
6.4.9	Butternut.....	36
6.5	Cumulative Impacts	36
7.0	RECOMMENDED AVOIDANCE AND MITIGATION MEASURES	37
7.1	Local Wetlands	37
7.2	Significant Wildlife Habitat	39
7.2.1	<i>Confirmed</i> Wetland Amphibian Breeding Habitat.....	39
7.2.2	Habitats of Special Concern and Rare Wildlife Species.....	40
7.2.3	Animal Movement Corridor.....	40
7.3	Fish Habitat	40
7.4	Species at Risk.....	41
7.4.1	Eastern Small-footed Myotis, Little Brown Myotis, and Tri-Colored Bat.....	41
7.4.2	Blanding’s Turtle.....	41
7.5	Wildlife	42
7.6	Best Practice Measures for Mitigation of Cumulative Impacts.....	43
8.0	CONCLUSIONS.....	44
9.0	LIMITATION OF LIABILITY.....	45
10.0	REFERENCES.....	46

LIST OF TABLES

Table 2.1 Summary of Field Investigations 4
Table 3.1 Vegetation Communities On-site..... 8
Table 4.2 Summary of Amphibian Breeding Call Surveys 15
Table 4.3 Summary of Marsh Breeding Bird Surveys 18

LIST OF APPENDICES

Appendix A Report Figures
Appendix B Site Photographs
Appendix C Report Summary Tables

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Menzie Almonte 2 Inc. (c/o Regional Group) to complete an Environmental Impact Statement (EIS) for the proposed residential subdivision development located on Lot 17, Concession 10 (Ramsey), collectively referred to as Mill Run Extension, in Almonte, Municipality of Mississippi Mills, Lanark County, Ontario, (hereafter referred to as “the subject property”). The general location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to develop an approximately 7.22 hectare (ha) rural property into a residential subdivision, consisting of low-rise residential units. Based on Section 5 of the Lanark County Official Plan (Lanark County, 2012) and Section 3.1.4 of the Municipality of Mississippi Mills Official Plan (Mississippi Mills, 2018), an EIS is required showing that the project 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.

1.2 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: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat 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 dictates that ‘development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.’”

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 residential 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 provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2020);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010);

- Lanark County Official Plan (Lanark County, 2012); and
- Municipality of Mississippi Mills Community Official Plan (Mississippi Mills, 2018).

1.3 Physical Setting

The subject property is located on Part of 17, Concession 10, in the Geographic Township of Ramsay, Municipality of Mississippi Mills, Almonte, Ontario. The site is comprised of coniferous woodlands, a cultural thicket and local wetlands with the Spring Creek Municipal Drain flowing along the western property border and a stormwater management pond occurring south of the property within the adjacent subdivision. The site is bound to the north by vacant neighbouring property of Lot 17, Concession 10 and to the south by rear yards of Leishman Drive. To the west and east the property is bound by neighbouring lots of Lot 17, Concession 10.

1.4 Land Use Context

The subject property is currently a rural setting situated within a larger urban residential area. The existing land use designation from the Lanark County OP is rural and waterbodies. The land-use from the Mississippi Mills Official Plan is rural. The zoning by-law from the municipality is rural (RU). It is understood that the Official Plan Amendment 22 proposes incorporating the subject property within the town boundaries.

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 review of SAR habitat requirements and range maps.

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 (OMNR, 2011b);
- Lanark County Official Plan (Lanark County, 2012);
- Municipality of Mississippi Mills Official Plan (Mississippi Mills, 2018);
- Lanark County Geoportal (County of Lanark Community Map, undated);
- Mississippi Valley Conservation Authority (MVCA Portal, Undated);
- Mississippi Mills Community Map (Mississippi Mills, undated);
- 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);
- Ontario Herpetofaunal Atlas (Oldham and Weller, 2000); 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 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
June 8, 2021	08:00-09:30	24°C, 90% cloud cover, Beaufort wind 1, no precipitation	Preliminary Constraints, Ecological Land Classification
April 24, 2022	21:30-22:30	9°C, 100% cloud cover, Beaufort wind 2, no precipitation	Amphibian Breeding Survey
April 29, 2022	10:30-12:30	5°C, 10% cloud cover, Beaufort wind 3, no precipitation	Turtle Basking Survey
May 10, 2022	12:45-14:00	23°C, 20% cloud cover, Beaufort wind 2, no precipitation	Turtle Basking Survey
May 16, 2022	20:45-21:30	11°C, 85% cloud cover, Beaufort wind 3, light precipitation	Amphibian Breeding Survey
May 18, 2022	12:00-13:45	14°C, 20% cloud cover, Beaufort wind 1, no precipitation	Turtle Basking Survey
May 24, 2022	12:30-14:00	17°C, 40% cloud cover, Beaufort wind 1, no precipitation	Turtle Basking Survey
May 30, 2022	10:30-12:00	24°C, 70% cloud cover, Beaufort wind 1, no precipitation	Turtle Basking Survey
May 31, 2022	07:35-08:35	20°C, 10% cloud cover, Beaufort wind 0, no precipitation	Breeding Bird Survey
June 13, 2022	06:15-07:15	12°C, 10% cloud cover, Beaufort wind 0, no precipitation	Breeding Bird Survey
June 14, 2022	21:15-22:15	22°C, 5% cloud cover, Beaufort wind 0, no precipitation	Amphibian Breeding Survey
June 29, 2022	06:00-06:45	14°C, 20% cloud cover, Beaufort wind 0, no precipitation	Breeding Bird Survey
August 16, 2022	10:00-12:30	23°C, no cloud cover, Beaufort wind 1, no precipitation	Wetland Boundary Delineation, Ecological Land Classification

2.2.1 Preliminary Constraints Assessment

A Preliminary Constraints Assessment was conducted in June 2021 to identify potential natural heritage features on the subject property which may pose a potential environmental constraint for future development of the site or otherwise limit the development yield of the site. A desktop assessment was completed prior the field investigation. The field investigation was conducted in combination with the initial Ecological Land Classification (ELC) assessment.

2.2.2 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 June 8, 2021 and August 16, 2022, 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.

2.2.3 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions, at two point count locations in 2022. Breeding bird survey locations are provided on Figure A.2 in Appendix A. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman, et al. 2007). Point count locations were established in representative habitats on-site and were generally spaced approximately 250 m apart in effort to minimize double counting. Surveys were conducted no earlier than 30 minutes before sunrise and were completed within 5 hours of sunrise, to encompass peak song bird activity. Breeding bird surveys consisted of 5 minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible.

To aid in assessing the possibility of marsh habitat on-site to provide significant wildlife habitat and to confirm the presence or absence of species at risk, breeding marsh bird surveys were completed at all breeding bird survey locations. Breeding marsh bird surveys followed the methodologies outlined in the Marsh Monitoring Program (Bird Studies Canada, 2009) for the purpose of detecting secretive marsh birds. Marsh breeding bird surveys consisted of five minutes of passive listening, followed by a five-minute call broadcast to illicit a response from secretive marsh birds.

A list of all avian species identified on-site and within the study area is provided in Table C.1 in Appendix C.

2.2.4 Breeding Amphibian Surveys

Breeding amphibian surveys were conducted in 2022, on three occasions at four point count locations. Breeding amphibian survey locations are provided on Figure A.2. 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 temperature was a minimum of 5°C, the second survey was conducted when night air temperature was a minimum of 10°C, and the third when night air temperature was 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 and within the study area is provided in Table C.1 in Appendix C.

2.2.5 Turtle Basking Surveys

To address a data gap in site biological inventory data, and to confirm whether the site wetland provides significant wildlife habitat for over wintering turtles, five basking turtle surveys were completed in 2022 during the early spring (April to June) while turtle species were actively basking.

Basking turtle surveys were completed following a modified Ministry of Natural Resources and Forestry visual encounter survey methodology for Blanding's turtles (OMNRF, 2015b). Due to the size and complexity of the on-site habitat the approach was modified and deviated from the prescribed 10 metre transect methodology by utilizing a random meander approach. The completion of five surveys allowed for an acceptable degree of coverage and search effort for the purpose of determining the diversity and abundance of over-wintering turtles within the wetland.

While the Stormwater Management Pond (SWMP), which is offsite but adjacent within the study area is not considered to provide significant wildlife habitat under the Provincial definitions, visual turtle basking surveys were also completed for the pond as the off-site SWMP is proposed to be expanded in conjunction with the proposed development.

A list of all reptilian species identified on-site and within the study area 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 Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated in 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 and an 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 gently downward gradient from the east end of the property west towards the west property boundary, from a topographical high of 143 metres above sea level (mASL) to a topographical low of 137 mASL.

Two topographical landforms, as mapped by Chapman and Putnam (1984) are described on the subject property, clay plains of the Ottawa Valley Clay Plains physiographic region and limestone plains of the Smiths Falls Limestone Plain physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property, fine-textured glaciomarine deposits consisting of silt and clay, minor sand and gravel being massive to well laminated that occurs in the southwestern half of the property and Paleozoic bedrock that occurs in the northeastern half of the property.

Bedrock at the site, is described by OGS (2019) consists of the Ottawa Group, Simcoe Group and Shadow Lake Formation consisting of limestone, dolostone, shale, arkose and sandstone.

3.3 Surface Water, Groundwater and Fish Habitat

Surface water features on the subject property consist of a portion of a larger local wetland located throughout the west and northwest portions of the study area and beyond. This large, approximately 30 ha local, unevaluated wetland is comprised of wet meadow, deciduous thickets and open-water marsh communities.

Based on air photo imagery reviewed from 1985 to 2021, the wetland extents and flooding regime are variable over time and appear to be significantly affected by beaver activity and drought conditions. The catchment area of the wetland appears to be confined to the portions of Concession 10, east of the Spring Creek Municipal Drain extending north to Lot 20, Concession 10. During two years of site investigations, no direct surface water was observed

within the on-site portions of the local wetland; however, based on dominant vegetation communities and the presence of organic soils, the ecological land classification system for Southern Ontario indicates the presence of wetland. It should be noted that the Natural Heritage Information System and Ontario Base Mapping do not indicate the presence of local wetlands within the study area. Furthermore, Mississippi Valley Conservation Authority (MVCA) geoportal mapping indicates the presence of only 0.25 ha of local wetland within the northern portion of the site.

Based on the temporal variation of wetland extents, the inconsistency in wetland mapping, the presence of beaver activity and drainage improvements associated with the Spring Creek Municipal Drain, the on-site portion of the local wetland may be transitioning to a terrestrial environment.

Surface water features identified off-site but within the study area, include a watercourse, referred to as Spring Creek Municipal Drain to the west of the property, a stormwater management pond to the south of the property within the adjacent subdivision and a cut-off ditch constructed in the early phases of the development which provides stormwater conveyance during peak storm events.

A fisheries assessment was not conducted as part of this EIS. While surface water was present in small areas within the on-site local wetlands at the time of the site investigation, due to its shallow depths and limited continuous connectivity the local unevaluated wetland is not considered to provide direct fish habitat. Similarly, the cut-off ditch has been assumed not to provide fish habitat based on its limited hydro period and the presence of barriers to migration for small bodied fish species. However, the adjacent watercourse to the west of the property, which was observed to be flowing at the time of the site investigation, is assumed to provide direct fish habitat as well as contribute to downstream fish habitat.

Groundwater investigations were not completed in support of this EIS.

3.4 Vegetation Communities

Vegetation communities on the subject property were delineated using publicly available air photos and confirmed in the field on June 8, 2021 and August 16, 2022, 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. The site is comprised of three vegetation communities, including one forest community, one cultural community resulting from prolonged human disturbance and one wetland community.

Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Type	Description	Size (ha)
Fresh-Moist White Cedar Coniferous Forest (FOC4-1)	Located along the southcentral and southeast portion of the property is a white cedar coniferous forest. This community was dominated by eastern white cedar (<i>Thuja occidentalis</i>) and to a lesser extent white pine (<i>Pinus strobus</i>), white spruce (<i>Picea glauca</i>) and trembling aspen (<i>Populus tremuloides</i>). The shrub and herbaceous layer in this community was minimal.	1.26
Cultural Thicket (CUT)	Located throughout the central and eastern portions of the property is a cultural thicket. Dominated by a mix of herbaceous vegetation and small trees and shrubs. Vegetation in this community included American elm (<i>Ulmus americana</i>) and trembling aspen in the canopy. The sub-canopy included saplings of green ash (<i>Fraxinus pennsylvanica</i>), eastern white cedar, white pine and American elm, as well as common buckthorn (<i>Rhamnus cathartica</i>). The herbaceous layer included common juniper (<i>Juniperus communis</i>) and a mix of broadleaf and grass like species.	2.32
Willow Thicket Swamp (SWT2)	Located in the west and eastern portions of the property is a willow thicket swamp. This community was primarily dominated by slender willow (<i>Salix petiolaris</i>). Tree cover in this community was sparse but included American elm and saplings of red maple (<i>Acer rubrum</i>). Herbaceous vegetation was primarily dominated by reed-canary grass (<i>Phalaris arundinacea</i>) other herbaceous vegetation included cattail (<i>Typha latifolia</i>) and other graminoid species. Standing water and areas of soil saturation were present sporadically within this community during site investigations.	3.64

3.5 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2021 and 2022 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 area, 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, *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 regard 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 PSWs were identified on-site during the desktop review, nor were they identified on-site. A single local wetland was identified on-site during the site investigation. Impacts to local, unevaluated wetlands from the proposed project are discussed in Section 6; however, PSWs are not discussed or assessed further within this EIS.

4.1.1 Unevaluated Wetlands

As mentioned in Section 3.3, a local, unevaluated wetland is present on the subject site which also extends throughout the west and northwest portions of the study area. This large, approximately 30 ha local, wetland is comprised of wet meadow, deciduous thickets and open-water marsh communities.

Based on air photo imagery reviewed from 1985 to 2021, the wetland extents and flooding regime are variable over time and appear to be significantly affected by beaver activity and drought conditions. During two years of site investigations, no direct surface water was observed within the on-site portions of the local wetland; however, based on dominant vegetation communities and the presence of organic soils (Paterson, 2021), the ecological land classification system for Southern Ontario indicates the presence of wetland.

Review of LiDAR topographic data indicates the presence of distinct spatial zones within the broader 30 ha wetland. The upper zone is located in the northern portion of the wetland and is partially isolated from the rest of the wetland by a ridge with a drop of approximately 0.5 m to the south. This separation is likely the result of beaver activity, and results in discharge being directed west to Spring Creek. Portions of the wetland south of the ridge discharge to the local watercourse and to the Spring Creek Municipal Drain.

The wetland is classified as a palustrine, willow thicket swamp, comprising a 3.64 ha area on-site. According to the Hydraulic Impact Statement, the catchment area for the wetland is 304 ha, extending predominately north and east of the site. As with most swamps, the wetland is subject to seasonal flooding during the spring freshet after which water subsides via surface drainage and evapotranspiration. Accordingly, the wetland provides flood attenuation, water quality and nutrient retention services within the study area and for Spring Creek Municipal Drain, in addition to the various ecological functions outlined in Section 4.5, 4.6 and 4.7 below.

Based on provincial mapping resources (AgMaps, 2023) the wetland is not mapped as occurring within a significant groundwater recharge area.

The wetland on-site consists of a single vegetation community as outlined above, and as such has a low degree of interspersion. Within the study area, there appears to be an open-water marsh community located further to the north. The surrounding habitat is generally characterized as abandoned agricultural land.

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.

Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. Based on the guidance outlined in the natural heritage reference manual (OMNR, 2010) and the Municipality of Mississippi Mills Official Plan, it is assumed that the woodland coverage within the planning area is between 15% and 30% of the land area, therefore the minimum woodland size for determining significance is 20 ha or greater.

In addition to the criteria from the NHRM presented in Table C.2, neither Lanark County OP nor the Municipality of Mississippi Mills OP have identified any significant woodlands on-site or within the study area.

Based on the results of the significant woodland screening presented in Table C.2, significant woodlands are not present on-site. As such, significant woodlands are not discussed or evaluated further in this EIS.

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, accordingly no valleylands have been identified on-site and as such, 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. As such, 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 (OMNR, 2000) and the significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015) were used to identify and evaluate 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 11 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 11

types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why or why they are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, one *candidate* habitats of seasonal concentration of animals has been identified on-site, turtle wintering area.

4.5.1.1 *Candidate* Turtle Wintering Area

Candidate turtle wintering areas SWH was identified on-site within the local wetlands.

To evaluate the potential for the local wetlands to provide turtle wintering area SWH, a series of turtle basking surveys were conducted. Turtle overwintering areas provide protection for turtle species from winter element and typically consist of permanent water bodies, large wetlands, bogs or fens, with adequate dissolved oxygen, soft substrates and deep water. The defining criteria for confirmed turtle wintering area SWH is the presence of five over-wintering midland painted turtles, one or more northern map turtle or one or more snapping turtle within a wetland (OMNRF, 2015a).

Overwintering areas may be identified by searching basking areas for congregations of turtles on warm, sunny days during the spring or fall (OMNRF, 2015a). A total of five basking turtle surveys were conducted in 2022. Table 4.1 below provides a summary of the basking turtle survey results.

Table 4.1 Summary of Turtle Basking Surveys

Date	Species / Number Observed	Location	Confirmed SWH
April 29, 2022	Midland Painted Turtle / 1	Stormwater Pond	
May 10, 2022	No turtles observed	N/A	
May 18, 2022	Midland Painted Turtle / 3 Snapping Turtle / 1	Stormwater Pond	No
May 24, 2022	Midland Painted Turtle / 5	Stormwater Pond	
May 30, 2022	Midland Painted Turtle / 2	Stormwater Pond	

Following review of Table 4.1 above, the wetland on-site does not provide *confirmed* turtle overwintering areas, as no turtles were observed during basking surveys.

Although snapping turtles and more than five midland painted turtles were observed within the adjacent storm water management pond, in accordance with the Significant Wildlife Habitat Criteria Schedule, man-made storm water management ponds are not considered significant wildlife habitat. As such turtle overwintering area SWH is not present on-site and is not discussed or evaluated further in this ESA.

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 wild habitat are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, two *candidate* specialized habitat for wildlife have been identified on-site or within the broader study area: waterfowl nesting area and wetland amphibian breeding habitat. The *candidate* SWH are discussed in detail in the subsections below.

4.5.3.1 *Candidate* Waterfowl Nesting Area

Candidate waterfowl nesting area SWH has been identified on-site and is associated with all upland habitats within 120 m of the local wetlands on-site where waterfowl breeding is known to occur, as defined in the SWH criteria schedule (OMNRF, 2015a).

Nine waterfowl species are listed as indicator species for waterfowl nesting areas: American black duck, northern pintail, northern shoveler, gadwell, blue-winged teal, green-winged teal, wood duck, hooded merganser, and mallard. Based on observations from breeding bird surveys, only one of the listed species was observed on-site, wood duck. A total of 10 nesting mallard pairs are required to confirm SWH. Waterfowl nesting can occur in any upland ecosite; however, based on GEMTEC's professional experience in completion of waterfowl nesting surveys, habitat conditions present on-site are unlikely to provide *confirmed* SWH for nesting waterfowl. This conclusion is supported by the absence of other listed species and the fact that less than 3 listed species pairs, excluding mallard and less than 10 pairs including mallard were observed on-site.

Based on the absence of indicator species outlined in the SWH Criteria schedules, waterfowl nesting SWH is not present on-site. As such, *candidate* waterfowl nesting SWH is not discussed or evaluated further in this EIS.

4.5.3.2 Candidate Wetland Amphibian Breeding Habitat

Candidate wetland amphibian breeding habitat was identified within the local wetlands present on-site and within the study area.

Wetland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: American toad, spotted salamander, four-toed salamander, blue-spotted salamander, gray treefrog, western chorus frog, northern leopard frog, pickerel frog, green frog, mink frog and bullfrog. Wetland amphibian breeding habitat occurs throughout swamps, marshes, fens, bogs, open aquatic and submerged aquatic habitats. The defining use criteria is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals or two or more listed frog/toad species with a call level code of 3.

To evaluate the potential for the habitats on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted. Table 4.2 below summarizes the results of the amphibian breeding surveys described in Section 2 of this report. Figure A.2 in Appendix A illustrates the survey locations.

Based on review of Table 4.2 below, wetland habitat on-site does meet the defining use criteria for *confirmed* wetland amphibian breeding SWH for stations 1, 2, 3, and 4, which corresponds to the willow thicket swamp (ELC codes SWT2). Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015), wetland amphibian habitat is considered to be the wetland and the shoreline encompassing the wetland.

Impacts to wetland amphibian breeding habitat from the proposed development is discussed in Section 6.

Table 4.2 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species/Highest Call Code/ Date	Confirmed SWH
1	Wetland	SPPE / 3* / April 24, 2022 WOFR / 2-5 / April 24, 2022 CHFR / 3 / May 16, 2022 SPPE / 3 / May 16, 2022 AMTO / 1-1 / June 14, 2022 GRFR / 1-4 / June 14, 2022 GRTR / 3 / June 14, 2022	Yes
2	Wetland	SPPE / 3* / April 24, 2022 WOFR / 1-1 / April 24, 2022 CHFR / 3 / May 16, 2022 SPPE / 3 / May 16, 2022 AMTO / 1-1 / June 14, 2022 GRFR / 1-2 / June 14, 2022 GRTR / 3 / June 14, 2022	Yes
3	Wetland	NLFR / 2-6 / April 24, 2022 SPPE / 3 / April 24 and May 16, 2022 WOFR / 2-6 / April 24, 2022 AMTO / 1-2 / May 16, 2022 CHFR / 3 / May 16, 2022 GRFR / 2-10 / June 14, 2022 GRTR / 3 / June 14, 2022	Yes
4	Wetland	NLFR / 3 / April 24, 2022 SPPE / 3* / April 24, 2022 WOFR / 2-5 / April 24, 2022 AMTO / 1-1 / May 16, 2022 CHFR / 3 / May 16, 2022 SPPE / 3 / May 16, 2022 GRFR / 2-10 / June 14, 2022 GRTR / 3 / June 14, 2022	Yes

Notes:

SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green frog, NLFR = Northern Leopard Frog, AMTO = American Toad, WOFR = Wood Frog, CHFR = Western Chorus Frog.

Call Codes: the first number indicates the call code 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 reliable. 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.

* = Observed calling from off-site.

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 (MNR, 2015), 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 (MNR, 2015), 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.5 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, two habitats for species of conservation concern have been identified on-site: marsh breeding bird habitat, and habitat for special concern and rare wildlife species for eastern wood thrush, eastern ribbonsnake, eastern musk turtle, northern map turtle, snapping turtle and river herring. The *candidate* SWH are discussed in detail in the subsections below.

4.5.4.1 *Candidate* Marsh Breeding Bird Habitat

Candidate marsh breeding bird SWH for green heron was identified within the thicket swamp (SWT2 on Figure A.3) located throughout the west and northern portions of the property.

Wetlands for marsh breeding birds are typically productive and rare in southern Ontario landscapes. Marsh breeding bird habitat provides critical habitat for the following wildlife species: American bittern, Virginia rail, sora, common moorhen, American coot, pied-billed grebe, marsh wren, sedge wren, common loon, sandhill crane, green heron, trumpeter swan, black tern and yellow rail. The defining use criteria for confirmed marsh breeding bird habitat is the presence of five or more nesting pairs of sedge or marsh wrens, or one pair of sandhill cranes or breeding by any combination of five or more listed species. Any wetland with breeding of one or more black tern, trumpeter swan, green heron or yellow rail is also considered SWH. As outlined in Table C.6, the defining ELC ecosites for the majority of the indicator species is not present on-site. However, ecosite SWT meets the candidate criteria to provide habitat for green heron.

The defining use criteria for confirmed marsh breeding bird SWH is the breeding of one or more green heron pairs. Table 4.3 below summarizes the results of the breeding bird surveys described in Section 2 of this report. Figure A.2 in Appendix A illustrates the survey locations.

Table 4.3 Summary of Marsh Breeding Bird Surveys

Survey Location	Species / Number of Individuals Calling / Date	Confirmed SWH
1	AMBI ¹ / 1 / April 29, 2022	
	GRHE ² / 2 / May 18, 2022	Yes
	GRHE ¹ / 1 / May 24 2022, May 30 2022	
2	GRHE ² / 2 / May 31, 2022	Yes

Notes: AMBI = American Bittern, GRHE = Green Heron.

* Denotes species that were detected responding to the Marsh Monitoring Program Call Broadcast used to elicit calls from secretive marsh species

¹Species observed within the SWM pond adjacent to site, not within on-site wetlands.

²Species observed flying between on-site wetlands and off-site wetlands and stormwater management pond.

Based on review of Table 4.3 above, wetland habitat on-site does meet the defining use criteria for green heron, but not for any other marsh breeding birds. However, due to the obscure movement of the observed green herons and limited open water habitat on-site, further surveys would be required to confirm the presence of green heron breeding.

Based on the information provided in the significant wildlife habitat ecoregion criterion schedule (OMNRF, 2015), green heron habitat is typically found at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Due to the lack of preferred habitat on-site it is unlikely that green heron breeding will be present.

Impacts to *candidate* marsh breeding bird habitat from the proposed project are discussed in Section 6.

4.5.4.2 Special Concern and Rare Wildlife Species SWH

Based on occurrence data from the NHIC, Ontario Reptile and Amphibian Atlas, Ontario Breeding Bird Atlas and observation data taken during field investigations, nine species of special concern have been identified on-site or within the broader study area, wood thrush, eastern ribbonsnake, eastern musk turtle, northern map turtle, snapping turtle and river redhorse. Potential impacts to all *candidate* special concern from the proposed development are discussed in Section 6.

Wood Thrush

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) and is listed as a species of special concern in Ontario. The most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario have shown a significant annual increase

of 4.4% between the first and second atlas (Cadman et al., 2007). The NHIC has identified historic observations for the subject property and surrounding study area. Wood thrush is a woodland species often found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees. Preferred habitat for wood thrush is not present on-site, furthermore, the species was not observed during any of the site investigations, or targeted breeding bird surveys. As such wood thrush are not likely to occur on-site and the proposed development is not anticipated to negatively impact wood thrush or their habitat. A such habitats of species of conservation concern are not discussed or evaluated further in this EIS.

Eastern Ribbonsnake

The eastern ribbonsnake is a slender, black snake with three yellow stripes running down its back. Eastern ribbonsnakes are found close to water, typically marshes, where its prey of frogs and small fish are abundant. This species overwinters in underground burrows or rock crevices. Given the availability of suitable aquatic habitat, the site and surrounding area provides suitable foraging and basking habitat for eastern ribbonsnake.

Eastern Musk Turtle

Eastern musk turtles are found in ponds, lakes, marshes and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms that they burrow into for winter hibernation. Nesting habitat is variable, but it must be close to the water and exposed to direct sunlight. The eastern musk turtle is of special concern and ranked as S3 (rare to uncommon) in Ontario. The NHIC identified eastern musk turtle as having occurred within 2 km of the site. Due to the lack of suitable habitat, eastern musk turtle are not likely to occur on-site and the proposed development is not anticipated to negatively impact eastern musk turtle or their habitat. As such habitats of species of conservation concern for eastern musk turtle are not discussed or evaluated further in this EIS.

Northern Map Turtle

The northern map turtle inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. The northern map turtle is of special concern and ranked as S3 (rare to uncommon) in Ontario. Given the lack of suitable aquatic habitat, the site and surrounding area does not provided suitable foraging or nesting habitat for northern map turtle. Due to the lack of suitable habitat northern map turtle are not likely to occur on-site and the proposed development is not anticipated to negatively impact northern map turtle or their habitat. As such habitats of species of conservation concern for northern map turtle are not discussed or evaluated further in this EIS.

Snapping Turtle

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) and is listed as a species of special concern in Ontario. The NHIC identified the snapping turtle as having historically occurred within 1 km of the site. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. Snapping turtle were observed on-site during site investigations. Given the availability of potentially suitable aquatic habitat on-site, there is a high potential for snapping turtle and its habitat to occur on-site.

4.5.5 Amphibian Movement Corridor

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 corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNR, 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 MNR district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, one animal movement corridor has been identified on-site, amphibian movement corridor. Amphibian movement corridors are corridors for amphibians moving from their terrestrial habitat to their breeding habitat, and can be important for local populations (OMNRF, 2015). Movement corridors must be determined when wetland amphibian breeding SWH is confirmed.

As discussed in Section 4.5.3.2, wetland amphibian breeding SWH has been confirmed within the local wetland which extends over the western portion of the site and adjacent north properties (ELC code SWT2 on Figure A.3). As such wetlands and the Spring Creek Municipal Drain may provide *candidate* amphibian movement corridors. Impacts to *candidate* amphibian movement corridors are discussed in Section 6.

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, “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.”

When development is unable to avoid resulting in the harmful alteration, disturbance or 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.

Based on field observations and as discussed in Section 3.3, the Spring Creek Municipal Drain provides suitable fish habitat while the on-site local wetlands and cut-off ditch lack sufficient water depth and/or permanency to provide direct fish habitat

Impacts to fish habitat on-site are discussed in Section 6.

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.7 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 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 Section 6.

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, is a development plan for a residential subdivision on an approximately 7.23 ha property located on Part of Lot 17, Concession 10, collectively referred to as Mill Run Extension, in Almonte, Municipality of Mississippi Mills, Lanark County, Ontario.

The proposed plan of subdivision includes the extension of one residential road and the creation of three additional residential roads all providing access to 125 residential units, developing approximately 6.7 ha. All lots will be on municipal water and sewer services. Access to the proposed subdivision will be from Sadler Drive. The proposed plan of subdivision is provided on Figure A.4.

Stormwater management (SWM) for proposed development will be the expansion of the present stormwater management pond located at the southern extent of the subject property. The proposed stormwater management facility is illustrated in Figure A.4 in Appendix A. The SWM pond will continue to discharge to the Spring Creek Municipal Drain west of the property. The wet pond will provide quality control to meet an enhanced level of treatment (80% TSS removal). Quantity control will be required and accomplished by expanding the existing pond to accommodate the additional drainage area and peak flow from the proposed extension meeting pre-development peak flow rates. The existing pond outlet structure will be modified to meet the new allowable release rates.

Future components of the proposed project considered in the impact assessment presented in Section 6 include: tree clearing and vegetation grubbing, fill placement and elevation grading, road construction, laneway construction, excavation and pouring of foundations, construction of low-rise residential units all on municipal services, general landscaping activities and the extension of stormwater management features.

The timeline for the proposed project, from lot creation to completion of residential construction is subject to the regulatory approvals process. For the purpose of assessing impacts to natural heritage features, it is assumed in this EIS that the creation of individual residential lots will happen in the near-term and will not result in any physical alterations to the natural environment of the site and the broader study area. Future construction of residential homes on each of the subdivision lots is assumed to occur over a several year period, and that the construction of any one residential home will be completed such that the duration of any potential impacts on the natural environment during construction will be approximately six months.

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: vegetation removal, habitat fragmentation and loss, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increase stormwater generation, increased nutrient loading to adjacent surface water features, increase in impervious surface and short-term increases in sedimentation and/or erosion.

6.1 Local Wetlands

As outlined in Section 3.3 and Section 4.1, one local unevaluated wetland of approximately 30 ha is located within the study area, with 3.64 ha present on-site. No PSWs are present within the study area.

The proposed development, as illustrated on Figure A.4, is anticipated to result in the loss of approximately 3.42 ha (11%) of the approximately 30 ha local wetland which extends beyond the study area. Approximately 3.42 ha of local wetland located in the west and north portions of the site is proposed to be removed to facilitate the construction of the proposed subdivision.

Direct impacts to the local wetland will include the direct loss of 3.42 ha of wetland area (11%) and a reduction of the wetland catchment area from 304 to 296.8 ha (2%).

As no in-water work is proposed for the development, the greatest potential impacts to wetlands on-site are loss of wetland habitat, encroachment, changes to surface and groundwater balance through increased storm water runoff resulting from an increase in the impervious surface area, compaction of soils and vegetation loss.

As outlined in the Hydraulic Impact Statement (GEMTEC, 2023), due to the zonation within the broader 30 ha wetland, a slight water level increase is expected for the wetland zones located off-site. As the water balance has indicated a slight increase in water level within the off-site wetland zones, most notably adjacent to the development, there are no anticipated impacts to wetland habitat off-site.

While the removal of organic soils have the potential to reduce baseflow to the Spring Creek Municipal Drain, post-development impacts to base flow within Spring Creek are expected to be minimal as the resulting increase in wetland depth adjacent to the wetland would have a corresponding and offsetting increase in runoff from the upgradient wetland to Spring Creek.

Other potential impacts include short duration construction impacts including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping of refuse and trampling.

Impacts to the hydraulic regime and hydroperiod of off-site watercourses which receive seasonal flows from local wetlands are not anticipated to be impacted by the development due to the net increase in stormwater storage provided by the proposed stormwater management expansion and the resulting maintenance of connectivity to existing drainage networks off-site to the west.

Impacts relating to habitat loss can be partially offset through application of natural design principles to the design and construction of a naturalized stormwater management pond.

Mitigation measures to protect local wetlands from development impacts are provided in Section 7.

6.2 Significant Wildlife Habitat

The potential presence of significant wildlife habitat on-site and within the study area was evaluated in Section 4.5, as a result of this assessment four types of significant wildlife habitat were determined to be present on-site or within the study area: *confirmed* wetland amphibian breeding habitat, *candidate* marsh breeding bird habitat, habitats of special concern and rare wildlife species, and amphibian movement corridor.

Potential impacts to significant wildlife habitats are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.2.1 Confirmed Wetland Amphibian Breeding Habitat

Confirmed wetland amphibian breeding habitat on-site is confined to the thicket swamp in the west and northern portions of the property (SWT2 on Figure A.3). *Confirmed* wetland amphibian breeding habitat is illustrated on Figure A.5 in Appendix A as local wetland.

Direct impacts to wetland amphibian breeding SWH include the direct loss of 3.42 ha of wetland habitat. Indirect impacts may include disturbance of amphibian movement corridors, trampling and foraging from humans and pets.

Other potential impacts include short duration construction impacts including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation and dumping of refuse.

Mitigation measures to reduce impacts to *confirmed* wetland amphibian breeding habitat SWH are provided in Section 7.

6.2.2 Candidate Marsh Breeding Bird Significant Wildlife Habitat

Candidate marsh breeding bird significant wildlife habitat on-site is represented by the local thicket wetland in the north and west portions of the property (local wetland on Figure A.5).

Direct impacts to *candidate* marsh breeding bird habitat for green heron on-site is the loss of wetland habitat and riparian vegetation loss. Other potential impacts include short duration construction impacts including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping of refuse, trampling and foraging.

Mitigation measures to reduce impacts to *confirmed* marsh breeding bird habitat SWH are provided in Section 7.

6.2.3 Habitats of Special Concern and Rare Wildlife Species SWH

6.2.3.1 Eastern Ribbonsnake

Eastern ribbonsnake is a long and narrow snake, that is black with three yellow stripes down its back and side. It has a distinct white crescent in front of the eye with a white chin and whitish yellow belly (Ontario, 2021a). As a semi-aquatic species, eastern ribbonsnake are typically found in habitats close to water such as wetlands and shorelines of lakes and rivers (Ontario, 2021a). In Ontario, the eastern ribbonsnake is listed as species of special concern.

Threats to Eastern ribbonsnake are primarily associated with the loss of wetland and adjacent forest habitat. Additional threats to the species include pollution-related impacts to local amphibian populations which negatively affect eastern ribbonsnake as frogs are a primary food source, as well as road mortality and illegal collection (Ontario, 2021a).

Direct impacts to potentially suitable eastern ribbonsnake habitat are primarily associated with a loss of habitat. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and yard waste and trampling. Additional indirect impacts may also include increased human and wildlife interaction associated with migrating snakes, particularly during nesting season.

Mitigation measures intended to minimize impacts to potential eastern ribbonsnake habitat are discussed in Section 7.

6.2.3.2 Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada; in central Ontario males average 32 cm in carapace length and have an average mass of 9.3 kg (COSEWIC, 2008). The carapace is keeled, and can be brown, black or olive in colour (COSEWIC, 2008). The plastron is cross-shaped and is small, leaving the limbs and sides of the body exposed (COSEWIC, 2008). The head of a snapping turtle is large with a hooked upper jaw, relatively long neck, and tail that can be as long as the carapace (COSEWIC, 2008). In Ontario the snapping turtle is listed as a species of special concern.

Threats to snapping turtle are primarily related to their life-history, their slow recruitment, late maturity, long lifespan and high adult survival make them extremely vulnerable to a variety anthropogenic impacts (COSEWIC, 2008). Short, cool summers also reduce hatching success. In Canada, snapping turtles are most impacted by events that increase adult mortality, such as harvesting of adults, persecution and road mortality (COSEWIC, 2008). Other threats include loss of habitat, environmental contamination, and nest predation (COSEWIC, 2008).

As no in-water work is proposed as part of the future development, potential impacts to snapping turtle and their habitat are anticipated to be indirect in nature. Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and yard waste and trampling. Additional indirect impacts may also include increased human and wildlife interaction associated with migrating turtles, particularly during nesting season, when turtles move between winter and summer habitats.

Mitigation measures to protect snapping turtle and their habitat from the proposed development are presented in Section 7.

6.2.4 Animal Movement Corridors

Impacts to candidate amphibian movement corridors on-site may include a loss of available corridor habitat, impairment to corridor function and increased human-wildlife interactions. As outlined in the SWHMST, if a significant portion of the corridor is impacted by development it can completely disrupt the function of a movement corridor. Potential direct impacts to candidate amphibian movement corridors include loss of woodland cover and creation of movement barriers through the corridor.

The Spring Creek Municipal Drain, located to the west of the property will maintain an uninterrupted movement corridor for amphibians to access off-site wetland habitat, within the study area to the north. It should be noted that wetlands on-site represent the edge of suitable

wetland habitat for amphibians, there is no viable habitat located south of the subject property to support breeding amphibians.

Potential indirect impacts may include changes to surface water quality and quantity through increased storm water runoff resulting from an increase in impervious surface area and vegetation loss. Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long-term human disturbance such as noise generation, dumping of refuse and yard waste and trampling.

Mitigation measures for candidate amphibian movement corridors are provided in Section 7.

6.3 Fish Habitat

According to the Provincial Policy Statement (MMAH, 2020), “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.”

In 2019, changes were made to the Fisheries Act, broadening the protection for fish and fish habitat. Under the new Fisheries Act, protection is afforded to all fish and fish habitat, not just those that support either a recreational, commercial or Aboriginal fishery. Under the Fisheries Act, work that is conducted in or near waterbodies must avoid “the death of fish, other than by fishing” (Canada, 1985). Furthermore, the new Fisheries Act states that work must avoid “the harmful alteration, disruption or destruction (HADD) of fish habitat” (Canada, 1985).

When activities are unable to avoid or mitigate harm to fish or fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under Subsection 35 (2) of the Fisheries Act is required for the project to proceed without contravening the Act.

The proposed development, described in Section 5, is not anticipated to impact the Spring Creek Municipal Drain. As no in-water work is proposed as part of the future development, potential impacts to water quality and fish habitat on-site from residential development are anticipated to be indirect in nature.

Potential indirect impacts resulting from increased runoff following construction may include increased inputs to base flow volumes, leading to increases in flow rates and resulting in sedimentation and erosion downstream. Additional indirect impacts to water quality and fish habitat from subdivision development may include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, as well as increased nutrient loading through both overland and subsurface pathways resulting from landscaping practices.

Mitigation measures intended to protect fish and fish habitat on-site are provided in Section 7.

6.4 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 subsections below.

6.4.1 Barn Swallow

The barn swallow (*Hirundo rustica*) 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 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).

Three diurnal breeding bird surveys were conducted during May and June 2022, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at two point count locations, one of which targeted potentially suitable habitat for grassland birds such as barn swallow; the survey locations are illustrated on Figure A.2 in Appendix A. Barn swallow were observed foraging during site investigations however, no nests were observed on-site. As such no negative impacts are anticipated to occur to barn swallow as a result of the proposed development and no mitigation measures are provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EISSA.

6.4.2 Bobolink

Bobolink (*Dolichonyx oryzivorus*) are small, omnivorous songbirds with large, somewhat flat heads, short necks and short tails. The male bobolink has a white back, black underside and a straw-yellow coloured patch on the back of the head. Female bobolinks have a non-descript buff and brown plumage not unlike most species of sparrows.

In Ontario, bobolink are restricted to southern Ontario and occur south of the Highway 17 corridor between North Bay and Sault Ste. Marie. Scattered populations exist in correlation with Clay Belt areas in Timiskaming, Cochrane and Thunder Bay areas. Between the first and second breeding bird atlas, the probability of bobolink observations declined by 28% province wide (Cadman et al., 2007).

Bobolink breed primarily in hayfields and other grasslands with tall vegetation that provides cover for nests which are established on the ground (Cadman et al., 2007). The bobolink is generally sensitive to vegetation structure and composition in its habitat that are generally found in old (> 8 years old) forage crops. Abundance and density are positively correlated with a moderate litter depth, high lateral litter cover, high grass-to-legume rations, an abundance of small shrubs and a high percentage of forb cover (COSEWIC, 2010). Bobolinks typically avoid nesting in habitats that are dominated by overly dense shrub vegetation with an overly deep litter layer or a high percentage of bare soil (COSEWIC, 2010).

Three diurnal breeding bird surveys were conducted during May and June 2022, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at two point count locations as illustrated on Figure A.2 in Appendix A.

No suitable meadow habitat is present on-site and bobolink were not heard or observed nesting or foraging during any of the site investigations. As such no negative impacts are anticipated to occur to bobolink as a result of the proposed development and no mitigation measures are provided in Section 7 for the protection of bobolink and they are not discussed or evaluated further in this EIS.

6.4.3 Eastern Meadowlark

Eastern meadowlark (*Sturnella magna*) is a chunky, medium-sized grassland songbird, with a short tail, and a long spear-shaped bill. The colour pattern of the species is pale brown marked with black, the underside is bright yellow and a bold black 'V' pattern across the chest.

The eastern meadowlark was once well established in southern Ontario, however, due to the natural succession of abandoned agricultural fields transitioning back to forested habitat on the Canadian shield and through the northern portion of the Lake Simcoe-Rideau region, along with intensive farming practices and expanding of urbanization in southwestern and eastern Ontario, the eastern meadowlark has suffered significant habitat loss (Cadman et al., 2007). Between the first and second breeding bird atlas, the probability of observation declined by 13% province wide (Cadman et al., 2007). The current distribution of eastern meadowlark is concentrated through the Lake Simcoe-Rideau region, primarily from Kingston to Lake Simcoe.

Three diurnal breeding bird surveys were conducted during May and June 2022, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at two point count locations, as illustrated on Figure A.2 in Appendix A.

No suitable meadow habitat is present on-site and eastern meadowlark were not heard or observed nesting or foraging during any of the site investigations. As such no negative impacts are anticipated to occur to eastern meadowlark as a result of the proposed development and no mitigation measures are provided in Section 7 for the protection of eastern meadowlark and they are not discussed or evaluated further in this EIS.

6.4.4 Red-headed Woodpecker

The red-headed woodpecker (*Melanerpes erythrocephalus*) is a medium-sized bird, approximately 20 centimetres long and is easily recognized for its vivid red head, neck and breast. The rest of the bird is black and white, mostly white underneath and black on top (Ontario, 2022).

In Ontario, the species' distribution is discontinuous in the southern part of the province, with many gaps between occurrences. It occurs uncommonly at sites on the southern Canadian Shield, near large urban centres, such as Toronto and Hamilton, and in certain intensively farmed areas. The species is a regular breeder, albeit in small numbers, in northwestern Ontario (i.e., Lake of the Woods area) and eastern Ontario, along the Ottawa River Valley. The Canada Breeding Bird Survey (BBS) shows a significant long-term annual rate of decline of -1.88% per year between 1970 and 2016 for red-headed woodpecker in Canada. Declines have been steepest in Ontario, with a significant decline of -3.42% per year between 1970 and 2016, or -79.8% in total (COSWEIC, 2018).

The main threats to Red-headed Woodpecker are habitat degradation and ecosystem modifications, particularly the loss of standing dead wood critical for nesting, flycatching, and food caching. This is primarily due to suppression of disturbances that may lead to the creation of standing dead wood such as fire, dead wood removal for aesthetic reasons, or through harvesting activities, and other human-driven modifications to the ecosystem that reduce standing dead wood (COSEWIC, 2018).

Red-headed woodpeckers live in a variety of open woodland and woodland edge habitat where there is an abundance of dead trees that are used for nesting and perching. Parks, golf courses and cemeteries are some areas red-headed woodpeckers are commonly found.

Three diurnal breeding bird surveys were conducted during May and June 2022, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at two point count locations, two of which targeted potentially suitable habitat for woodland birds such as red-headed woodpecker; the survey locations are illustrated on Figure A.2 in Appendix A.

Suitable woodland habitat is present on-site, however red-headed woodpecker were not heard or observed nesting or foraging during any of the site investigations. As such no negative impacts are anticipated to occur to red-headed woodpecker as a result of the proposed development and no mitigation measures are provided in Section 7 for the protection of red-headed woodpecker and they are not discussed or evaluated further in this EIS.

6.4.5 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, 2021b).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-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.

6.4.6 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, 2021c).

Little brown Myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2021c). 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 clearcuts are not typically utilized for foraging (COSEWIC, 2013).

Although the forest habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-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.

6.4.7 Tri-Colored Bat

Tri-colored bat (*Perimyotis subflavos*) 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, 2013).

Tri-colored bat overwinter in 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, 2013). In the spring and summer, tri-colored bat utilizes trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013).

Although the woodlands on-site do not meet minimum snag density requirements to support bat maternity colony habitat, given the availability of habitat on-site 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, 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.

6.4.8 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, 2016). 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, 2016).

The Blanding's Turtle is a largely aquatic turtle that occurs in a variety of habitats including but not limited to swamps, bogs, fens, marshes, marshy meadows, lakes, and ponds (COSEWIC, 2016). In the Great Lakes/St. Lawrence population, the most preferred habitats are wetlands that are eutrophic, with shallow water (typically < 100cm, range 0-200cm), an organic substrate, a high density of aquatic vegetation and slow to no flow (COSEWIC, 2016). Upland forest is a strong predictor for the presence of Blanding's turtle in a landscape, with upland habitat being extensively used as a travel corridor and for hatchling dispersal to overwintering sites (COSEWIC, 2016). Wet forest, vernal pools, beaver ponds and shallow-water wetlands, are also often used by Blanding's turtles when travelling between residence wetlands and during nesting forays (COSEWIC, 2016). Vernal pools and ephemeral wetlands are important foraging sites for Blanding's turtles during spring as they provide rich sources of amphibian and insect eggs and larvae (COSEWIC, 2016).

As outlined in the MNRF general habitat description for Blanding's turtle, Category 1 habitat is defined as "the nest and the area within 30 m of the nest or overwintering sites and the area within 30 m of the site", Category 2 habitat is defined as "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" and Category 3 habitat is defined as "the area between 30 m and 250 m around suitable wetlands and waterbodies identified as Category 2, within 2 km of an occurrence." The MNRF general habitat description for Blanding's turtle is provided in Appendix D.

Blanding's turtle nests (Category 1 habitat) are created in open habitats with low vegetation cover, loose soils, and high sun exposure such as in forest clearings, meadows, shorelines, beaches and gravel roads (Ontario, 2021) and (COSEWIC, 2016). Suitable Blanding's turtle overwintering habitat typically includes permanent bogs, fens, marshes, ponds, channels or other habitats with free (unfrozen) shallow water. Blanding's turtle may also hibernate within graminoid shallow marsh areas of larger marsh complexes by burying into substrates in areas of pooled water. Blanding's turtle may also overwinter in seasonal pools or small excavated areas with standing water (Ontario, 2021).

Suitable Category 2 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 (Ontario, 2021). 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 (Ontario, 2021) and (COSEWIC, 2016).

Although wetlands and ponds are used as movement corridors when available, females make extensive movements through upland habitat to access nesting sites (Ontario, 2021). 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 (Ontario, 2021). 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 (Ontario, 2021).

Review of NHIC occurrence data indicates the species has been observed within 1 km of the site. During the site investigation, Blanding's turtles were not detected on-site however a historical report completed by Bowfin Environmental Consulting, dated March 8, 2022, for the adjacent west development, known as Hanna Hills makes note of a Blanding's turtle observation on March 30, 2021, within the stormwater management pond directly south of the subject property.

As regulated Blanding's turtle habitat extends up to 2 km from an observation, based conservatively on the NHIC observation data, all wetlands and watercourses on-site are assumed to provide Category 2 and 3 habitat. However, based on field observations and the lack of standing water within the on-site wetland, it is unlikely that the mapped thicket swamp would provide suitable wetland habitat for Blanding's turtle. As such, no Category 1 or Category 2 habitat has been confirmed within the on-site wetlands. However, it should be noted that the adjacent stormwater management facility and wetlands to the north may provide suitable Category 1 habitat for foraging, basking and overwintering for Blanding's turtle based on historical observations.

As no in-water work will occur on the subject property, potential impacts to Spring Creek and the off-site local wetland are anticipated to be indirect and primarily associated with changes to the surface water and groundwater water balance through increased stormwater runoff resulting from an increase in the impervious surface area and encroachment resulting in compaction of soils and vegetation loss. This increase in storm water runoff and flow rates has the potential to result in increased sedimentation and erosion downstream.

Indirect impacts to water quality may include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, as well as increased nutrient loading through both overland and subsurface pathways resulting from landscaping practices. Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping or refuse and yard waster and trampling and increased road mortality, particularly during nesting season, when turtles are more transient.

Potential direct impacts to Blanding's turtles are anticipated to be associated with the modification of the stormwater management facility, a loss of Category 2 and 3 habitat and increased interactions between transient Blanding's turtles. Modifications of the stormwater management facility will impact Category 1 habitat, particularly during construction. Additionally the proposed

development is unable to avoid development within Category 2 and 3 habitat on-site. The proposed development has the potential to impact up to 0.64 ha of Category 2 habitat and 7.22 ha of Category 3 habitat. Development within Category 2 and 3 habitat will include a direct loss of vegetation cover within these areas.

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

6.4.9 Butternut

Butternut (*Juglans cinerea*) is a relatively short lived, medium-sized tree that can reach heights of up to 30 m. It is easily distinguished by its compound leaves, made up of 11 to 17 leaflets, arranged in a feather-like pattern. Each leaflet is 9 to 15 centimetres in length. The bark is grey and smooth on young trees, becoming more ridged with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The Canadian range for Butternut extends through southern Ontario into southern Quebec, and New Brunswick (COSEWIC, 2017). Butternut is a shade intolerant tree that is commonly found in riparian habitats, and sites in a regenerative state. Butternut can also be found on rich, moist, well-drained gravels, favouring those of limestone origin. Common associates of Butternut trees 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 the proposed severance parcel or within 120 m of the proposed severance parcel. As such the proposed draft plan application and potential future development on the retained lands is not anticipated to impact butternut or their habitat.

As no potential impacts to butternut or their habitat are expected due to the proposed project, no mitigation measures are provided for the protection of butternut or their habitat, and they are not discussed further in this EIS.

6.5 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, increases in nutrient loading to aquatic features, potential decreases in base flow to Spring Creek during drought conditions, and the loss of wetland, thicket and forest habitat, primarily for avian, amphibian, and reptilian species, including Blanding's turtle.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given the existing residential and agricultural land use in the surrounding project 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.

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). Buffers recommended in the following subsections and illustrated on Figure A.6, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation.

7.1 Local Wetlands

As the proposed development is anticipated to result in the loss of approximately 3.42 ha of local wetlands and significant wildlife habitat for breeding wetland amphibians, compensation is required to offset the loss of 3.42 ha of wetland on-site. It is currently proposed that off-site compensation will take place within the Mississippi River watershed and consist of a minimum of 3.42 ha of newly constructed wetland comprised of approximately 2/3 marsh and 1/3 thicket swamp. Further details on wetland compensation will be provided under separate cover.

With respect to remnant wetland not proposed for removal, Beacon Environmental Review of Ecological Buffers (2012), provides a range for buffer widths to protect various natural heritage features based on the current science. The buffers are presented in a way that determines the risk of not achieving the desired buffer function (i.e. high, moderate and low). The functions analysed include water quantity, water quality, screening or human disturbance/changes in land use, hazard mitigation zone and core habitat protection. Impacts to the local wetlands on and off-site were identified to include potential impacts to water quality, human disturbance and core habitat protection (habitat for Blanding's turtle, *confirmed* wetland amphibian breeding habitat, *confirmed* marsh breeding bird habitat and *candidate* snapping turtle SWH). Wetland buffer widths have a moderate risk of not providing adequate mitigation for water quality impacts at widths between 11 m and 50 m. Wetland buffer widths have a moderate risk of not providing adequate mitigation for human disturbance/land use change impacts at widths between 11 m and 30 m and low risk at widths of 31 m to 50 m. Wetland buffer widths have a moderate risk of not providing adequate mitigation for core habitat protection at widths between 21 m and 60 m.

In consideration of the Spring Creek Municipal Drain, and the nature of the proposed development and similar adjacent developments, a minimum 15 m setback from the watercourse is recommended. The recommended 15 m setback from Spring Creek provides moderate protection for mitigating water quality impacts and human disturbances. At 15 m, the protection the buffer offers for core habitat protection, falls into the high risk of not achieving desired buffer function; however, the Spring Creek MD provides only limited core habitat functions as they relate to small-bodied, warm water fish populations.

In consideration of the off-site, open-water marsh to the north, a 30 m setback is recommended. The recommended 30 m setback provides moderate protection for mitigating water quality impacts and human disturbances. At 30 m, the protection the buffer offers for core habitat protection falls into the moderate risk of not achieving desired buffer function; however, based on the extent of available habitat the moderate risk of not achieving the desired buffer function is acceptable. Furthermore, the MECP has determined that a 30 m buffer is sufficient for the protection of Category 2 Blanding's turtle habitat.

As outlined above, the proposed development illustrated on Figure A.4 is anticipated to result in the loss of 3.42 ha of wetland habitat, 11% of the approximately 30 ha local, unevaluated wetland. A 15 m setback from the top-of-bank of Spring Creek and a 30 m setback from the northern open-water marsh is proposed as illustrated on Figure A.6.

Despite the loss of wetland habitat required to accommodate the construction of residential dwellings and road network, no significant residual negative impacts on local, unevaluated wetlands are anticipated as a result of the proposed development if all mitigation measures recommended above, including the 1:1 off-site compensation for wetland loss, and those provided below are enacted and best management practices followed.

Mitigation measures recommended for the protection of water quality and wetland habitat include:

- 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.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- 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 waterbodies.

- In order to protect fish habitat from contamination, 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 high water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.

7.2 Significant Wildlife Habitat

7.2.1 Confirmed Wetland Amphibian Breeding Habitat

In accordance with the Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014), for large areas of significant wildlife habitat, when complete avoidance is not possible, minimizing the amount of habitat affected may be a satisfactory mitigation measures (i.e., make the development footprint as small as possible, confine development along the edge of the habitat and ensure that it doesn't change wetland water quality or quantity).

Mitigation measures presented in Section 7.1 are sufficient to mitigate and/or offset impacts to local wetlands and amphibian breeding habitat on-site. Furthermore, protection of Spring Creek Municipal Drain as a wildlife travel corridor, allowing it to connect natural and open spaces on-site and off-site, is sufficient to ensure that off-site travel corridors are maintained, which is important for amphibians moving between habitats throughout the year.

In addition to the amphibian monitoring recommended in Section 7.1 above, to confirm the assumption that the loss of 3.42 ha of significant wildlife habitat for wetland amphibians does result in a negative impacts, breeding amphibian surveys should be undertaken for a period of three years to document no residual negative impacts to significant wildlife habitat for breeding wetland amphibians as a result of wetland removal.

The 30 m setback presented in Section 7.1 above, to protect off-site local wetlands not proposed for removal are adequate to protect the ecological function of remaining *confirmed* wetland amphibian breeding habitat.

To protect migrating amphibians associated with *confirmed* breeding habitat on-site during construction, 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.

7.2.1.1 Candidate Marsh Breeding Bird Habitat

The proposed development would result in the loss of 3.64 ha of *candidate* marsh breeding bird habitat; however, the protection of open water marsh habitat within the study area north of the property by way of a 30 m setback and the protection of potential foraging habitat within the Spring Creek Municipal Drain by way of a 15 m setback is sufficient for the preservation of *candidate* significant wildlife habitat for breeding marsh birds, specifically green heron.

7.2.2 Habitats of Special Concern and Rare Wildlife Species

7.2.2.1 Eastern Ribbonsnake

To provide protection to eastern ribbonsnake during construction, installation of silt fence barriers along the proposed 15 m and 30 m setbacks, including completion of daily sweeps of the construction areas, is recommended.

7.2.2.2 Snapping Turtle

The 15 m setback from Spring Creek and 30 m setback from the open water marsh north of the property are sufficient to protect snapping turtle and their habitat on-site from potential impacts of development.

Installation of silt fence barriers around the entire construction envelope of each future residential dwelling is recommended to prohibit the migration of snapping turtles into the construction area. Additionally, all stock piled material should be covered with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.

7.2.3 Animal Movement Corridor

The 15 m setback from Spring Creek and 30 m setback from the open water marsh north of the property are sufficient to protect and maintain existing *candidate* amphibian movement corridors.

Furthermore, the position of each wetland community relative to the property boundaries results in the uninterrupted migration of amphibians on at least one side of each wetland through the watercourse northwest of the property.

7.3 Fish Habitat

The 15 m setback established above to protect Spring Creek is sufficient to protect fish and fish habitat within Spring Creek.

Additional general mitigation measures recommended for the protection of water quality and fish habitat include the following:

- Buffers should be comprised of a mixture of native or non-invasive, self-sustaining trees, shrubs and tall grasses.
- Culverts, if required, should be installed such that it is imbedded in the streambed, ensuring the culvert remains passable (i.e. does not become perched).
- Install and maintain effective sediment and erosion control measures before starting work.
- Schedule work to avoid wet, windy and rainy periods.
- The development plan should include lot-side swales and/or roadside ditches designed to promote infiltration.

- A storm water management plan should be prepared by a qualified engineer with the purpose of reducing suspended sediment and ensuring matching of pre- and post-development flows to Spring Creek.

7.4 Species at Risk

7.4.1 Eastern Small-footed Myotis, Little Brown Myotis, and 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 April 1 to November 30), 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.

7.4.2 Blanding's Turtle

The 15 m setback as prescribed above is sufficient for the protection of Category 2 habitat within Spring Creek and has been supported by the MECP for the adjacent western development, Hanna Hills.

Blanding's turtle habitat impacted by the proposed development includes 0.24 ha of Category 2 Blanding's habitat on-site and 6.80 ha of Category 3 habitat on-site. To protect nesting and migrating turtles, tree removal where required should take place outside of the spring and summer active season (typically April 1 to October 31), when turtles move between winter and summer habitats. Due to the presence of Blanding's turtle in the surrounding area, presence of Category 2 and 3 habitat on-site and that development cannot avoid impacts to regulated habitat, an Information Gathering Form is required to be submitted to the MECP to determine if the proposed development plan requires an authorization under the Endangered Species Act (ESA).

The following mitigation measures provided are to be implemented *before* issuance of a building permit in order to avoid contravention of the ESA:

- Prior to issuance of a building permit for the property, 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 turtle or its regulated habitat. The Information Gathering Form should be prepared by a qualified professional with experience in species at risk management.
- Additionally, wetlands, waterbodies, watercourses and shorelines should not be altered or destroyed during the construction stages of the residential dwelling. The development can avoid impacts to Blanding's turtle habitat by avoiding wetlands and associated habitats, which ensures no contravention of Section 10 of the Endangered Species Act.

The following mitigation measures are expected to be implemented to avoid contravention of the Endangered Species Act (ESA):

- To protect migratory Blanding's turtles, vegetation clearing should be undertaken outside of the MECP identified turtle active season (April 1 – October 31).
- Prior to any site work, reptile and amphibian exclusion fencing should be installed around the entire perimeter of the property to prevent the migration of Blanding's Turtles and other wildlife into the construction zone. The temporary exclusion fencing will also provide a visual demarcation of the property 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 (MNRFP, 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. SAR sightings should be reported to the MECP and the NHIC.
- 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, homeowners 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.

7.5 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 of March 15 - November 30 to avoid the key breeding bird period and bat summer active season. The timing windows provides protection of migratory birds, roosting bats and avoids contravention of the Migratory Bird Convention Act and Endangered Species Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest and roost survey shall be conducted by a qualified professional. 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.

7.6 Best Practice Measures for Mitigation of Cumulative Impacts

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

- Stormwater generated from the proposed development is to be managed on-site such that dewatering discharge during construction and discharge to watercourse post-development, are both equal to pre-development discharge rates. Site stormwater management should also be treated to achieve a reduction of 80% TSS prior to discharge.
- 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 storm water 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 EIS is a subdivision application for the development of an existing 7.22 ha property.

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

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

- No significant residual impacts to natural heritage features identified on-site, including fish habitat, local wetlands, significant wildlife habitat or habitats of species at risk are anticipated as a result of the proposed project.
- 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 Lanark County Official Plan and the natural heritage policies of the Municipality of Mississippi Mills Community 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 Menzie Almonte 2 Inc. (c/o Regional Group) and is intended for the exclusive use of Menzie Almonte 2 Inc. (c/o Regional Group). This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and Menzie Almonte 2 Inc. (c/o Regional Group). 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, including excavations, borings 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.



Emily Young, B.Sc.
Junior Biologist



Drew Paulusse, B.Sc.
Senior Biologist



Taylor Warrington, B.Sc.,
Biologist

10.0 REFERENCES

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

Bird Studies Canada. 2008. Marsh Monitoring Protocol Participant Handbook for Monitoring Amphibians. Revised 2008.

Bird Studies Canada. 2009. Marsh Monitoring Program Participant's Handbook for Surveying Marsh Birds. Published by Bird Studies Canada in Cooperation with Environment Canada and the U.S. Environmental Protection Agency, February.

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.

Chapman, L.J., and Putnam, D.F. 1984. The Physiography of Southern Ontario. Ontario Geological Survey, Special Volume 2.

COSEWIC. 2018. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.

COSEWIC. 2017. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 74 pp.

COSEWIC. 2016. COSEWIC assessment and status report on the Blanding's Turtle *Emydoidea blandingii* Nova Scotia population and Great Lakes/St. Lawrence population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xix + 110 pp.

COSEWIC. 2013. 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. 2012. COSEWIC assessment and status report on the Wood Thrush *Hylocichla mustelina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.

COSEWIC. 2011. COSEWIC assessment and status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.

COSEWIC. 2010. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.

COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 28 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. Viewed online, December 12, 2022. Available from: <http://www.dfo-mpo.gc.ca/species-especies/sara-lep/map-carte/index-eng.html>

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

Downes, C.M., and B.T. Collins, Canadian Breeding Bird Survey, 1967-2003. National Wildlife Research centre, Canadian Wildlife Service, Ottawa.

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.

Lanark. 2012. Lanark County Official Plan: Sustainable Communities Official Plan. Available online:

<http://www.lanarkcounty.ca/Assets/New/Planning+Department/SCOP+Approved+2013.pdf>

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

Mississippi Mills. 2018. Municipality of Mississippi Mills Community Official Plan, viewed online December 12, 2022. Available online: <https://www.mississippimills.ca/en/build-and-invest/official-plan.aspx>

Mississippi Valley Conservation Authority. MVCA Portal, viewed online December 12, 2022. Available

online: <https://camaps.maps.arcgis.com/apps/webappviewer/index.html?id=70831905961e470988262c7a703a56af>

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

Ontario, Government of (Ontario). 2022. Red-headed Woodpecker, viewed online September 13, 2022. Available online: <https://www.ontario.ca/page/red-headed-woodpecker>

Ontario, Government of (Ontario). 2021a. Eastern Ribbonsnake, viewed online September 13, 2022. Available online: <https://www.ontario.ca/page/eastern-ribbonsnake>

Ontario, Government of (Ontario). 2021b. Eastern small-footed Myotis. Viewed online July 21, 2022. Available from: <https://www.ontario.ca/page/eastern-small-footed-myotis>

Ontario, Government of (Ontario). 2021c. Little Brown Myotis. Viewed online July 21, 2022. Available from: <https://www.ontario.ca/page/little-brown-myotis>

Ontario, Government of (Ontario). 2021d. Northern Myotis. Viewed online July 21, 2022. Available from: <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 (Ontario). 2007. Endangered Species Act.

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2020, Provincial Policy Statement – Under Planning Act, Toronto. April.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2020a. Wildlife Values Area. Accessed from Ontario GeoHub, viewed online December 12, 2022. Available from <https://geohub.lio.gov.on.ca/datasets/wildlife-values-area?geometry=-117.696%2C38.917%2C-51.778%2C58.786>

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2020b Wildlife Values Site. Accessed from Ontario GeoHub, viewed online December 12, 2022. Available from: <https://geohub.lio.gov.on.ca/datasets/wildlife-values-site>

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

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

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2015b. Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario. Species Conservation Policy Branch. Peterborough, Ontario. ii + 16 pp.

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 (OMNR). 2011a. Bats and Bat Habitats Guidelines for Wind Power Projects. Second Edition.

Ontario Ministry of Natural Resources (OMNR). 2011b. Bobolink Survey Methodology.

Ontario Ministry of Natural Resources (OMNR). 2011c. 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, 2019, Ontario Reptile and Amphibian Atlas, viewed online December 12, 2022. Available:

<https://www.ontarioinsects.org/herp/index.html?Sort=1&area2=squaresCounties&records=all&myZoom=5&Lat=42.95&Long=-81.01>



APPENDIX A

Figure A.1 – Site Location

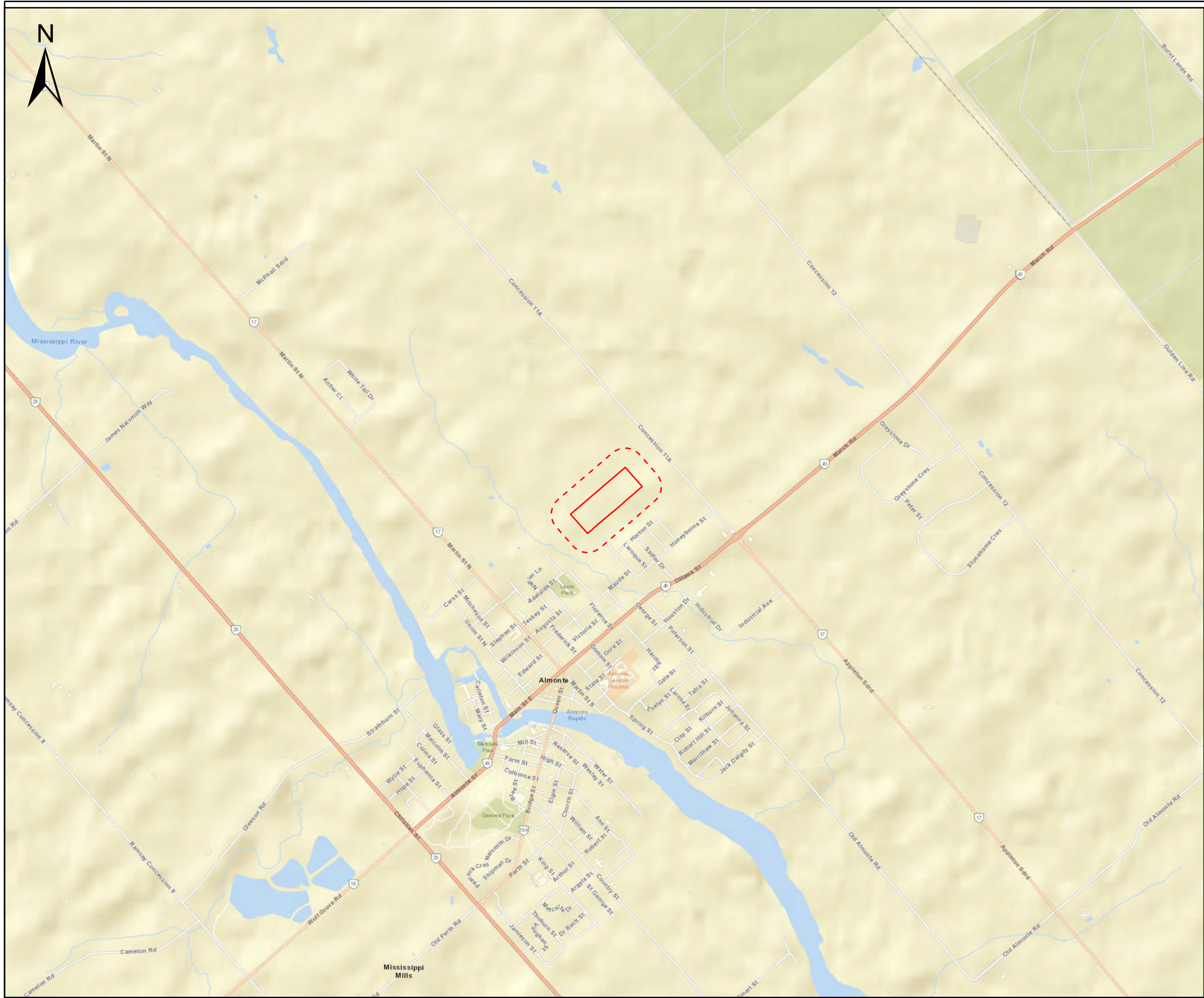
Figure A.2 – Site Layout

Figure A.3 – Vegetation Communities

Figure A.4 – Development Plan

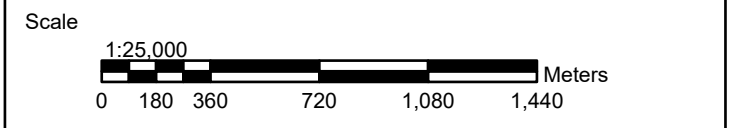
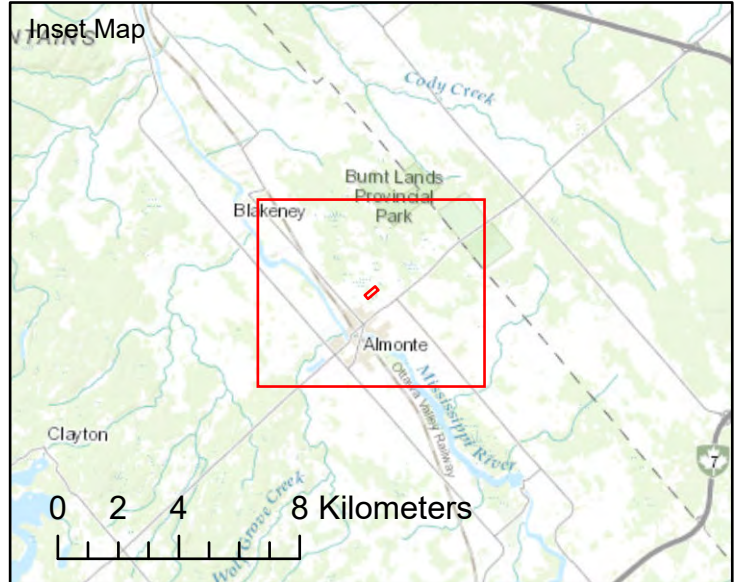
Figure A.5 – Natural Heritage Features

Figure A.6 – Mitigation Measures



Legend

- Property Boundary
- Study Area



GEMTEC
 CONSULTING ENGINEERS
 AND SCIENTISTS

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

Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
---	----------------------------

Location
 Part of Lot 17, Concession 10
 Almonte, Ontario

Drwn By: EP	Chkd By: TW	Site Location
----------------	----------------	----------------------

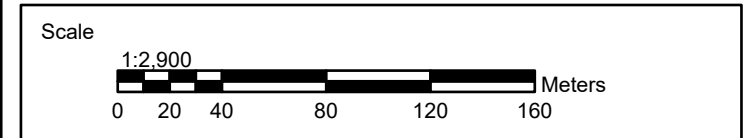
Date: July 2024	Rev.	Figure A.1
© Queen's Printer for Ontario	0	

Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Ontario MNR, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, AAFC, NRCan
 World Street Map: Esri, HERE, Garmin, INCREMENT P, NGA, USGS, NRCan



Legend

- Property Boundary
- Study Area
- Local Wetland
- Stormwater Management Pond
- MVCA Watercourse
- GEMTEC Watercourse
- Amphibian Breeding Station (100m radius)
- Breeding Bird Station (100m radius)



GEMTEC
CONSULTING ENGINEERS
AND SCIENTISTS

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

Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
--	------------------------

Location
**Part of Lot 17, Concession 10
Almonte, Ontario**

Drwn By: EP	Chkd By: TW	Site Layout
----------------	----------------	--------------------

Date: July 2024	Rev. 0	Figure A.2
© Queen's Printer for Ontario		

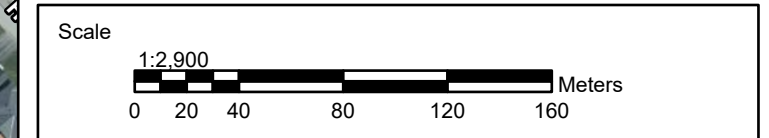
Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
 World Imagery: Maxar, Microsoft
 MVC DRAPE 2019 Imagery: Terms of Use
 Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCAN, Parks Canada



Legend

- Property Boundary
- Study Area
- Local Wetland
- Stormwater Management Pond
- MVCA Watercourse
- GEMTEC Watercourse
- Vegetation Community

FOC4-1 = White Cedar Coniferous Forest
 SWT2 = Willow Swamp Thicket
 CUT = Cultural Thicket



GEMTEC
 CONSULTING ENGINEERS
 AND SCIENTISTS

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

Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
--	------------------------

Location
 Part of Lot 17, Concession 10
 Almonte, Ontario

Drwn By: EP	Chkd By: TW	Vegetation Communities
----------------	----------------	-------------------------------

Date: July 2024	Rev. 0	Figure A.3
-----------------	-----------	-------------------

Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
 World Imagery: Maxar, Microsoft
 MVC DRAPE 2019 Imagery: Terms of Use
 Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCAN, Parks Canada

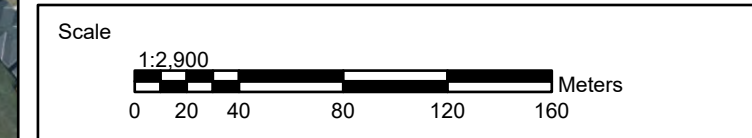


Legend

- Property Boundary
- Study Area
- Local Wetland
- Stormwater Management Pond
- MVCA Watercourse
- GEMTEC Watercourse

Proposed Development Concept

- Road
- Lot
- Park Lands
- Stormwater Management Pond Expansion
- Naturalized Buffer
- Walkway / Servicing Block



GEMTEC
CONSULTING ENGINEERS
AND SCIENTISTS

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

Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
--	------------------------

Location
**Part of Lot 17, Concession 10
Almonte, Ontario**

Drwn By: EP	Chkd By: TW	Development Concept
----------------	----------------	----------------------------

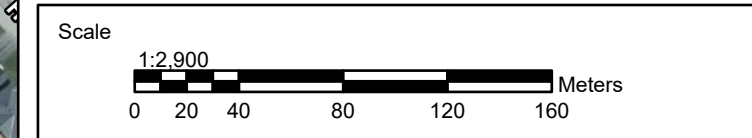
Date: July 2024	Rev. 0	Figure A.4
© Queen's Printer for Ontario		

Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: World Imagery: Maxar, Microsoft
 MVC DRAPE 2019 Imagery: Terms of Use
 Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCAN, Parks Canada



Legend

- Property Boundary
- Study Area
- Local Wetland
- Stormwater Management Pond
- MVCA Watercourse
- GEMTEC Watercourse
- Category 1 Blanding's Turtle Habitat
- Category 2 Blanding's Turtle Habitat (30 m)



GEMTEC
CONSULTING ENGINEERS
AND SCIENTISTS

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

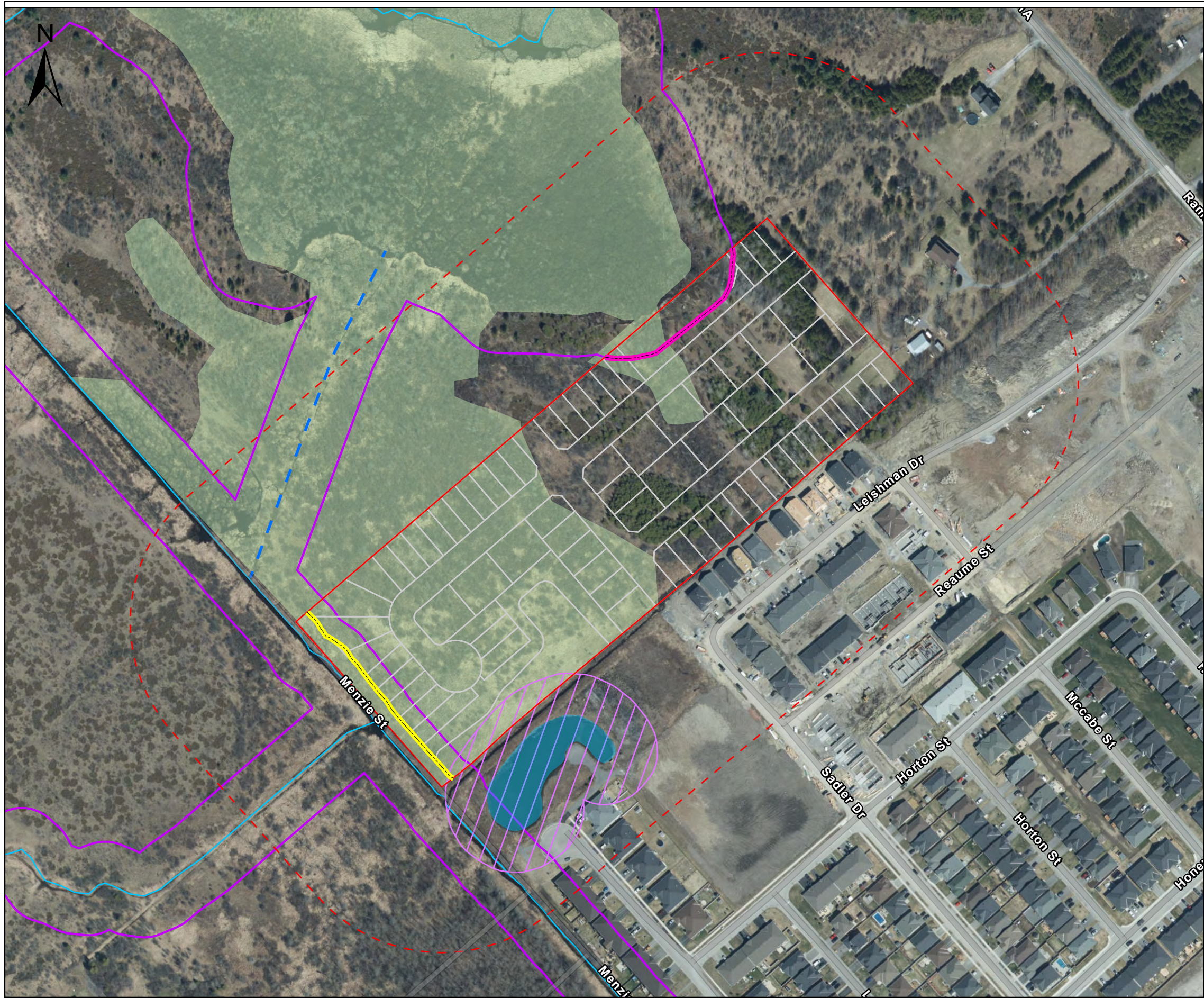
Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
--	------------------------

Location
**Part of Lot 17, Concession 10
Almonte, Ontario**

Drwn By: EP	Chkd By: TW	Natural Heritage Features
----------------	----------------	----------------------------------

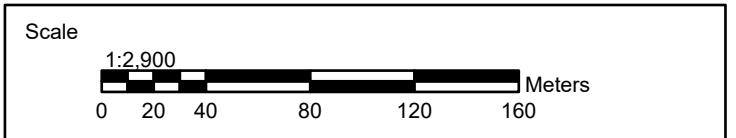
Date: July 2024	Rev. 0	Figure A.5
© Queen's Printer for Ontario		

Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: MVC DRAPE 2019 Imagery: Terms of Use
 Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCAN, Parks Canada
 World Imagery: Maxar



Legend

- Property Boundary
- Study Area
- Local Wetland
- Stormwater Management Pond
- MVCA Watercourse
- GEMTEC Watercourse
- Proposed Development Concept
- Category 1 Blanding's Turtle Habitat
- Category 2 Blanding's Turtle Habitat (30 m)
- 15 m Setback
- 30 m Setback



GEMTEC
CONSULTING ENGINEERS
AND SCIENTISTS

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

Client: Menzie Almonte 2 Inc. (c/o Regional Group)	Project: 100436.004
--	------------------------

Location
**Part of Lot 17, Concession 10
Almonte, Ontario**

Drwn By: EP	Chkd By: TW	Mitigation Measures
----------------	----------------	----------------------------

Date: July 2024	Rev. 0	Figure A.6
-----------------	-----------	-------------------

Coordinate System: NAD 1983 UTM Zone 18N
 Service Layer Credits: World Imagery: Maxar, Microsoft
 MVC DRAPE 2019 Imagery: Terms of Use
 Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCAN, Parks Canada



APPENDIX B

Site Photographs



Site Photograph 1 – White Cedar Coniferous Forest (FOC4-1)



Site Photograph 2 – White Cedar Coniferous Forest (FOC4-1)



Site Photograph 3 – Cultural Thicket (CUT)



Site Photograph 4 – Cultural Thicket (CUT)



Site Photograph 5 – Willow Thicket Swamp (SWT)



Site Photograph 6 – Willow Thicket Swamp (SWT)



Site Photograph 7 – Willow Thicket Swamp (SWT)



Site Photograph 8 – Willow Thicket Swamp (SWT)



Site Photograph 9 – Adjacent Willow Thicket Swamp (SWT) to the North of the Subject Property



Site Photograph 10 – Willow Thicket Swamp (SWT) leading to the northern Open-Water Marsh



Site Photograph 11 – Willow Thicket Swamp along West Property Boundary and Adjacent Watercourse



Site Photograph 12 – Adjacent Watercourse along West Property Boundary



Site Photograph 9 – Stormwater Management Facility to the South of the Subject Property



APPENDIX C

Summary Tables

**TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJACENT TO SITE**

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
Alder flycatcher	<i>Empidonax alnorum</i>	S5B	Heard calling
American bittern	<i>Botaurus lentiginosus</i>	S4B	Heard calling
American crow	<i>Corvus brachyrhynchos</i>	S5B	Heard calling
American goldfinch	<i>Carduelis tristis</i>	S5B	Heard calling
American robin	<i>Turdus migratorius</i>	S5B	Heard calling
Barn swallow	<i>Hirundo rustica</i>	S4B	Observed on-site
Black-and-white warbler	<i>Mniotilta varia</i>	S5B	Heard calling
Black-capped chickadee	<i>Poecile atricapillus</i>	S5	Heard calling
Blue jay	<i>Cyanocitta cristata</i>	S5	Heard calling
Brown-headed cowbird	<i>Molothrus ater</i>	S4B	Heard calling
Canada goose	<i>Branta canadensis</i>	S5B	Heard calling, observed in storm water pond
Cedar waxwing	<i>Bombycilla cedrorum</i>	S5B	Heard calling
Chipping sparrow	<i>Spizella passerina</i>	S5B	Heard calling
Common grackle	<i>Quiscalus quiscula</i>	S5B	Heard calling
Common raven	<i>Corvus corax</i>	S5	Heard calling
Common yellowthroat	<i>Geothlypis trichas</i>	S5B	Heard calling
Eastern phoebe	<i>Sayornis phoebe</i>	S5B	Heard calling
Field sparrow	<i>Spizella pusilla</i>	S4B	Heard calling
Gray catbird	<i>Dumetella carolinensis</i>	S5B	Heard calling
Green heron	<i>Butorides virescens</i>	S4B	Observed in storm water pond and fly-over
Killdeer	<i>Charadrius vociferus</i>	S5B	Heard calling
Merlin	<i>Falco columbarius</i>	S5B	Heard calling
Mourning dove	<i>Zenaida macroura</i>	S5B	Heard calling
Northern cardinal	<i>Cardinalis cardinalis</i>	S5	Heard calling
Red-eyed vireo	<i>Vireo olivaceus</i>	S5B	Heard calling
Red-winged blackbird	<i>Agelaius phoeniceus</i>	S5B	Heard calling
Ring-billed gull	<i>Larus delawarensis</i>	S5B, S4N	Heard calling
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	S5B	Heard calling
Ruby-crowned kinglet	<i>Regulus calendula</i>	S4B	Heard calling
Song sparrow	<i>Melospiza melodia</i>	S5B	Heard calling
Swamp sparrow	<i>Melospiza georgiana</i>	S5B	Heard calling
Tree swallow	<i>Tachycineta bicolor</i>	S4B	Heard calling
Turkey vulture	<i>Cathartes aura</i>	S5B	Observed on-site
Wild turkey	<i>Melagris gallopavo</i>	S5	Heard calling
Wood duck	<i>Aix sponsa</i>	S5B	Observed in storm water pond
Yellow warbler	<i>Setophaga petechia</i>	S5B	Heard calling
Yellow-rumped warbler	<i>Setophaga coronata</i>	S5B	Heard calling
Mammalian Species			
Coyote	<i>Canis latrans</i>	S5	Observed on-site
White-tailed deer	<i>Odocoileus virginianus</i>	S5	Observed on-site
Amphibian Species			
American toad	<i>Anaxyrus americanus</i>	S5	Heard calling
Blue-spotted salamander	<i>Ambystoma laterale</i>	S4	Observed on-site
Gray treefrog	<i>Hyla versicolor</i>	S5	Heard calling
Green frog	<i>Lithobates clamitans</i>	S5	Heard calling
Northern leopard frog	<i>Lithobates pipiens</i>	S5	Heard calling
Spring peeper	<i>Pseudacris crucifer</i>	S5	Heard calling
Western chorus frog	<i>Pseudacris triseriata</i>	S4	Heard calling
Wood frog	<i>Lithobates sylvaticus</i>	S5	Heard calling
Reptilian Species			
Midland painted turtle	<i>Chrysemys picta marginata</i>	S4	Observed on-site
Snapping turtle	<i>Chelydra serpentina</i>	S3	Observed on-site

Notes:

* Denotes a threatened or endangered Species at Risk under the ESA

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	Contiguous woodlands on and off-site do not meet the minimum size requirement for the planning area (> 20 ha).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site do not meet the minimum size requirement for the planning area (> 8 ha).
b) Proximity	No	Woodlands on-site are proximal to fish habitat and other identified significant natural features, however the minimum size requirement is not met.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	No	Woodlands on-site are proximal to fish habitat, however the minimum size requirement is not met.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking 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 values.

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

Wildlife Habitat	Further Considered in EIS	Rationale
Winter Deer Yard	No	As outlined in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer management are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area. The closest deer yard to site is a patch of Stratum II deer yard located approximately 30 km northeast of site.
Colonial Bird Nesting Habitat	No	No suitable nesting habitat is present on-site; however, it may be available within the study area. No nests observed during the site investigation. A singular green heron was observed in the storm water pond off-site during two site investigations.
Waterfowl Stopover and Staging Areas	No	No suitable wetland habitat is present on-site; however, it may be available within the study area. No indicator species were observed.
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	Site does not contain suitable mixture of upland and forest ecosites necessary to support raptor wintering area SWH.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies.
Turtle Wintering Area	Yes	Suitable open water habitat may be present to provide turtle wintering habitat on-site. The stormwater management pond is manmade and thus not considered significant wildlife habitat.
Reptile Hibernaculum	No	Structures such as large rock piles, bedrock outcrops, and cervices were not identified on-site.
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	Yes	Suitable upland habitat is present adjacent to suitable wetland habitats on-site.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	No suitable forest habitat is located directly adjacent to the open water which may support foraging bald eagles or osprey. No nests were observed on-site, and neither species were observed during investigations. Nesting sites for these species are uncommon in Ecoregion 6E (MNRF, 2012).
Woodland Nesting Raptor Habitat	No	Nesting may occur in any forested ecosites, with species preference towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands on-site does not meet the minimum size requirements. No sticks nests were observed on-site.
Turtle Nesting Habitat	No	No suitable habitat (exposed mineral soil with minimal vegetation cover) was observed on-site. Potential suitable habitat was observed within the greater study area; however, it is associated with the storm water pond which is not considered a significant wildlife habitat.
Seeps and Springs	No	Neither seeps nor springs were identified on-site.
Woodland Amphibian Breeding Habitat	No	Suitable woodland habitat is not present to support woodland amphibian breeding SWH.
Wetland Amphibian Breeding Habitat	Yes	Suitable wetland habitat within the swamp thicket (SWT), is located on-site and within the study area, and may support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-sensitive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site do not meet the minimum size defining criteria of >30 ha, or interior forest habitat >200 m from a forest edge.

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

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	Yes	Potentially suitable marsh habitat, ELC SWT, is present on-site to support green heron marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No suitable meadow habitat on-site to support open country bird breeding.
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. Thicket habitat on-site does not meet minimum size requirements.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	During the site investigations, no species of special concern were identified on-site; however, one species of special concern, snapping turtle, was observed within the greater study area. Occurrence data for the NHIC and HerpAtlas also indicates the following species of special concern to have occurred within 2 km of site: eastern ribbonsnake, eastern musk turtle, northern map turtle, snapping turtle, river redhorse and wood thrush.

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

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	Yes	<i>Confirmed</i> wetland amphibian breeding habitat has been identified on-site.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

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

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian				
Barn Swallow	Threatened	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Moderate	Species was observed foraging on-site. Potentially suitable nesting structures may be present within the broader study area.
Bobolink	Threatened	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Moderate	Suitable grassland habitat not available on-site, but may be available within study area. NHIC indicates species within 1km of site. Species not observed during investigation.
Eastern Meadowlark	Threatened	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Moderate	Suitable grassland habitat not available on-site, but may be available within study area. NHIC indicates species within 1km of site. Species not observed during investigation.
Eastern Wood-pewee	Special Concern	Woodland species, often found near clearings and edges.	Low	Suitable woodlands present on-site. No historical occurrence data for species within study area. Species not observed during investigation.
Red-headed Woodpecker	Endangered	Open woodland and woodland edges, and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching.	Moderate	Suitable woodland habitat available on-site and within the study area. NHIC indicates species within 1km of the site. Species not observed during investigation.
Wood Thrush	Special Concern	Prefers deciduous or mixed woodlands	Moderate	Suitable woodland habitat is present on-site and within surrounding study area. NHIC indicates presence of species within 1km of site. Wood Thrush was not observed on-site during site investigations.
Mammalian				
Eastern Small-footed Myotis	Endangered	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 structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Little Brown Myotis	Endangered	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 structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	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 rarely roosts in anthropogenic structures.
Tri-colored Bat	Endangered	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Available habitat on-site does not meet bat maternity colony requirements however the site and surrounding area may provide foraging and non-maternal roost habitat.
Reptilian				
Blanding's Turtle	Threatened	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	NHIC data indicates Blanding's turtle have been observed within 2km of the site to the east. Based on data obtained from the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed 8 times between 2017 and 2019 within the 10 km2 grid square that encompass the site. The local wetland on-site may provide suitable habitat to support species. Species not observed during field investigation.
Eastern Musk Turtle	Special Concern	Permanent ponds, lakes, marshes and rivers.	Moderate	NHIC data indicates eastern musk turtle has been observed within 2km of the site. Based on data obtained from the Herp Atlas (Ontario Nature, 2019), eastern musk turtle have been observed once in 2017 within the 10 km2 grid square that encompass the site. Suitable wetland habitat may be present within the study area. Species not observed during investigation.
Eastern Ribbonsnake	Special Concern	Usually found close to water, especially marshes. At onset of cold weather species will congregate in underground burrows or rock crevices to hibernate together.	Moderate	NHIC data indicates eastern ribbonsnake has been observed within 2km of the site. Suitable wetland habitat may be present within the local wetland on-site and within the study area. Species not observed during investigation.
Gray Ratsnake	Threatened	On the Frontenac Axis, preference to a mosaic of forest and open habitats (fields; bedrock outcrops) with a high amount of edge habitat. In summer, seeks shelter in standing snags, hollow logs, and rock crevices. Nesting occurs inside standing snags, logs, stumps, compost piles. Overwinters in below ground hibernacula.	Low	Suitable habitat does not exist within the study area. Species not observed during investigation. No historical occurrence records for species within study area.
Northern Map Turtle	Special Concern	Highly aquatic species found only in lakes and large rivers.	Low	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), northern amp turtle have been observed twice in 2015 within the 10 km2 grid square that encompass the site. Suitable wetland habitat may not be present on-site or within the study area. Species not observed during investigation. No historical occurrence records for species within study area.
Snapping Turtle	Special Concern	Highly aquatic species, found in a wide variety of permanent ponds, lakes, marshes and rivers.	High	NHIC data indicates snapping turtle have been observed within 1km of the site. Species observed near the storm water pond during field investigation. Based on data obtained from the Herp Atlas (Ontario Nature, 2019), snapping turtle have been observed 6 times between 2017 and 2019 within the 10 km2 grid square that encompasses the site. The local wetland may provide suitable habitat to support species.
Plants				
American Ginseng	Endangered	Grows in rich, moist but well-drained and relatively mature, deciduous woodlands dominated by sugar maple, white ash and American basswood.	Low	Woodlands on-site may provide suitable habitat to support species. Species was not observed during field investigation. No occurrence record for species on-site or within broader study area.
Butternut	Endangered	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	NHIC data indicates butternut has been observed within 2km of the site. Some portions of the site are open and in a regenerative state. Species was not observed on-site during the site investigation.
Insects				

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

Bogbean Buckmoth	Endangered	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	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Monarch Butterfly	Special Concern	Caterpillars required milkweed plants that are confined to meadows and open areas. Adult butterflies use more diverse habitats with a variety of wildflowers.	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Larval food plant, New Jersey Tea, is found in sandy areas and alvars.	Low	Preferred habitat of sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rapids Clubtail	Endangered	Distribution in Ottawa not know. Occurs along Mississippi River in Blakeney/Pakenham area upstream of City. One of two extant populations in Ontario (and Canada).	Low	Site lacks suitable habitat for species.
Rusty-patched Bumble Bee	Endangered	Habitat generalist	Low	Currently the only known Ontario population occurs in Pinery Provincial Park.
Traverse Lady Beetle	Endangered	Habitat generalist	Low	No new records in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Requires mature moist, deciduous woods, with larval host plant, toothwort.	Low	Necessary vegetation and toothwort plant are not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Habitat generalist: mixed woodlands, variety of open habitat.	Moderate	Potentially suitable foraging habitat available for yellow-banded bumble bee on-site.

experience • knowledge • integrity



civil
geotechnical
environmental
field services
materials testing

civil
géotechnique
environnementale
surveillance de chantier
service de laboratoire des matériaux

expérience • connaissance • intégrité

