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**Environmental Impact Statement
Proposed Plan of Subdivision
1009 Derry Side Road
Beckwith, Ontario**

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Submitted to:

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September 16, 2019
Project: 64878.01

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Ltd. (GEMTEC) was retained by Steve Smith to carry out an Environmental Impact Statement (EIS) for the property located at 1009 Derry Side Road in Beckwith, Ontario (hereafter referred to as “the subject property”). The general location of the subject property is illustrated on the Site Location, Figure A.1 in Appendix A.

1.1 Purpose

The property owner is seeking to create nine property parcels from an existing 16.3 hectare (ha) property for future residential development purposes. Based on Section 5 of the Lanark County Official Plan (OP), an EIS is required showing that the proposed plan of subdivision will not negatively impact the 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.

The objective of the work presented herein is fourfold:

- Identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2014), on the subject property and within the broader study area;
- Assess the potential impacts from the proposed development on any natural heritage features identified and to recommended appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified;
- Evaluation of the small, 0.93 hectare, wetland on-site in accordance with the Ontario Wetland Evaluation System (MNRF, 2014b); and,
- Assess the potential on-site wildland fire hazard in accordance with provincial guidance documents (Appendix D).

1.2 Background

A historical EIS was prepared for the subject property in 2017 by Stantec Consulting Ltd., (Stantec) for a previous development concept which included a larger plan of subdivision. The 2017 Stantec EIS was subject to regulatory review by Rideau Valley Conservation Authority (RVCA) and the Kemptville district Ministry of Natural Resources and Forestry (MNRF).

GEMTEC has reviewed the Stantec EIS and has found the methodologies employed, findings and evaluation of impacts to have been completed in a conservative manner following industry best practices. As such, information pertaining to the identification and significance of the following natural heritage features presented in this report has been relied upon from the Stantec EIS unless otherwise noted: vegetation communities, significant wildlife habitat, habitats

of Species at Risk (SAR) and observations for flora and fauna located on site and within the broader study area.

The 2019 update to the Stantec 2017 EIS, presented herein, has been completed in accordance with the following federal, provincial and municipal policies and guidelines:

- Provincial Policy Statement (MMAH, 2014);
- Species at Risk Act (Canada, 2002);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010); and
- Lanark County Official Plan (Lanark County, 2012).

1.3 Physical Setting

The subject property is located at 1009 Derry Side Road, Beckwith, Ontario, and is comprised of a mix of deciduous and mixed forests and swamp habitat. The subject property is bound to the northwest by Ferguson Road, and to the northeast by Derry Side Road. To the southwest the site is bound by neighbouring property off Lot 20, Concession 4, and to the southeast by Richmond Road.

1.3.1 Land Use Context

The subject property is situated within a larger rural agricultural area. The Goodwood Marsh Provincially Significant Wetland Complex is located approximately 700 m to the northwest. The existing land use designation from the Lanark County OP is rural area and agricultural land and the zoning by-law from the Beckwith Township is rural (RU) and agricultural (A).

2.0 METHODOLOGY

2.1 Desktop Review

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

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

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

- Make a Map: Natural Heritage Areas (OMNRF, 2014a)
- Land Information Ontario (OMNR, 2011);
- Lanark County Official Plan (Lanark County, 2012)
- RVCA GeoPortal (RVCA, 2019);
- 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);
- Ontario Ordonata Atlas (OMNR, 2005); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2015).

2.2 Field Investigations

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

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

Table 2.2 Summary of Field Investigations

Date	Time	Weather	Surveys Conducted
April 10, 2019	10:50 - 14:40	2°C, partly cloudy, Beaufort 2, no precipitation	Bat Maternity Roost Survey
June 20, 2019	07:40 – 08:50	19°C, overcast, Beaufort 3, no precipitation	Breeding Bird Survey
June 24, 2019	06:05 – 07:40	13°C, few clouds, Beaufort 1, no precipitation	Breeding Bird Survey
June 28, 2019	06:30 – 07:20	17°C, few clouds, Beaufort 2, no precipitation	Breeding Bird Survey
August 9, 2019	08:45 – 10:15	20°C, clear skies, Beaufort 3, no precipitation	Wetland Evaluation (OWES)

2.2.1 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions from three point count locations; the breeding bird survey locations are provided on Figure A.3. 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). 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. A list of all avian species identified on-site is provided in Table C.1 in Appendix C.

2.2.2 Bat Maternity Roost Surveys

Potential bat maternity roosting sites were surveyed for in each forested ecosite on-site on April 10, 2019, following the protocol for identifying candidate maternity roosts outlined in the MNRF (2011) Bats and Bat Habitats: Guidelines for Wind Power Projects.

2.2.3 Wetland Evaluation

A wetland evaluation was conducted following the methodologies and guidance outlined in the Ontario Wetland Evaluation System for Southern Ontario (OMNRF, 2014b). The 2019 wetland evaluation has been submitted to the Kemptville District MNRF

2.2.4 Ecological Land Classification

Vegetation communities on the subject property were delineated by Stantec in 2017, following the Ecological Land Classification System for Southern Ontario (Lee et al, 2008) and were confirmed in 2019 with slight modifications.

2.2.5 Breeding Amphibian Surveys

Three breeding amphibian surveys were conducted by Stantec in 2017 following the protocol outlined in the Marsh Monitoring Program (Bird Studies Canada, 2008). Data collected from the breeding amphibian surveys was used to determine the presence or absence of significant wildlife habitat for breeding amphibians. Survey locations for breeding amphibian survey calls conducted by Stantec in 2017 are illustrated on Figure A.3 in Appendix A.

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);
- Ontario Wetland Evaluation System – Southern Ontario (OMNRF, 2014b);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014c).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

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

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

3.2 Landforms, Soils and Bedrock Geology

The topography of the site is relatively flat with a gentle downslope from north to south, from a topographical high of 135 metres above sea level (mASL) to a topographical low of 127 mASL.

A single topographical landform, as mapped by Chapman and Putman (1984) is described on-site, limestone plains of the Smiths Falls Limestone Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies three surficial soil units on the subject property, till, organic deposits and Paleozoic bedrock. Paleozoic bedrock occurs in the extreme north end of the property. Organic deposits consisting of peat, muck and marl occurs throughout the northcentral portion of the property. Till, consisting of stone-poor, sandy silt to silty sand on Paleozoic terrain, occurs throughout the central and the entire southern portions of the property.

Bedrock at the site, as described by the Ontario Geological Survey (OGS, 2019), consists of the Beekmantown Group, comprised of dolostone and sandstone.

3.3 Surface Water, Groundwater and Fish Habitat

Surface water on the site consists of the Leach Municipal Drain, Leach Branch 1, and an evaluated wetland (Appendix E). The Leach Municipal Drain is classified by the Department of Fisheries and Oceans (DFO) as a Class F Drain, indicating an intermittent flow regime and the absence of sensitive fish species; Class F Drains do not require DFO authorizations if disturbances are conducted during dry, stagnant or frozen conditions.

The Leach Drain on-site has an up gradient drainage area of approximately 0.9 km² with a channel length of 2.6 km; the mean annual flow is approximately 0.01 m³/s (OFAT, 2019).

A fisheries assessment was not conducted as part of this EIS, however it is assumed that the Leach Municipal Drain and Leach Branch 1 provides indirect fish habitat through contributions of base flow to downstream fish habitat.

Groundwater investigations were not completed in support of this EIS.

3.4 Vegetation Communities

Vegetation communities on-site were characterized and confirmed by Stantec in 2017, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee, et al., 2008). Vegetation at the site represents a mosaic of upland and lowland deciduous and mixed forests with cultural thickets and pastures also present. Table 3.4 below provides a summary of the various vegetation communities identified on-site by Stantec. Vegetation communities are illustrated on Figure A.4 in Appendix A.

Table 3.4 Vegetation Communities

ELC Type	Description	Size (ha)
Fresh-Moist, White Cedar-Hardwood Mixed Forest (FOMM7-2)	This community occurs in the centre and southwest corner of the site. This community is dominated by eastern white cedar (<i>Thuja occidentalis</i>) with balsam fir (<i>Abies balsamea</i>), black ash (<i>Fraxinus nigra</i>), green ash (<i>Fraxinus pennsylvanica</i>) and trembling aspen (<i>Populus tremuloides</i>). Less abundant constituents include basswood (<i>Tilia americana</i>) and white elm (<i>Ulmus americana</i>). The understory of this community is populated by sarsaparilla (<i>Aralia nudicaulis</i>) with poison-ivy (<i>Toxicodendron radicans</i>) and Pennsylvania sedge (<i>Carex pennsylvanica</i>) occurring abundantly.	4.07
Fresh-Moist, Green Ash-Hardwood Lowland Deciduous Forest (FODM7-2)	This community occurs throughout the central portions of the site. This community is dominated by green ash and red maple (<i>Acer rubrum</i>) with black ash occurring occasionally and balsam fire and white ash occurring to a much lesser extent. The understory of this community is populated by sarsaparilla and false miterwort (<i>Tiarella cordifolia</i>).	9.33
Treed Pasture (TAGM4)	This community occurs in the northeast corner of the site. The canopy is dominated by juvenile white spruce (<i>Picea glauca</i>), eastern white pine (<i>Pinus strobus</i>) and green ash. The understory is dominated by goldenrod (<i>Solidago spp.</i>) with wild parsnip (<i>Pastinaca sativa</i>), common milkweed (<i>Asclepias syriaca</i>) and alfalfa (<i>Medicago sativa</i>) throughout.	1.52
Maple Mineral Deciduous Swamp (SWDM3)	This community occurs over the central portion of the site and is dominated by red maple, silver maple (<i>Acer saccharinum</i>) and Freeman’s maple (<i>Acer x freemani</i>) with black ash and green ash occurring less frequently. The understory of this vegetation community is primarily populated by beaked sedge (<i>Carex rostrata</i>) sarsaparilla and	0.93

ELC Type	Description	Size (ha)
	dwarf raspberry (<i>Rubus pubescens</i>).	
Thicket Swamp (SWT)	This community occurs approximately 90 m south of the subject property, within the study area.	0.12
Shallow Marsh (MAS)	This community occurs approximately 50 m south of the subject property, with the study area and is dominated by	0.02

3.5 Wildlife

Wildlife observed on-site and within the study area during field investigations completed by GEMTEC in 2019 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, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

4.1 Significant Wetlands

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

The Goodwood Swamp Provincially Significant Wetland Complex is located approximately 700 m to the northwest. No other provincially significant wetlands were identified during the desktop review or during any of the site investigations.

The on-site wetland parcel was evaluated in accordance with the Ontario Wetland Evaluation System (MNRF, 2014b) and is included in Appendix E. The result of this evaluation indicates that the on-site wetland is located within a separate drainage basin than the Goodwood Swamp PSW and based on the evaluation of wetland features, is unlikely to be included by the MNRF in the Goodwood Swamp PSW complex.

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. For comparison of woodland criteria used in Table C.2, it is assumed that the woodland coverage within the planning area (Lanark County) is between 30% and 60% of the

land area, therefore the minimum woodland size for determining significance is 50 ha or greater, based on the guidance outlined in the natural heritage reference manual (OMNR, 2010).

Based on the results of the significant woodland screening presented in Table C.2, the forest and woodland along the west property boundary and adjacent, off-site forest are considered significant woodlands due to their size and ecological functions. Significant woodlands within the study area are illustrated on Figure A.5.

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 and no valleylands have been identified on-site, as such valleylands are not discussed or evaluated further in this EIS.

4.4 Significant Areas of Natural and Scientific Interest

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

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

4.5 Significant Wildlife Habitat

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

Table C.3, C.4, C.5 and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

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

Following review of Table C.3 in Appendix C, no *candidate* habitat of seasonal concentration of animals are present on-site.

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 (MNRF, 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, one *candidate* specialized habitat for wildlife is present on-site; woodland amphibian breeding habitat.

4.5.3.1 Woodland Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat was identified on-site by Stantec in 2017.

To evaluate the potential for habitat to provide woodland amphibian breeding habitat, a series of amphibian breeding surveys were conducted by Stantec. Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog (OMNRF, 2015). The defining criteria for confirmed woodland amphibian breeding significant wildlife habitat is the presence of breeding populations of two or more of the listed frog species

with at least 20 individuals, or two or more of the listed species with call level codes of 3 (OMNRF, 2015).

Table 4.5 below summarizes the results of the amphibian call surveys conducted by Stantec in 2017. Following review of Table 4.5 below, SWH for woodland breeding amphibians is confirmed for Stations 003 and 004. SWH for woodland breeding amphibians is illustrated on Figure A.5 in relation to other site features.

Table 4.5 Summary of Amphibian Breeding Call Results

Survey Location	Breeding Habitat	Species / Highest Call Code / Date	Confirmed SWH
001	Woodland	AMTO / 3* / May	No
		GRTR / 3* / May & June	
		SPPE / 3* / April	
002	Woodland	AMTO / 3* / April	No
		AMTO / 3 / June	
		GRTR / 3* / May & June	
		SPPE / 3* / April	
		SPPE / 1-1 / May	
003	Woodland	CHFR / 2-8* / April	Yes
		GRTR / 3 / May & June	
		SPPE / 3 / April	
		CHFR / 2-6 / April	
004	Woodland	GRTR / 3 / May & June	Yes
		SPPE / 3 / April	
		CHFR / 1-4 / April	

Notes: AMTO = American Toad, GRTR = Gray Tree Frog, SPPE = Spring Peeper, 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 reliably estimated. The second number identifies the number of individuals calling. Call codes of 3 do not have a second numbers, as individual estimates are not possible. #* indicates species heard outside the 100 m station but within the subject property. Results are summarized from the Stantec 2017 EIS report.

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 (MNRF, 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 (OMNRF, 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, the following habitat of species of conservation concern has the potential to occur on-site, special concern and rare wildlife species habitat.

4.5.4.1 Special Concern and Rare Wildlife Species

According to the NHIC database accessed on August 26, 2019 and based on observation data from the 2017 Stantec EIS and 2019 GEMTEC EIS, two species of conservation concern have been identified on-site or within the broader study area. The species include two avian species, eastern wood-pewee and wood thrush. No other species of conservation concern or rare wildlife were identified on-site or within the broader study area.

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the eastern wood-pewee has a probability of occurrence of over 80% (Cadman et al, 2007). Furthermore, the national capital region is considered to have some of the highest density of wood-pewee in Ontario, indicating a stable, healthy population (Cadman et al, 2007). The NHIC identified the eastern wood-pewee as having historically occurred within 1 km of the site, but did not provide a last observed date. Eastern wood-pewee is a woodland species that is often found near clearings and edges. Given the mosaic of woodland and open habitat on-site and the eastern wood-pewee's affinity for clearings and edges, there is a high chance of eastern wood-pewee or suitable habitat to occur on-site. Furthermore, Eastern wood-pewee were observed calling on-site during the 2019 site investigations.

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario indicate a significant annual increase of 4.4% between the first and second atlas (Cadman et al, 2007). The NHIC has not identified any historic observations for the subject property and surrounding study area, however the species was observed calling on-site by Stantec in 2017. Wood thrush is a woodland species that is often found in moist, deciduous, hardwood or mixed forest stands, with dense deciduous undergrowth and tall trees. Given the

mosaic of mixed and deciduous woodlands on-site, there is a high chance of wood thrush or suitable habitat to occur on-site.

4.5.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement 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.

Furthermore, review of Table C.6 in Appendix C does not identify any animal movement corridors on-site or within the study area. As such, animal movement corridors are not discussed or evaluated further in this EIS.

4.6 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “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 or mitigate serious harm to fish 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.

A fisheries assessment was not conducted as part of this EIS, until such time that a fisheries assessment is completed, the Leach Drain is assumed to provide indirect fish habitat through contributions to base flow conditions. Fish habitat is identified on Figure A.5 in relation to other site features.

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, 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 regional distribution, their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in Section 6.4..

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area includes the creation of nine residential lots for future single family residential construction.

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, laneway construction, drilling of individual lot groundwater wells and septic system installation, excavation and pouring of foundations, construction of single family dwellings and general landscaping activities. No storm water infrastructure or municipal servicing has been proposed as part of this project.

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 5 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the natural environment from the proposed development outlined in Section 5 include: vegetation removal, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increase storm water generation and increased nutrient loading to adjacent surface water features.

6.1 Unevaluated Wetlands

No impacts are anticipated to the evaluated on-site wetland due primarily to the separation distance, approximately 50 m, between the proposed development and the wetland parcel, and the absence of significant wildlife habitat and habitats of species at risk. As such, no mitigation measures are provided in Section 7 below.

6.2 Significant Woodlands

As discussed in Section 4.2, the woodlands on-site are significant due to their size and ecological function. Potential impacts to significant woodlands on-site may include the loss of roadside forest habitat, increased fragmentation and increased human disturbance.

Future residential development on the proposed severances is to occur such that each future residence will front to Derry Side Road. Complete build out of the proposed severance parcels 2 through 9, could result in a loss of 3.84 ha of woodland habitat on-site. Parcel 1 is not located within significant woodlands and is not anticipated to negatively impact significant woodlands on-site.

6.3 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 two types of significant wildlife habitat were determined to be present on-site or within the study area, including: woodland amphibian breeding SWH and habitats of special concern and rare wildlife SWH.

Potential impacts to each types of significant wildlife habitat are discussed in the following subsections, while mitigation measures indented to prevent such impacts are presented in Section 7.

6.3.1 Woodland Amphibian Breeding SWH

Confirmed woodland amphibian breeding habitat on-site is confined within the MAS and SWT vegetation communities located south of the subject property, but within the study area. No development is proposed within the MAS or SWT communities, as such impacts to woodland amphibian breeding SWH are anticipated to be indirect in nature. Potential indirect impacts to water quality and woodland amphibian breeding SWH from residential development can include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, increased nutrient loading through both overland and subsurface pathways resulting from landscaping practices and septic leachate. Mitigation measures intended to protect woodland breeding amphibian SWH from negative impacts are discussed in Section 7.

6.3.2 Habitats of Special Concern and Rare Wildlife Species SWH

Two habitats of special concern and rare wildlife species SWH are present on-site, eastern wood-pewee and wood thrush.

Eastern Wood-pewee

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the eastern wood-pewee has a probability of occurrence of over 80% (Cadman et al, 2007). Furthermore, the national capital region is considered to have some of the highest density of wood-pewee in Ontario, indicating a stable, healthy population (Cadmen et al, 2007).

Eastern wood-pewee is a woodland species that is often found near clearings and edges. Given the mosaic of woodland and open habitat on-site and the eastern wood-pewee's affinity for clearings and edges, there is a high change of the eastern wood-pewee or suitable habitat to occur on-site. Furthermore, Eastern wood-pewee were observed calling on-site during the site investigations.

Eastern wood-pewee (*Contopus virens*) is a small, avian insectivore, that lives in a variety of deciduous, mixed and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012a). Adult eastern wood-pewee are grey-olive with pale wing-bars, the breast and sides are slightly darker than the wings. It is best identified by its three-phrased song, often paraphrased as a whistled 'pee-ah-wee' (COSEWIC, 2012a). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Threats to eastern wood-pewee are not well understood, however, loss of suitable forested habitat does not appear to be a significant issue across their Canadian breeding range (COSEWIC, 2012a). Furthermore, research indicates that the species is not very sensitive to forest fragmentation effects or forest size (COSEWIC, 2012a). Other threatened to eastern wood-pewee include changes in the availability of aerial insects, mortality during migration and/or

wintering, nest predation and habitat changes due to white-tailed deer browsing (COSEWIC, 2012a).

Impacts to eastern wood-pewee and their habitat on-site from the proposed residential development is limited to the forest and woodland habitat on-site (FODM7-2 and FOMM7-2), which may provide nesting and foraging habitat. Impacts to eastern wood-pewee habitat may include loss of forest habitat, increased fragmentation and increased human presence.

The proposed development will result in the loss of suitable forested habitat on-site, however, suitable habitat is readily available within the broader study area. Research also indicates that eastern wood-pewee are not negatively impacted by the loss of forest habitat, increased fragmentation or smaller woodlot size (COSEWIC, 2012a). Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are present in Section 7.

Wood Thrush

The wood thrush (*Hylocichla mustelina*) is a medium-sized songbird, similar in shape to an American robin but slightly smaller. Generally wood thrush plumage is distinct from other thrush species, with rusty-brown upper parts, white under parts and large blackish spots on the breast and sides.

In Ontario, the wood thrush breeding range extends from southern Ontario north to northern Georgian Bay and eastern Lake Superior (COSEWIC, 2012b). While wood thrush populations have declined over most of its North American range, between 1981 and 2005, breeding bird data indicates populations in Ontario have increased by 4.4%, likely due to an increase in woodland cover south of the Shield (Cadman et al., 2007). The probability of occurrence in Ontario however has decreased by 15% between the first and second breeding bird atlas (Cadman et al., 2007). The wood thrush is listed as a species of special concern in Ontario.

During the breeding season the wood thrush is found in moist, deciduous, hardwood or mixed forest stands, often in previously disturbed sites, with dense deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). For wood thrush, habitat selection is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012b).

No wood thrush observation records were provided by the NHIC for any of the four 1 km grid squares that encompass the site. No wood thrush were observed or heard calling during any of

the site investigations in 2019. However, wood thrush were observed calling on-site during the 2017 site investigations conducted by Stantec.

Impacts to wood thrush and their habitat on-site from the proposed residential development is limited to the forest and woodland habitat on-site (FODM7-2 and FOMM7-2), which may provide nesting and foraging habitat. Impacts to wood thrush habitat may include loss of forest habitat, increased fragmentation and increased human presence. The proposed development will result in the loss of suitable forested habitat on-site however, suitable habitat is readily available within the broader study area. Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the subject property and availability of suitable habitat within the greater study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging wood thrush are present in Section 7.

6.4 Fish Habitat

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

Section 35 (1) of the Fisheries Act (Canada, 1985) states that “no person shall carry on any work, undertaking or activity that results in *serious harm* to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.” *Serious harm* to fish, as defined in the Fisheries Act (Canada, 1985) means “the death of fish or any *permanent alteration* to, or destruction of, fish habitat.” When development is unable to avoid or mitigate serious harm to fish from typical project impacts such as temperature regime alteration, sedimentation, infilling, reduction of nutrients or food supply, an authorization under Subsection 35 (2) of the Fisheries Act is required for the project to proceed.

As no in-water work is anticipated as part of the proposed project, potential impacts to fish habitat are anticipated to be indirect in nature. Potential indirect impacts to water quality and fish habitat from residential development can include increased overland flow and concomitant sediment transport caused by an increase in impervious surface area, increased nutrient loading through both overland and subsurface pathways resulting from landscaping practices and septic leachate.

Mitigation measures intended to protect fish and fish habitat from negative impacts are discussed in Section 7.

6.5 Species at Risk

6.5.1 Barn Swallow

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

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

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

No suitable habitat for nesting or foraging barn swallow occurs on-site but potential nesting and foraging habitat occurs on the adjacent agricultural properties surrounding the site (OAG on Figure A.4). The proposed project described in Section 5, will not negatively impact any potentially suitable habitat for barn swallow, as such no mitigation measures are provided in Section 7 for barn swallow.

6.5.2 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 Timiskamin, Cochrane and Thunder Bay areas (Cadman et al., 2007). Between the first and second breeding bird atlas, the probability of bobolink observatinos declined by 28% province wide.

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).

Bobolink were observed calling from off-site, neighbouring agricultural fields during the site investigations (OAG on Figure A.4). However, no suitable grassland habitat is present on-site to support bobolink life processes. As such no negative impacts are anticipated to occur as a result of the proposed development and no mitigation measures are provided in Section 7 for the protection of bobolink.

6.5.3 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 the 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.

The eastern meadowlark prefers native grassland, pasture and savannah habitat, however it is known to use a variety of anthropogenic grassland habitats including hayfields, weedy meadows, young orchards, grain fields and herbaceous fence rows (COSEWIC, 2011). Preferred grassland habitat typically contains moderately tall (25 to 50 cm) grass species with abundant litter cover, with a high proportion of grass, moderate to high forb density a low percent of shrub cover (typically <5%) and low percent cover of bar ground (COSEWIC, 2011).

No suitable habitat for nesting or foraging eastern meadowlark occurs on-site but potential nesting and foraging habitat occurs on the adjacent agricultural properties surrounding the site (OAG on Figure A.4). The proposed project described in Section 5, will not negatively impact any potentially suitable habitat for eastern meadowlark, as such no mitigation measures are provided in Section 7 for eastern meadowlark.

6.5.4 Eastern Small-footed Myotis

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

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

Eastern small-footed *Myotis* overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2019a).

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 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 of marginal roadside forest habitat, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed *Myotis* from impacts of the proposed development are discussed in Section 7.

6.5.5 Little Brown Myotis

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

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

Little Brown *Myotis* overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2019b). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little Brown *Myotis* roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clearcuts are not typically utilized for foraging (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 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 of marginal roadside forest habitat, encroachment and increased wildlife-human interaction. Mitigation measures intended

to protect little brown *Myotis* from impacts of the proposed development are discussed in Section 7.

6.5.6 Northern Myotis

Northern Myotis (*Myotis septentrionalis*) is a small (typically 4-7 g), insectivorous bat. The fur of a Little Brown Myotis is a glossy brown. The most distinctive identifying feature of the Northern Myotis is the very long ears and tragus that is long and thin, with a sharp, pointed tip (Fraser, MacKenzie & Davy, 2007).

In Canada, Northern Myotis' has been observed in all provinces as well as the Yukon and Northwest Territories, approximately 40% of the species' global range is within Canada (COSEWIC, 2013). Its range extends through most of North America, particularly along the eastern US; generally, Northern Myotis is rare south of the Appalachian mountain range (COSEWIC, 2013). In Ontario, the Northern Myotis is found in forested areas in southern Ontario, to the north shore of Lake Superior and occasionally as far north as Moosonee and west to Lake Nipigon (Ontario, 2019c).

Northern Myotis overwinter in caves or abandoned mines (COSEWIC, 2013). Daytime roosting may occur in a variety of structures, including rock crevices, behind flagging bark and within tree cavities (COSEWIC, 2013). Northern Myotis can, but rarely use human-made structures for roosting (COSEWIC, 2013). During the summer months, maternity colonies are most strongly associated with the density and characteristics (e.g. height, diameter, age, decay class) of trees (COSEWIC, 2013). Foraging occurs in gaps in the forest, along waterways and forest edges, and occasionally over water. Open fields and clearcuts are not typically utilized for foraging (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 northern Myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to northern Myotis are primarily associated with habitat loss of marginal roadside forest habitat, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect northern Myotis from impacts of the proposed development are discussed in Section 7.

6.5.7 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 utilize 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 of marginal roadside forest habitat, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.5.8 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 patten. 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, 2003). 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.

A single butternut tree was observed in 2017 in the south central portion of the site; no additional butternut trees were documented in 2019. Based on the proposed development outlined in Section 5 and the distance from the butternut tree location, greater than 100 m, no impacts to butternut are anticipated. As such, no mitigation measures are presented in Section 7 below for the protection of butternut.

6.6 Cumulative Impacts

Cumulative impacts associated with nine potential future residential dwellings would include minor increases in stormwater generation and the loss of thicket and forest habitat.

Cumulative impacts to the natural environment at the site and within the broader study area due to increased human presence are expected to be negligible given the nature of the development; single family dwellings on rural residential lots, within an area of greater rural residential and agricultural land use.

The cumulative impacts associated with nutrient loading to adjacent aquatic features can be mitigated following septic system best practices.

There are no anticipated impacts on the integrity and ecological functions of the significant woodlands as the proposed severances and residential development are not likely to increase forest fragmentation or disrupt animal migration.

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. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

7.1 Significant Woodlands

If the full build-out potential on the proposed severance lots were realized it could potentially result in the loss in 3.84 hectares of significant woodland present on-site. To ensure that only the area required to accommodate a single family dwelling, septic field, drinking water well and garage is cleared, site control by way of prescribed development envelopes for each severance parcel is recommended.

Figure A.6 illustrates the proposed development envelopes on each land parcel and Table 7.1 below provides a summary of the various development envelope sizes on Parcels 2 to 9. The development envelopes are positioned on each parcel in such a manner as to reduce impacts on the integrity of the significant woodlands by developing each lot as close to Derry Side Road as possible.

Table 7.1 Recommended Development Envelopes

Severance Parcel	Area (ha)
2	0.29
3	0.29
4	0.27
5	0.27
6	0.32
7	0.38
8	0.33
9	0.34

By registering the proposed development envelopes on land title for the proposed severances, the maximum loss of significant woodlands is only 1.74 ha of the 14.6 ha of significant woodlands on-site.

No negative impacts on the ecological function of the significant woodlands are anticipated as a result of this project if the development envelopes proposed above are registered on land title and all mitigation measures and best management practices recommended below are adhered to.

7.2 Significant Wildlife Habitat

The 15 m buffer from the watercourse on-site, presented below is sufficient to prevent negative impacts to amphibian breeding habitat due to nutrient and sediment loading to the watercourses. Furthermore, the establishment of development envelopes on forested parcels minimizes the encroachment of development to breeding habitat.

7.3 Fish Habitat

No negative impacts on fish habitat are anticipated as a result of this project if all mitigation measures recommended below are enacted and best management practices followed. Fish habitat can be protected against potential impacts of the proposed development outlined in Section 5 through the implementation of a construction setback. A minimum 15 m setback is recommended from the watercourse and local wetlands identified on-site.

General mitigation measures recommended for the protection of water quality and fish 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 in the near shore area.
- 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.
- The development plan should include lot-side swales and/or road side ditches designed to promote infiltration.
- Downspouts should be directed towards lot-side swales that are in turn directed to road side ditches and not adjacent surface water features. Rain gardens or infiltration trenches should be utilized in areas of difficult topography.
- 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.
- Septic systems shall be installed no closer than 30 m from the high water mark of any surface water feature.
- Any proposed dock structures should be either a floating or pole type, so not to interfere with fish habitat.

7.4 Species at Risk

7.4.1 Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis & Tri-colored Bat

The development envelopes, presented above, will protect the integrity and ecological function of the significant woodlands on-site, by confining development to marginal roadside forest habitat. This will minimize the amount of habitat loss for bat SAR species that have the potential to occur on-site.

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

7.5 Wildlife

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

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

7.6 Best Practice Measures for Mitigation of Cumulative Impacts

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

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

8.0 CONCLUSIONS

The proposed project supported by this EIS is the creation of nine single-dwelling lots, for future residential development, on an existing 16.3 ha property.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual 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 regards to the Environmental Impact Statement.

- No significant impacts to natural heritage features identified on-site, including significant woodlands, local wetland, fish habitat, significant wildlife habitat or habitats of species at risk are anticipated as a result of future residential development.
- 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.

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 the Steve Smith and is intended for the exclusive use of the Steve Smith. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC and the Steve Smith. 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, and 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.



Taylor Warrington, B.Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

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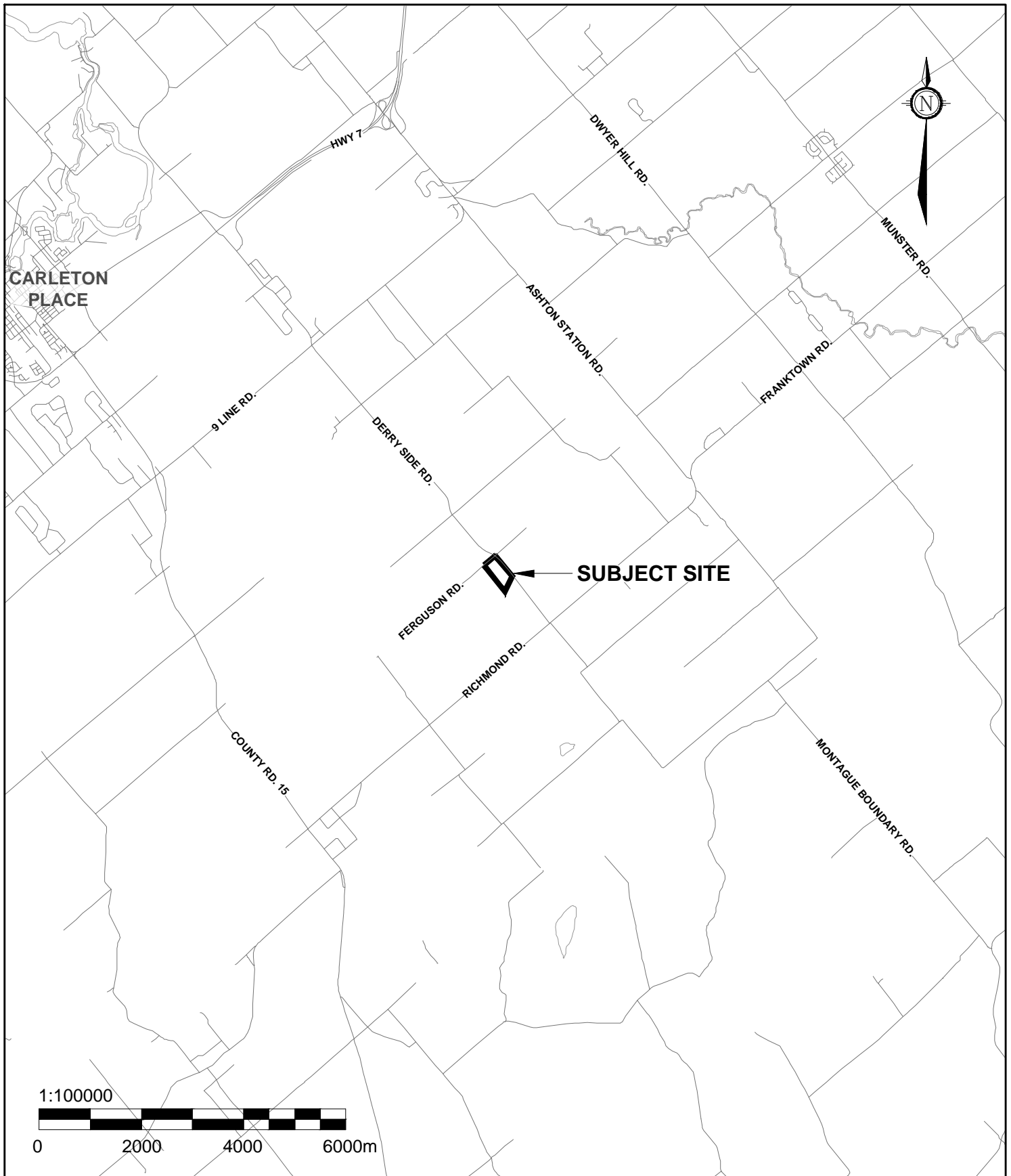
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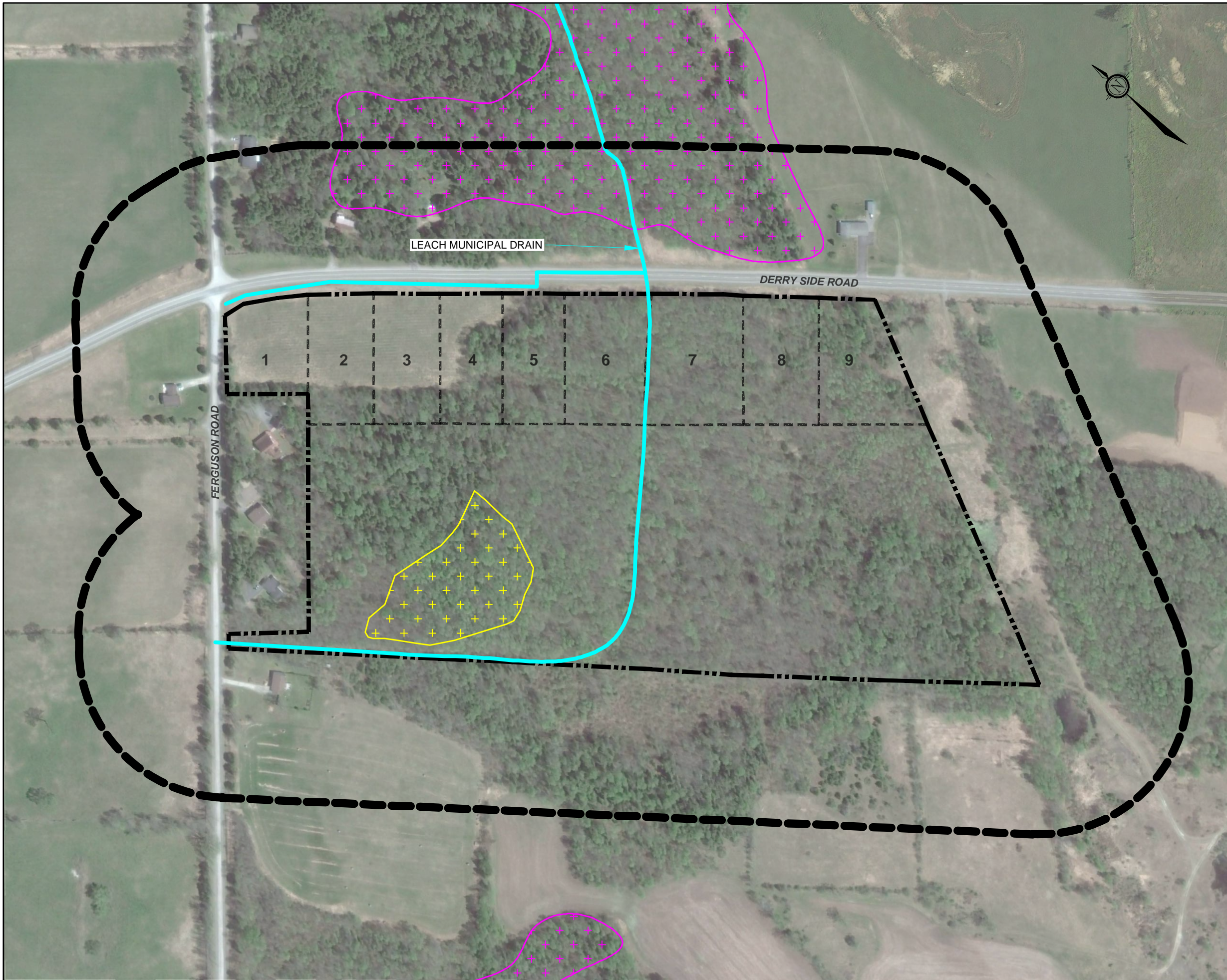


APPENDIX A

Report Figures

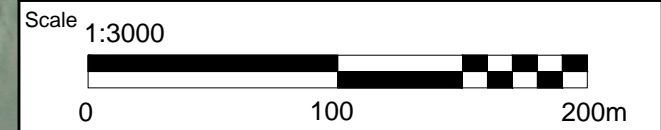


 GEMTEC CONSULTING ENGINEERS AND SCIENTISTS <small>32 Steacie Drive, Ottawa, ON K2K 2A9 T: (613) 836-1422 www.gemtec.ca ottawa@gemtec.ca</small>	Project ENVIRONMENTAL IMPACT STATEMENT PART OF LOT 20, CONC. 4 TWP. OF BECKWITH, ON		Drawing SITE LOCATION		
	Drwn By P.C.	Chkd By T.W.	Date SEPTEMBER 2019	Project No. 64878.01	Revision No. 0



LEGEND

- SUBJECT SITE
- PROPOSED SEVERANCES
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WETLAND - UNEVALUATED
- WETLAND - EVALUATED
- WATERCOURSE



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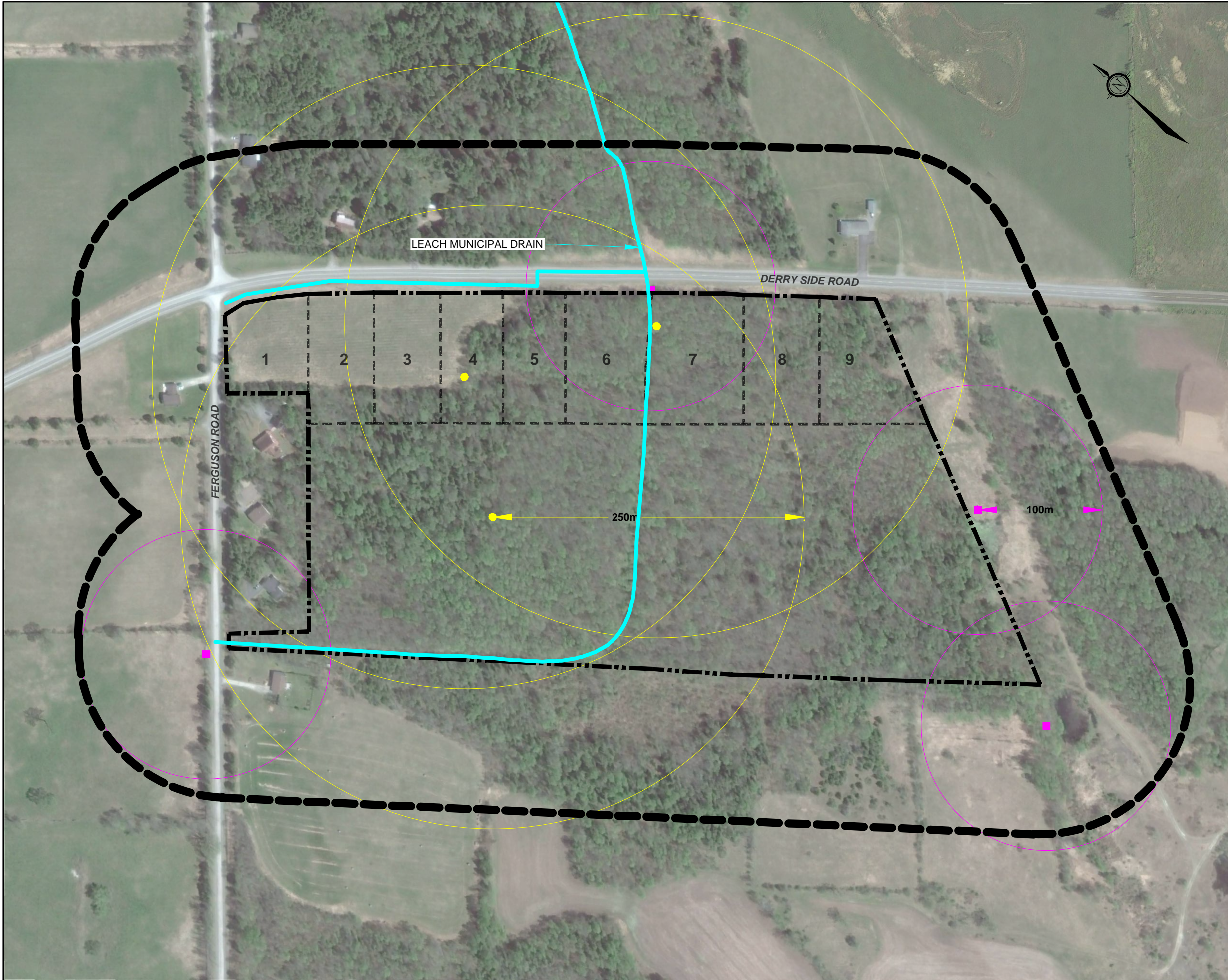
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Drawing **SITE LAYOUT**

Client **S. SMITH**

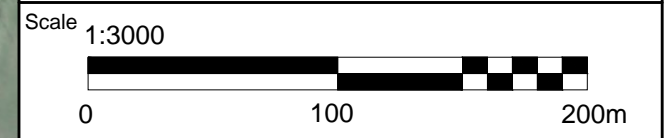
Project	64878.01	ENVIRONMENTAL IMPACT STATEMENT PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO
Drwn by	P.C.	
Chkd by	T.W.	

Date	SEPTEMBER 2019	Rev.	0	FIGURE A.2
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LEGEND

- SUBJECT SITE
- PROPOSED SEVERANCES
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WATERCOURSE
- AMPHIBIAN SURVEY
- BREEDING BIRD SURVEY



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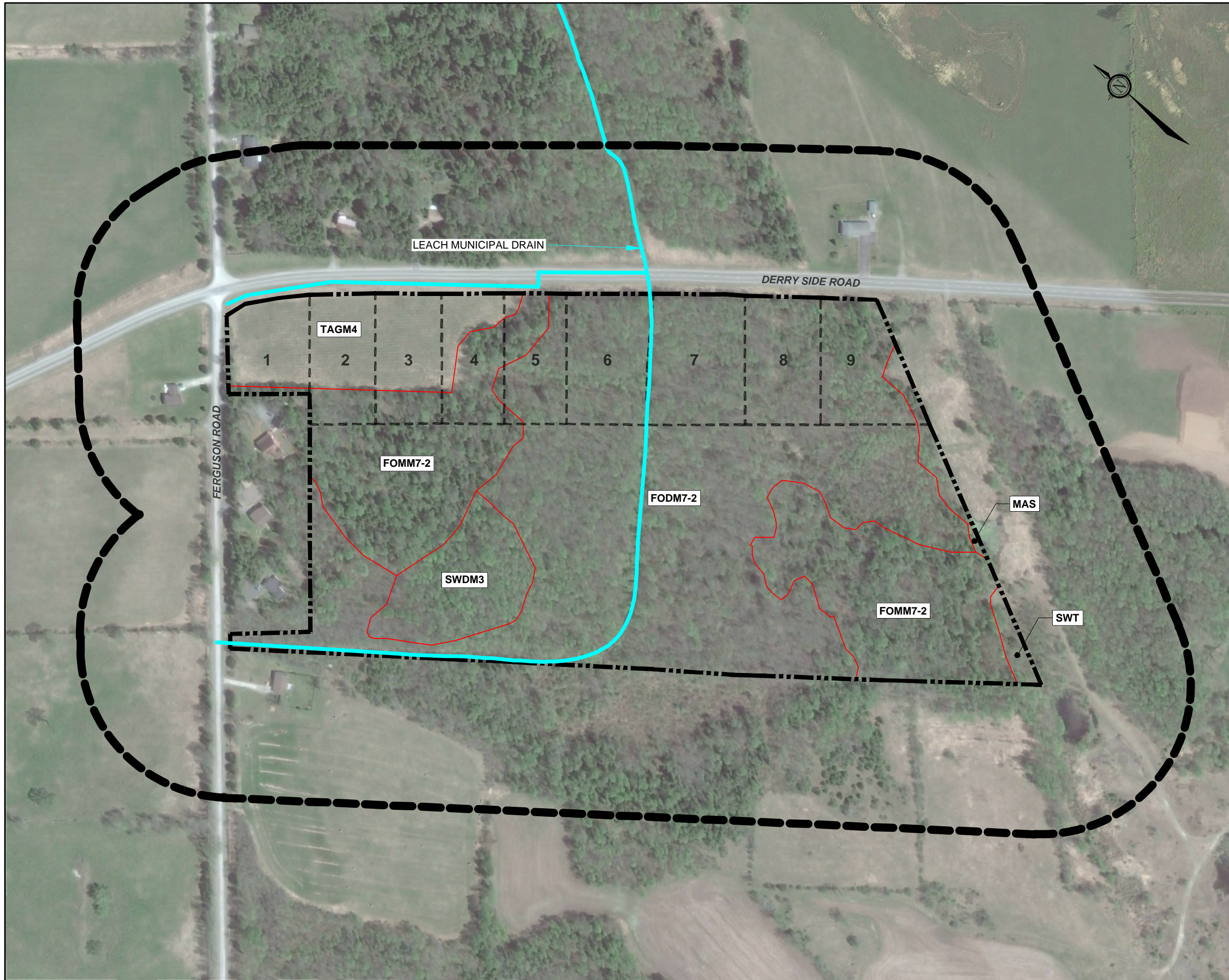
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Drawing **SURVEY LOCATIONS**

Client **S. SMITH**

Project 64878.01		ENVIRONMENTAL IMPACT STATEMENT PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO
Drwn by P.C.	Chkd by T.W.	
Date SEPTEMBER 2019	Rev. 0	

FIGURE A.3

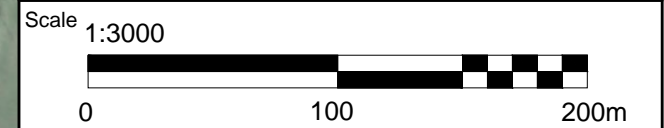


LEGEND

- SUBJECT SITE
- PROPOSED SEVERANCES
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WATERCOURSE
- VEGETATION COMMUNITIES

VEGETATION COMMUNITIES

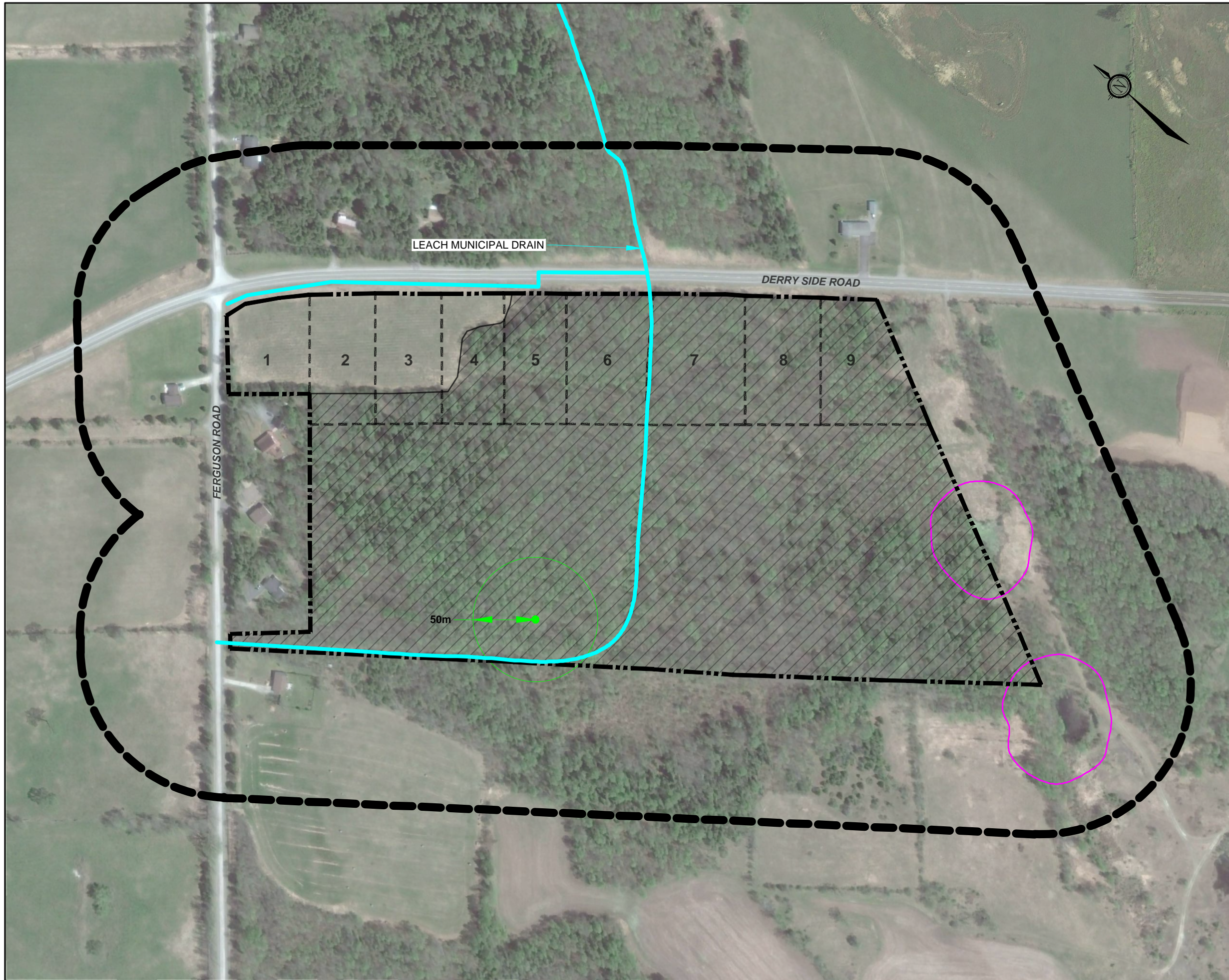
- FODM7-2 Fresh, Moist Green Ash-Hardwood Lowland Deciduous Forest
- TAGM4 Treed Pasture
- CVI_1 Transportation
- CVR_4 Rural Property
- SWDM3 Maple Mineral Deciduous Swamp Ecosite
- OAG Open Agricultural
- MAS Shallow Marsh
- SWT Thicket Swamp



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Drawing		VEGETATION COMMUNITIES	
Client		S. SMITH	
Project	64878.01	ENVIRONMENTAL IMPACT STATEMENT	
Drwn by	P.C.	Chkd by	T.W.
Date		Rev.	0
SEPTEMBER 2019		FIGURE A.4	



LEGEND

- SUBJECT SITE
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WATERCOURSE
- SWH SIGNIFICANT AMPHIBIAN BREEDING HABITAT
- SIGNIFICANT WOODLANDS
- BUTTERNUT TREE LOCATION

Scale 1:3000

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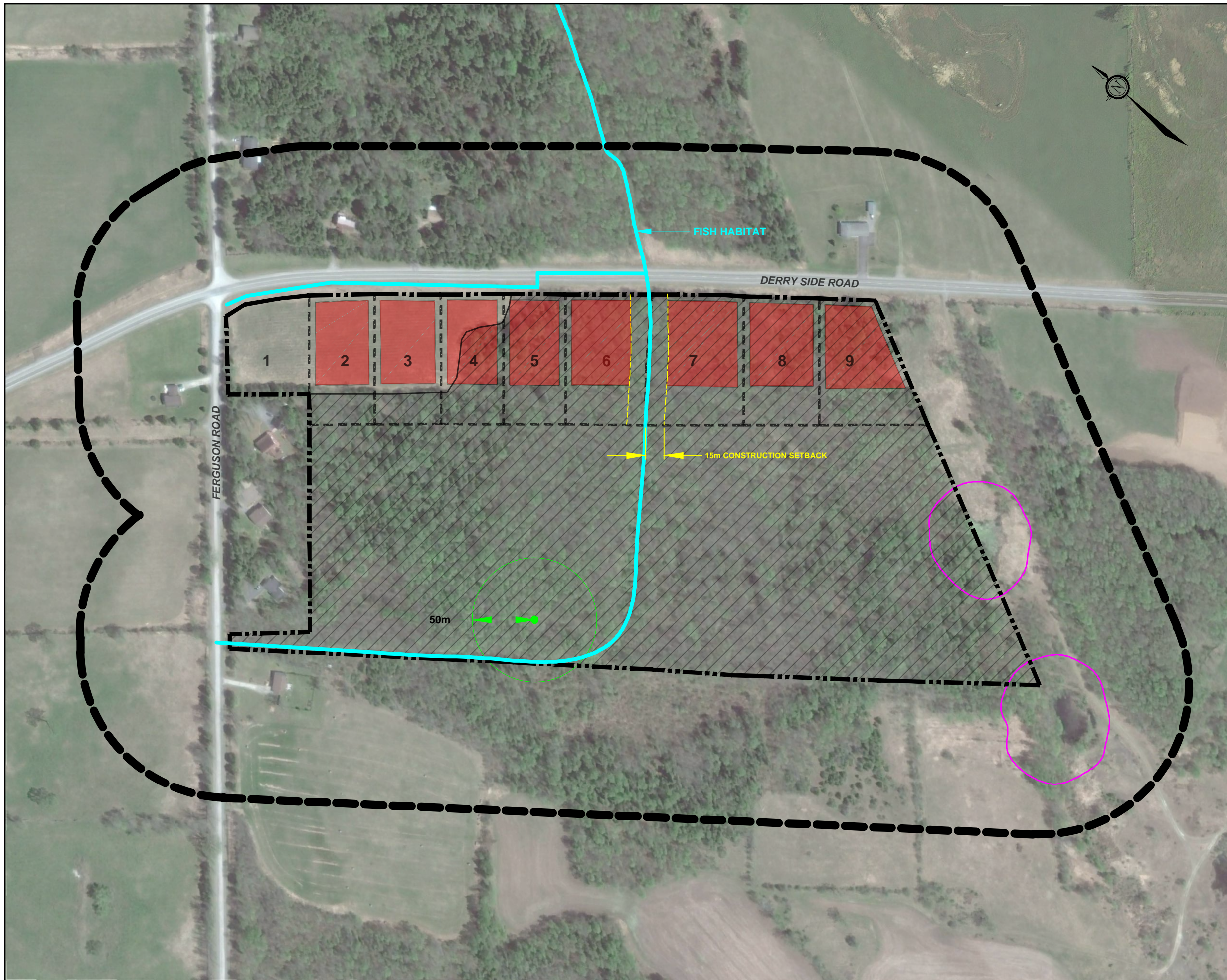
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Drawing
NATURAL HERITAGE FEATURES

Client
S. SMITH

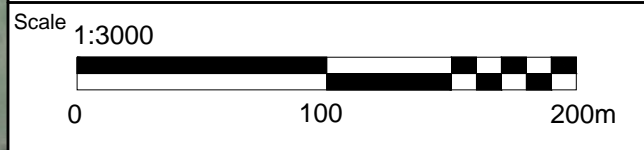
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Drwn by P.C.	Chkd by T.W.	
Date SEPTEMBER 2019	Rev. 0	

FIGURE A.5



LEGEND

- SUBJECT SITE
- PROPOSED SEVERANCES
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WATERCOURSE
- SWH SIGNIFICANT AMPHIBIAN BREEDING HABITAT
- DEVELOPMENT ENVELOPE
- SIGNIFICANT WOODLANDS
- BUTTERNUT TREE LOCATION



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Drawing **MITIGATION MEASURES**

Client **S. SMITH**

Project 64878.01	ENVIRONMENTAL IMPACT STATEMENT PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO
Drwn by P.C.	
Chkd by T.W.	

Date SEPTEMBER 2019	Rev. 0	FIGURE A.6
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APPENDIX B

Site Photographs



Typical view of plantation community



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Typical view of wetland community



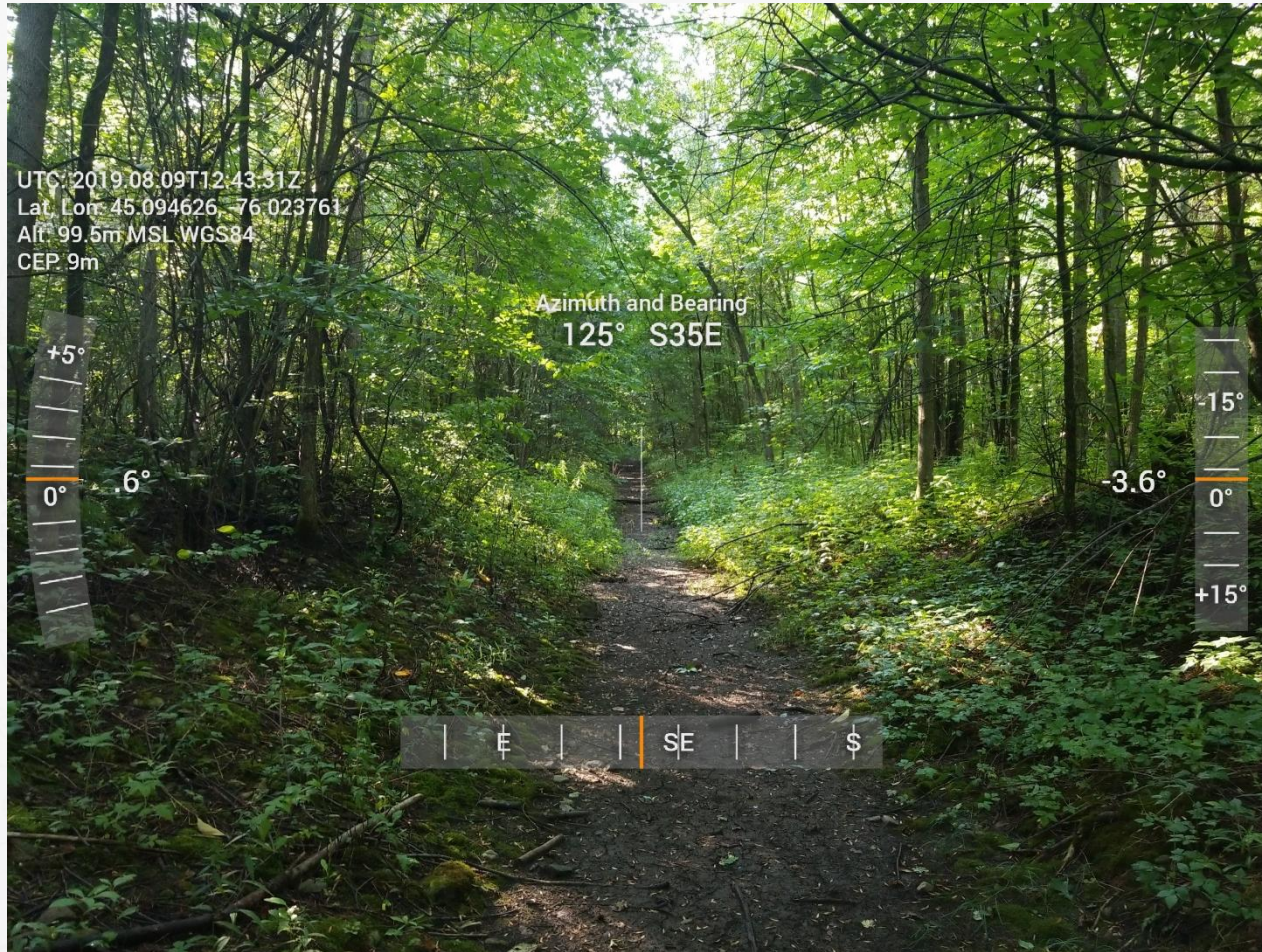
Boundary between upland and wetland community



Typical view of forest community



View of Leach Municipal Drain, April 2019



View of Leach Municipal Drain, August 2019



APPENDIX C

Report Summary Tables

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

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
American crow	<i>Covus brachyrhynchos</i>	S5B	Heard calling
American goldfinch	<i>Spinus tristis</i>	S5B	Heard calling
American robin	<i>Turdus migratorius</i>	S5B	Heard calling, observed foraging
Black-capped chickadee	<i>Poecile atricapillus</i>	S5	Heard calling
Blue jay	<i>Cyanocitta cristata</i>	S5	Heard calling
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	adajcent field
Common Grackle	<i>Quiscalus quiscula</i>	S5B	Heard calling
Common yellowthroat	<i>Geothlypid trichas</i>	S5B	Heard calling
Eastern wood-pewee	<i>Contopus virens</i>	S4B	Heard calling
Great crested flycatcher	<i>Myiarchus crinitus</i>	S4B	Heard calling
Indigo bunting	<i>Passerina cyanea</i>	S4B	Heard calling, observed perched
Mourning dove	<i>Zenaida macroura</i>	S5	Heard calling
Northern cardinal	<i>Cardinalis cardinalis</i>	S5	Heard calling
Northern flicker	<i>Colaptes auratus</i>	S4B	Heard calling
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	Heard calling
Pileated woodpecker	<i>Dryocopus pileatus</i>	S5	Heard calling
Red-breasted nuthatch	<i>Sitta canadensis</i>	S5	Heard calling, observed foraging
Red-eyed vireo	<i>Vireo olivaceus</i>	S5B	Heard calling
Song sparrow	<i>Melospiza melodia</i>	S5B	Heard calling
Veery	<i>Catharus fuscescens</i>	S4B	Heard calling
Winter Wren	<i>Troglodytes hiemalis</i>	S5B	Heard calling
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	S5B	Heard calling, observed foraging

Notes:

Subnational Conservation Status Ranks:

S1 - Critically Impedriled, 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 faily 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 referes 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	Yes	Woodlands on-site and adjacent to site form a contiguous woodland larger than 50 ha.
Ecological Functions		
a) Woodland Interior	No	Woodlands interior habitat on-site does not meet the minimum size criteria of > 8 ha.
b) Proximity	No	Woodlands on-site are not adjacent to any other on-site natural heritage features.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features on-site.
d) Water Protection	Yes	Woodlands on-site are adjacent to the Leach Municipal Drain and associated fish habitat.
e) Diversity	No	Species composition within the on-site woodlands 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	No significant stands of mast producing trees, no large coniferous forest stands on-site to provide protection and cover from winter elements.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Waterfowl Stopover and Staging Areas	No	No suitable habitat located on-site to support waterfowl stopover and staging areas.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	No	The site does not contain the appropriate combination of forest and upland habitat that may provide suitable hawk and owl wintering habitat.
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	No	The Goodwood Marsh PSW on-site may provide suitable water depth and appropriate substrate to protect overwintering turtles from the winter elements.
Reptile Hibernaculum	No	No structures such as large rock piles, bedrock outcrops, cervices or other karstic features have been 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	No	The site lacks suitable upland habitat adjacent to wetlands necessary to support waterfowl nesting.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	The site is located >120 m from any habitat which could support foraging bald eagles or osprey. Nesting sites for these species are uncommon in Ecoregion 6E (MNRF, 2012).
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands >30 ha are present on-site, however interior habitat with a 200 m buffer is not present on-site.
Turtle Nesting Habitat	No	Vegetation and soil on-site does not provide suitable nesting habitat for turtles.
Seeps and Springs	No	No seeps or spring were identified on-site during the preliminary site investigation.
Woodland Amphibian Breeding Habitat	Yes	Local swamp and pond habitat within and adjacent to on-site woodlands may support woodland amphibian breeding habitat.
Wetland Amphibian Breeding Habitat	No	No suitable wetland habitat to support wetland amphibian breeding habitat occurs on-site.
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 and adjacent to the site do not meet the defining criteria.

**TABLE C.5
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS**

General Habitats of Species of Further Considered Conservation Concern	in EIS	Rationale
Marsh Breeding Bird Habitat	No	No suitable wetlands have been identified on-site or adjacent to site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	Due to recent (< 5 years) agricultural disturbance, the meadow habitat on-site does not meet defining use criteria for open country breeding bird habitat.
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. The cultural thickets on-site are not considered SWH due to recent (< 5 years) agricultural disturbances.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	Observation data from the NHIC indicates that the eastern wood-pewee has been observed on-site and within the broader study area. Furthermore, eastern wood-pewee were observed during the site investigations. Wood thrush, a species at risk were observed during the 2017 site investigations conducted by Stantec. No other special concern species or rare wildlife were observed during the site investigations.

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

Animal Movement Corridor	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	Amphibian movement corridors must be determined when amphibian breeding habitat is confirmed as SWH for wetland amphibian breeding habitat. Wetland amphibian breeding habitat is not present on-site. As such there are no amphibian movement corridors are not present.
Deer Movement Corridor	No	No deer wintering habitat has been identified on-site, and deer movement corridors have not been identified on county official plans.

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

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian					
Bald Eagle	Special Concern	Confirmed nest at Shirley's bay since 2012.	Nest in mature forests near open water	Low	Site lacks suitable forest habitat adjacent to open water and foraging area to support Bald Eagle activity
Bank Swallow	Threatened	12 confirmed, 2 probable and 8 possible nests in recent OBBA.	Colonial nester, burrows in eroding silt, to sand banks, sand pit walls, etc.	Low	No suitable nesting habitat located on-site or within study area. Preferred foraging field habitat is not located on-site.
Barn Swallow	Threatened	33 confirmed, 2 probable, and 3 possible nests in recent OBBA.	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Moderate	No suitable nesting habitat or structures located on-site. Potentially suitable nesting habitat/structures located within study area. Preferred foraging field habitat is not located on-site, but occurs within study area.
Bobolink	Threatened	Widespread in the Ottawa region, confirmed and probable nests found in 39 or 40 local atlas squares during recent OBBA.	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	High	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable tall grass habitat on-site to support Bobolink. Bobolink detected during site investigations on adjacent lands
Canada Warbler	Special Concern	1 confirmed, 2 probable, 6 possible nests during recent OBBA. No critical habitat identified in Ottawa region.	Prefers wet forests with dense shrub layers.	Low	Forest structure is unlikely to provide preferred habitat. Species was not observed or detected during any of the site investigations.
Cerulean Warbler	Threatened	No nests reported during recent OBBA. SARO and SARA range maps both include parts of Ottawa.	Prefers mature deciduous forests.	Low	Forest composition is unlikely to provide preferred habitat. Species was not observed or detected during any of the site investigations.
Chimney Swift	Threatened	3 confirmed, 2 probable and 11 possible nests in recent OBBA. No critical habitat identified in Ottawa.	Nests in traditional-style open brick chimneys.	Low	No suitable nesting habitat on-site to support chimney swift.
Common Nighthawk	Special Concern	6 probable, 5 possible nests reported in recent OBBA. No critical habitat identified in Ottawa region.	Nests in a variety of open sites: beaches, fields, and gravel rooftops.	Low	Suitable habitat does not occur on-site.
Eastern Meadowlark	Threatened	Sporadic occurrences in Ottawa region, more common in rural areas with pasture or fallow fields.	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Moderate	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable tall grass habitat on-site to support Eastern Meadowlark.
Eastern Whip-poor-will	Threatened	Primary breeding range located east, west and south of the Precambrian shield. 7 probable and 10 possible nests in recent OBBA. Critical habitat tentatively identified in 4 squares in western Ottawa.	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Low	No suitable woodland habitat occurs on-site or within study area.
Eastern Wood-Pewee	Special Concern	4 possible, 15 probable and 19 confirmed nests in recent OBBA for Ottawa area	Woodland species, often found near clearings and edge habitat.	High	Woodlands on-site provide suitable habitat for eastern wood-pewee. Eastern wood-pewee were observed calling during the during the site investigation.
Golden Eagle	Endangered	Migrant only in the Ottawa area.	Nests on remote, bedrock cliffs overlooking large burns, lakes or tundra.	Low	Suitable nesting habitat does not occur on-site.
Golden-winged Warbler	Special Concern	1 confirmed, 1 probable nest in recent OBBA. Critical habitat identified in Quebec, northeast of Ottawa.	Ground nesting, edge species. Breeds in successional scrub habitats surrounded by forests.	Low	Site is unlikely to provide suitable habitat for golden-winged warblers due to the lack of successional scrub habitat.
Grasshopper Sparrow	Special Concern	4 confirmed, 5 probable, 2 possible nests in recent OBBA	Area-sensitive grassland species, nests on ground	Low	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable grassland habitat to support grasshopper sparrow nesting on-site.
Evening Grosbeak	Special Concern	5 confirmed, 6 probable, 8 possible nests in recent OBBA.	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Moderate	Woodlands on-site may provide suitable habitat for evening grosbeak. Species was not detected during the site investigations.
Henslow's Sparrow	Endangered	No nests in recent OBBA	Prefers open, moist tallgrass fields.	Low	Potentially suitable grassland habitat adjacent to site in agricultural fields but no suitable grassland habitat to support Henslow's sparrow nesting on-site.
Loggerhead Shrike	Endangered	1 possible nest in recent OBBA. Critical habitat in Montague Township, however no confirmed nests from MNRF since 2002, and the MNRF do not consider Ottawa to include any significant habitat	Prefers grazed pastures with short grass and scattered shrubs, especially hawthorn.	Low	Preferred pasture habitat and shrub vegetation does not occur on-site.
Olive-sided Flycatcher	Special Concern	1 probable, 1 possible nest in recent OBBA.	Forest edge species, forages in open areas from high vantage points in rees.	Moderate	Site may provide suitable habitat for olive-sided flycatcher. Species was not detected during site investigations.
Peregrine Falcon	Special Concern	1 confirmed nest in recent OBBA and second nest established in 2011 in the Ottawa downtown.	Nests on cliffs near water and on more anthropogenic structures such as tall buildings, bridges and smokestacks	Low	Site lacks suitable nesting structure for peregrine falcon
Red Knot	Endangered	Migrant only, Ottawa River shores, area lagoons, etc.	Nests in the far north, shorelines and lagoons of the Ottawa River	Low	Site does not provide suitable habitat for migrant Red Knot
Red-headed Woodpecker	Special Concern	1 confirmed, 1 probable and 1 possible during recent OBBA. Nesting pair reported from village of Constance Bay in recent years.	Prefers open deciduous woodlands.	Low	Mixed woodlands on-site do not provide preferred habitat and structure for nesting red-headed woodpeckers.
Rusty Blackbird	Special Concern	No nests in recent OBBA, primarily observed during migration	Wet wooded or shrubby areas (nests at edges of Boreal wetlands)	Low	Suitable habitat does not occur on-site.
Short-eared Owl	Special Concern	1 confirmed, 2 probable, 2 possible nests in recent OBBA.	Ground nester, prefers open habitats: fields and marshes	Low	No suitable open field or open marsh habitat on-site.

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

Wood Thrush	Special Concern	5 possible, 15 probable, and 16 confirmed nests in recent OBBA for Ottawa area.	Prefers deciduous or mixed woodlands.	Moderate	Woodlands on-site may provide suitable mixed woodlands to support wood thrush. Species was not detected during site investigations.
Mammalian					
Eastern small-footed Myotis	Endangered	Rare throughout its range. Historical records in downtown Ottawa.	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Woodlands are suitable in size and structure to support candidate maternity roost habitat.
Little Brown Myotis	Endangered	Various sites in central and western parts of the Ottawa area. No critical habitat (hibernacula) identified in Ottawa to date.	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures adjacent to site. Woodlands are suitable in size and structure to support candidate maternity roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Historical records in downtown Ottawa, more recently in sites to east (Orleans, Clarence-Rockland). No critical habitat (hibernacula) identified in Ottawa to date. Ottawa and region is at southern most limit of range.	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Woodlands are suitable in size and structure to support candidate maternity roost habitat.
Tri-colored Bat	Endangered	Provincially Uncommon, only 26 documented occurrences in Ontario from pre-1980 to present (MNRF, 2016). Unknown distribution in Ottawa; historical records from sites in urban Ottawa and Lanark County.	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures adjacent to site. Woodlands are suitable in size and structure to support candidate maternity roost habitat.
Reptilian					
Blanding's Turtle	Threatened	Provincial range extends from Manitoulin Island south and east. Scattered occurrent records in central Ontario. Scattered throughout Ottawa and national capital region, with numerous sites in western half of city. Critical habitat present in Ottawa.	Inhabits quiet lakes, stream and wetland with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Low	No historic occurrence data for species on NHIC database on-site. No critical habitat has been identified on-site.
Snapping Turtle	Special Concern	Widespread and abundant throughout Ottawa and surrounding region.	Highly aquatic species, found in a variety of permanent ponds, lakes, marshes and rivers.	Low	No historic occurrence data for species on NHIC. No critical habitat has been identified on-site.
Plants					
Butternut	Endangered	Range is confined to eastern and southern Ontario. Widespread in Ottawa and region.	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Moderate	Majority of the site is open and in a regenerative state.
Lichens					
Flooded Jellyskin	Not at Risk	Stony Swamp, Marlborough Forest	Seasonally flooded woodlands, deciduous swamps	Low	Preference is for vernal pooling and deciduous forests/swamps, mixed forests on-site is unlikely to provide suitable habitat
Pale-bellied Frost Lichen	Endangered	Historical records in downtown , however locally extirpated. No critical or regulated habitat identified in Ottawa	Historical records in downtown area (extirpated locally). No critical or regulated habitat identified in Ottawa.	Low	Species believed to be extirpated from the Ottawa area.
Insects					
Bogbean Buckmoth	Endangered	Richmond Fen	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Historic occurrences only. Range in Ontario uncertain.	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known population is in Pinery Provincial Park
Monarch Butterfly	Special Concern	Widespread in the Ottawa area	Caterpillars require milkweed plants confined to meadow and open areas. Adult butterflies use more diverse habitat with a variety of wildflowers	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Constance Bay area, Burnt Lands Alvar	Larval food plant (New Jersey Tea) found in sandy areas and alvars.	Low	Sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Historically present but no reports in Ontario since mid-1990s	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated
Rusty-patched Bumble Bee	Endangered	Historic records in Ottawa and Gatineau	Habitat generalist	Low	Currently the only known population is in Pinery Provincial Park
Traverse Lady Beetle	Endangered	Unknown in Ottawa region. No southern Ontario records since 1985	Habitat generalist	Low	No new records of Traverse Lady Beetle in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Unknown. No NESS or NHIC records. SARO range map includes Ottawa.	Requires mature moist deciduous woods with larval host plant toothwort.	Low	Necessary vegetation and toothwort plant not present on-site or within study area
Yellow-banded Bumble Bee	Special Concern	Unknown. Historic occurrences and a few recent occurrences in Eastern Ontario/Western Quebec region.	Habitat generalist; mixed woodlands, variety of open habitat	Moderate	Woodlands on-site may provide habitat for yellow-banded bumble bee.



APPENDIX D

Wildfire Hazard Assessment

September 10, 2019

File: 64878.01

Steve Smith
1009 Derry Side Road
Beckwith, Ontario
K0A 1B0

Attention: Mr. Steve Smith

**Re: Wildland Fire Assessment in Support of a Proposed Plan of Subdivision
1009 Derry Side Road, Beckwith, Ontario**

Please accept this letter as the GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) wildland fire risk assessment for the proposed plan of subdivision, located at 1009 Derry Side Road, in Beckwith Ontario. This document addresses the concerns raised by the Ministry of Natural Resources and Forestry (MNRF) as they relate to wildland fire risk on-site, as outlined in the email dated October 2, 2018.

BACKGROUND

The property owner is seeking to create nine property parcels from an existing 16.3 hectare (ha) property for future residential development purposes. As the subject property contains woodlands, the Ministry of Natural Resources and Forestry (MNRF) identified the need to consider wildland fire risks for the subject property, in relation to the proposed development.

The wildland fire policy was introduced in the 2014 Provincial Policy Statement to ensure communities consider and plan for avoiding and mitigating losses to their communities due to wildland fire. As outlined in the Provincial Policy Statement, *“Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire. Development may however be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards”*.

To assist planning authorities in implementing the policy, the MNRF has produced general wildland fire hazard mapping based on the most current Forest Resource Inventory and LandSat data, and provides fuel type categories established by the Canadian Forest Fire Behaviour Prediction system. The MNRF mapping for the subject property indicates that the hazard classification for the woodlands on-site is ‘Pine – Needs Evaluation’. This memorandum provides the evaluation of the on-site woodlands in relation to wildland fire hazard level.

Site Level Assessments

The MNRF Wildland Fires Risk Assessment Guideline (2016) recommends a two-step process for site level wildland fire assessments. In all cases, site assessments should take place during snow-free conditions to better assess the potential risks of lands being assessed.

Level 1 Site Assessment

The level 1 site assessment consists of a desktop screening of sites for the presence and/or type of forest cover in the area, and may include the review of aerial photography, Make a Map: Natural Heritage Areas mapping application, and site investigations. The results of the Level 1 Site Assessment will determine the presence/absence of forest cover on-site and, if forest cover is determined to be present, a Level 2 Site Assessment is required to further assess wildland fire risk. If forest cover is not present on-site a Level 2 Site Assessment is not required. Lands that are not forested, agricultural areas, lands that are dominated by hardwood/deciduous species and wetland areas are examples of lands that would not require a Level 2 Site Assessment.

Level 2 Site Assessment

A Level 2 Site Assessment is used to evaluate the forest characteristics present on-site and assess the risk for wildland fires to occur. The Level 2 Site Assessment should consider the following factors for the subject property and surrounding area:

- Forest composition and predominant vegetation (fuel types), particularly those that are associated with the risk of high to extreme wildland fire;
- Forest condition (e.g. presence of disease, storm or insect damage);
- Forest arrangement and density; and
- Presence of ladder fuels and ground fuel accumulation.

Following the Level 2 Site Assessment, if hazardous forest types for wildland fire are present, measures to minimize wildland fire risk should be mitigated, and applied before permitting development.

RESULTS

Level 1 Site Assessment

Following review of available background data, aerial imagery and based off the MNRF Fire Hazard Mapping provided for the subject property, vegetation on-site may provide a risk of wildland fire and the woodlands on-site required a Level 2 Site Assessment to further examine their potential risk level for wildland fire.

Level 2 Site Assessment

To further characterize the woodlands on-site, a Level 2 Site Assessment was conducted to determine the forest characteristics of the on-site woodlands. Development on-site is proposed to front to Derry Side Road, and corresponds with the following vegetation communities: green ash – hardwood lowland deciduous forest (ELC code FODM7-2), white cedar – hardwood mixed forest (ELC code FOMM7-2) and treed pasture (ELC code TAGM4). Table 1 below presents the characteristics of the on-site vegetation communities where development is proposed, and their associated wildland fire risk level.

Table 1 Summary of On-site Forest Characteristics and Wildland Fire Risk Level

Forest Characteristic	Site Characteristic	Wildland Fire Risk
	Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2) dominated by red maple and with black ash and occasionally balsam fir and white ash	Low
Forest Composition and Predominate Vegetation	White Cedar – Hardwood Mixed Forest (FOMM-2) dominated by eastern white cedar, with balsam fir, black ash, green ash and trembling aspen.	Low/Moderate
	Treed Agriculture (TAGM4) dominated by juvenile white spruce, eastern white pine and green ash.	Low
Forest Condition	No to low presence of disease, storm or insect damage in all forest community on-site.	Low
Forest Arrangement and Density	The forest communities on-site are not tightly arranged and are of a low density canopy and understory. Conifer trees are scattered evenly within hardwood and deciduous trees.	Low
Presence of Ladder Fuels and Ground Fuel Accumulation	Ladder fuels and ground fuel accumulations are minimal or not present within the area of proposed development.	Low

Following review of Table 1.0, the characteristics of the on-site woodlands indicate that the risk level for wildland fires to occur is low.

CONCLUSIONS

The MNRF Fire Hazard Mapping, identified the woodlands on-site as requiring evaluation to determine their potential fire hazard classification. Following a Level 2 Site Assessment, as outlined in the MNRF Wildland Fire Risk Assessment and Mitigation Guidebook, the woodlands on-site have been determined to have a low risk for wildland fire. As such, no further mitigation measures are required for the proposed residential development.

CLOSURE

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

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

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

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

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

Sincerely,



Taylor Warrington, B. Sc.
Biologist



Drew Paulusse, B.Sc.
Senior Biologist

REFERENCES

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

Ontario Ministry of Natural Resources and Forestry. 2016. Wildland Fire Risk Assessment and Mitigation: A Guidebook in support of the Provincial Policy statement, 2014 - DRAFT. April 2016.



APPENDIX E

Wetland Evaluation

TRANSMITTAL

September 13, 2019

File: 64878.01

Ministry of Natural Resources and Forestry
2698 Concession Road
Kemptville, Ontario
K0G 1J0

Attention: Scott Smithers, Management Biologist

Re: Wetland Evaluation
Lot 20, Concession 4, Beckwith Township, County of Lanark

Please find enclosed the GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) wetland evaluation completed in accordance with the Ontario Wetland Evaluation System for Southern Ontario (MNR, 2014).

The enclosed wetland evaluation has been completed in response to the Kemptville District MNR request to have the 0.93-hectare wetland parcel identified in the 2017 Stantec Inc. Environmental Impact Statement (EIS) and the subsequent 2019 GEMTEC (EIS) be evaluated for consideration of inclusion within the off-site Goodwood Swamp Provincially Significant Wetland Complex.

Documents enclosed include:

- Wetland Evaluation and Data Scoring Record;
- Wetland Catchment Basin Figure;
- Wetland Vegetation Community Figure;
- Wetland Vegetation Interspersion Figure;
- Field Data Sheets; and,
- Site Photos

Following your review and assessment of the data provided, if you have any questions, comments or concerns please do not hesitate to contact the undersigned.

Sincerely,



Drew Paulusse, B.Sc.,
Senior Biologist

WETLAND EVALUATION DATA
AND SCORING RECORD

- i) Wetland Name: Smith Wetland
- ii) MNR Administrative Region: EAST
MNR District: Kemptville
MNR Area Office: Kemptville
- iii) Conservation Authority Jurisdiction: Rideau Valley
- iv) County of Regional Municipality: Canark
- v) Township/Geographic Twp and/or Local Municipality: Beckwith
- vi) Lots and Concessions: Lot 20, Concession 4
- vii) Ecodistrict/Ecoregion: 6E-11
- viii) Map and Air Photo References:
- a) Latitude: 45.090963 Longitude: -76.022012
- b) UTM grid reference:
Zone: _____ Block: _____ E: _____ N: _____
- c) National Topographic Series:
Map name(s): _____
Map number(s): _____
Edition: _____
Scale: _____
- d) Aerial photographs:
Date(s) photo taken: _____ Scale: _____
Flight & plate numbers: _____
- e) Ontario Base Map numbers & scale: _____

ix) Wetland Size
(circle appropriate category, a or b)

a) Single contiguous wetland area

Total wetland size = 0.93 hectares

b) Wetland complexed comprised of ____ individual wetlands:

- Wetland Unit No. 1 = _____ hectares
- Wetland Unit No. 2 = _____ hectares
- Wetland Unit No. 3 = _____ hectares
- Wetland Unit No. 4 = _____ hectares
- Wetland Unit No. 5 = _____ hectares
- Wetland Unit No. 6 = _____ hectares
- Wetland Unit No. 7 = _____ hectares
- Wetland Unit No. 8 = _____ hectares
- Wetland Unit No. 9 = _____ hectares
- Wetland Unit No.10 = _____ hectares

(Attach additional sheet if necessary)

Total wetland size = _____ hectares (add together size of each unit)

Documentation requirements for evaluated wetland complexes (attach additional sheet if necessary):

- a statement of rationale for identifying a wetland complex;
- a statement of rationale for identifying any wetland complex less than 2 ha in total size;
- a statement of rationale for any vegetation community less than 0.5 ha in size;
- adherence to the wetland complexing rules (750 m; "watershed rule"; lacustrine wetlands); and
- ■ written documentation of the reasons for including wetland units smaller than 2 ha.

Wetland has been assessed following a request by Mary Dillion
on 3-Oct-18, in relation to a development proposal and
given the location/proximity 0.78 km from the Goodwood BSW.

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 Growing Degree-Days/Soils (max: 30 pts)

Refer to page 43 of manual for further explanation.

1. Determine the correct GDD value for your wetland (use Figure 5).
2. Circle the appropriate GDD value from the evaluation table below.
3. Determine the Fractional Area (FA) of the wetland for each soil type.
4. Multiply the fractional area of each soil type by the applicable score-factor in the evaluation table.
5. Sum the scores for each soil type to obtain the final score (maximum score is 30 points).

NOTE: In wetland complexes the evaluator should aim at determining the fractional area occupied by the categories for the complex as a whole.

Growing Degree-Days	Clay-Loam	Silt-Marl	Limestone	Sand	Humic-Mesic	Fibric	Granite
	<2800	15	13	11	9	8	7
2800-3200	18	15	13	11	9	8	7
3200-3600	22	18	15	13	11	9	7
3600-4000	26	21	18	15	13	10	8
>4000	30	25	20	18	15	12	8

Soil Type	FA of wetland in soil type	Enter appropriate score-factor from above table	
Clay/Loam		X	=
Silt/Marl:		X	=
Limestone:		X	=
Sand:	1	X 13	= 13
Humic/Mesic:		X	=
Fibric:		X	=
Granite:		X	=
Total			

GDD/Soils score (maximum 30 points) 13

1.1.2 Wetland Type

(Fractional Areas = area of wetland type/total wetland area)

	Fractional Area		Score
Bog		x 3 =	
Fen		x 6 =	
Swamp	1	x 8 =	8
Marsh		x 15 =	
Total		=	8

Wetland type score (maximum 15 points) 8

1.1.3 Site Type

(Fractional Area = area of site type/total wetland area)

	Fractional Area		Score
Isolated	1	x 1 =	1
Palustrine (permanent or intermittent flow)		x 2 =	
Riverine		x 4 =	
Riverine (at rivermouth)		x 5 =	
Lacustrine (at rivermouth)		x 5 =	
Lacustrine (with barrier beach)		x 3 =	
Lacustrine (exposed to lake)		x 2 =	
Total		=	

Site Type Score (maximum 5 points) 1

1.2 BIODIVERSITY

1.2.1 Number of Wetland Types

(Check only one)

<input checked="" type="checkbox"/>	One	=	9 points
<input type="checkbox"/>	Two	=	13
<input type="checkbox"/>	Three	=	20
<input type="checkbox"/>	Four	=	30

Number of Wetland Types Score
(maximum 30 points) 9

1.2.2. Vegetation Communities

Use the data sheet provided in Appendix 4 to record and score vegetation communities (the completed form must be attached to this data record)

Scoring (circle only one option for each of the columns below):

Total # of communities with 1-3 forms	
<input checked="" type="radio"/>	1 = 1.5 pts
<input type="radio"/>	2 = 2.5
<input type="radio"/>	3 = 3.5
<input type="radio"/>	4 = 4.5
<input type="radio"/>	5 = 5
<input type="radio"/>	6 = 5.5
<input type="radio"/>	7 = 6
<input type="radio"/>	8 = 6.5
<input type="radio"/>	9 = 7
<input type="radio"/>	10 = 7.5
<input type="radio"/>	11 = 8
+ 0.5 for each additional community	
=	

Total # of communities with 4-5 forms	
<input type="radio"/>	1 = 2 pts
<input type="radio"/>	2 = 3.5
<input type="radio"/>	3 = 5
<input type="radio"/>	4 = 6.5
<input type="radio"/>	5 = 7.5
<input type="radio"/>	6 = 8.5
<input type="radio"/>	7 = 9.5
<input type="radio"/>	8 = 10.5
<input type="radio"/>	9 = 11.5
<input type="radio"/>	10 = 12.5
<input type="radio"/>	11 = 13
+ 0.5 for each additional community	
=	

Total # of communities with 6 or more forms	
<input type="radio"/>	1 = 3 pts
<input type="radio"/>	2 = 5
<input type="radio"/>	3 = 7
<input type="radio"/>	4 = 9
<input type="radio"/>	5 = 10.5
<input type="radio"/>	6 = 12
<input type="radio"/>	7 = 13.5
<input type="radio"/>	8 = 15
<input type="radio"/>	9 = 16.5
<input type="radio"/>	10 = 18
<input type="radio"/>	11 = 19
+ 1.0 for each additional community	
=	

Vegetation Communities Score
(maximum 45 points) 1.5

1.2.3 Diversity of Surrounding Habitat

Check all appropriate items. Only habitat within 1.5 km of the wetland boundary and at least 0.5 ha in size are to be scored.

<input checked="" type="checkbox"/>	row crop
<input checked="" type="checkbox"/>	pasture
<input checked="" type="checkbox"/>	abandoned agricultural land
<input checked="" type="checkbox"/>	deciduous forest
<input type="checkbox"/>	coniferous forest
<input checked="" type="checkbox"/>	mixed forest*
<input checked="" type="checkbox"/>	abandoned pits and quarries
<input type="checkbox"/>	open lake or deep river
<input checked="" type="checkbox"/>	fence rows with deep cover, or shelterbelts
<input type="checkbox"/>	terrain appreciably undulating, hilly or with ravines
<input checked="" type="checkbox"/>	creek flood plain

* "Mixed forest" is defined as either 25% coniferous trees distributed singly or in clumps in deciduous forest, or 25% deciduous trees distributed singly or in clumps in coniferous forest. Note that Forest Resource Inventory (FRI) maps can be misleading since 25% conifer within a unit could be entirely concentrated around a lake.

Score 1 point for each feature checked, up to a maximum of 7 points.

Diversity of Surrounding Habitat Score
(maximum 7 points) 7

1.2.4 Proximity to Other Wetlands

Check highest appropriate category. (Note: if the wetland is lacustrine, score option #1 at 8 points).

<input checked="" type="checkbox"/>		Points
<input type="checkbox"/>	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river within 1.5 km	8
<input type="checkbox"/>	Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km	8
<input type="checkbox"/>	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river from 1.5 to 4 km away	5
<input type="checkbox"/>	Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km away	5
<input checked="" type="checkbox"/>	Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water	5
<input type="checkbox"/>	Within 1 km of other wetlands, but not hydrologically connected by surface water	2
<input type="checkbox"/>	No wetland within 1 km	0

Name and distance (from wetland) of wetlands/waterbodies scored above:

0.67 km to unnamed, unevaluated wetland to south-southeast 0.79 km to Greenwood PSW to northwest.

Proximity to other Wetlands Score
(maximum 8 points) 5

1.2.5 Interspersion

Number of Intersections = 2

✓	Number of Intersections (Check one only)	Points
	26 or less	= 3
	27 to 40	= 6
✓	41 to 60	= 9
	61 to 80	= 12
	81 to 100	= 15
	101 to 125	= 18
	126 to 150	= 21
	151 to 175	= 24
	176 to 200	= 27
	>200	= 30

Interspersion Score (maximum 30 points) 9

1.2.6 Open Water Types

NOTE: this attribute is only to be scored for permanently flooded open water within the wetland (adjacent lakes do not count). Check one option only.

✓	Open Water Type	Characteristic	Points
	Type 1	Open water occupies < 5 % of wetland area	= 8
	Type 2	Open water occupies 5-25% of wetland (occurring in central area)	= 8
	Type 3	Open water occupies 5-25% (occurring in various-sized ponds, dense patches of vegetation or vegetation in diffuse stands)	= 14
	Type 4	Open water occupies 26-75% of wetland (occurring in a central area)	= 20
	Type 5	Open water occupies 26-75% of wetlands (small ponds and embayments are common)	= 30
	Type 6	Open water occupies 76%-95% of wetland (occurring in large central area; vegetation is peripheral)	= 8
	Type 7	Open water occupies 76-95% of wetland (vegetation in patches or diffuse open stands)	= 14
	Type 8	Open water occupies more than 95% of wetland area	= 3
✓	No open water		= 0

Open Water Type Score (maximum 30 points) 0

1.3 SIZE (BIOLOGICAL COMPONENT)

Total Size of Wetland = 0.93 ha

Sum of scores from Biodiversity Subcomponent

1.2.1 9
 + 1.2.2 1.5
 + 1.2.3 7
 + 1.2.4 5
 + 1.2.5 9
 + 1.2.6 0

 = 31.5

Circle the appropriate score from the table below.

		Total Score for Biodiversity Subcomponent									
		<37	37-47	48-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
Wetland size (ha)	<20 ha	1	5	7	8	9	17	25	34	43	50
	20-40	5	7	8	9	10	19	28	37	46	50
	41-60	6	8	9	10	11	21	31	40	49	50
	61-80	7	9	10	11	13	23	34	43	50	50
	81-100	8	10	11	13	15	25	37	46	50	50
	101-120	9	11	13	15	18	28	40	49	50	50
	121-140	10	13	15	17	21	31	43	50	50	50
	141-160	11	15	17	19	23	34	46	50	50	50
	161-180	13	17	19	21	25	37	49	50	50	50
	181-200	15	19	21	23	28	40	50	50	50	50
	201-400	17	21	23	25	31	43	50	50	50	50
	401-600	19	23	25	28	34	46	50	50	50	50
	601-800	21	25	28	31	37	49	50	50	50	50
	801-1000	23	28	31	34	40	50	50	50	50	50
	1001-1200	25	31	34	37	43	50	50	50	50	50
	1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50	
1601-1800	34	40	43	46	50	50	50	50	50	50	
1801-2000	37	43	47	49	50	50	50	50	50	50	
>2000	40	46	50	50	50	50	50	50	50	50	

Size Score (Biological Component)

(maximum 50 points) 1

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 Wood Products

Check the option that best reflects the total area (ha) of forested wetland (i.e., areas where the dominant vegetation form is h or c). Note that this is the area of all the forested vegetation communities, not total wetland size. Do not include areas where harvest is not permitted. Check only one option.

Area of wetland used for scoring 2.1.1: 0.93 ha

<input checked="" type="checkbox"/>	< 5 ha	= 0 pts
<input type="checkbox"/>	5 - 25 ha	= 3
<input type="checkbox"/>	26 - 50 ha	= 6
<input type="checkbox"/>	51 - 100 ha	= 9
<input type="checkbox"/>	101 - 200 ha	= 12
<input type="checkbox"/>	> 200 ha	= 18

Source of information:

Wood Products Score (maximum 18 points) 0

2.1.2 Wild Rice

Check only one.

<input type="checkbox"/>	Present (min. size 0.5 ha)	= 6 pts
<input checked="" type="checkbox"/>	Absent	= 0
<input type="checkbox"/>	Harvest not permitted	= 0

Source of information:

Wild Rice Score (maximum 6 points) 0

2.1.3 Commercial Bait Fish

Check only one.

<input type="checkbox"/>	Present	= 12 pts
<input checked="" type="checkbox"/>	Absent	= 0
<input type="checkbox"/>	Fishing not permitted	= 0

Source of information:

Commercial Fish Score (maximum 12 points) 0

2.1.4 Furbearers

Only species recognized as furbearers under the Fish & Wildlife Conservation Act may be scored here. Score 3 points for each furbearer species listed, up to a maximum of 12 points.

	Name of furbearer	Source of information
1.	Raccoon	Environmental Impact Statement
2.		
3.		
4.		
5.		
6.		

Furbearer Score (maximum 12 points) 3

2.2 RECREATIONAL ACTIVITIES

Sources of information and reasons for scoring a wetland under high or moderate use below, must be included below.

Circle one score for each of the activities listed. Score is cumulative – add score for hunting, nature enjoyment and fishing together for final score.

Intensity of Use	Type of Wetland-Associated Use		
	Hunting	Nature Enjoyment/ Ecosystem Study	Fishing
High	40 points	40 points	40 points
Moderate	20	20	20
Low	8	8	8
Not Possible/ No evidence	0	0	0

Sources of information (include evidence/criteria forming basis for score and any relevant reference used to obtain that information):

- e.g., Hunting scored at 20 points: 5 hunting blinds observed; hunters using area frequently monitored for compliance (source: D. Black, MNR Conservation Officer)

Hunting: Private property that does not allow hunting

Nature: Environmental Impact Statements ~ Ecosystem Study

Fishing: No surface water

Recreational Activities Score
(maximum 80 points) 8

2.3 LANDSCAPE AESTHETICS

2.3.1 Distinctness

Check only one.

<input type="checkbox"/>	Clearly Distinct	= 3 pts
<input checked="" type="checkbox"/>	Indistinct	= 0

Landscape Distinctness Score
(maximum 3 points) 0

2.3.2 Absence of Human Disturbance

Check only one.

<input checked="" type="checkbox"/>	Human disturbances absent or nearly so	= 7 pts
<input type="checkbox"/>	One or several localized disturbances	= 4
<input type="checkbox"/>	Moderate disturbance; localized water pollution	= 2
<input type="checkbox"/>	Wetland intact but impairment of ecosystem quality intense in some areas	= 1
<input type="checkbox"/>	Extreme ecological degradation, or water pollution severe and widespread	= 0

Details regarding type, extent and location of disturbance scored:

Source of information:

Environmental Impact Statement

Absence of Human Disturbance Score
(maximum 7 points) 7

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 Educational Uses

Check highest appropriate category.

	Frequent	= 20 pts
	Infrequent	= 12
✓	No visits	= 0

Details regarding the type and frequency of education uses scored above:

Source of information:

Correspondence with property owner

Educational Uses Score (maximum 20 points) 0

2.4.2 Facilities and Programs

Check all appropriate options, score highest category checked.

	Staffed interpretation centre	= 8 pts
	No interpretation centre or staff, but a system of self-guiding trails or brochures available	= 4
	Facilities such as maintained paths (e.g., woodchips), boardwalks, boat launches or observation towers, but no brochures or other interpretation	= 2
✓	No facilities or programs	= 0

Additional Notes/Comments:

Source of information:

Environmental Impact Statement

Facilities and Programs Score
(maximum 8 points) 0

2.4.3 Research and Studies

Check all that apply; score highest category checked.

	Long term research has been done	= 12 pts
	Research papers published in refereed scientific journal or as a thesis	= 10
✓	One or more (non-research) reports have been written on some aspect of the wetland's flora, fauna, hydrology, etc.	= 5
	No research or reports	= 0

List of reports, publications, research studies etc. scored above:

2017 Stattec Environmental Impact Statement
 2019 GEMTEC Environmental Impact Statement

Research and Studies Score
 (maximum 12 points) 5

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Name of Settlement: Prospect

Distance of wetland from settlement: 4.3 km

Population of settlement: ~300 (Source: assumption based on Beckwith Township population census of 7,664 (2016))

Circle only the highest score applicable

Distance of wetland to settlement	population >10,000	population 2,500-10,000	population <2,500 or cottage community
	within or adjoining settlement	40 points	26 points
0.5 to 10 km from settlement	26	16	<u>10</u>
10 to 60 km from settlement	12	8	4
>60 km from nearest settlement	5	2	0

Proximity to Human Settlement Score
 (maximum 40 points) 10

2.6 OWNERSHIP

FA of wetland held by or held under a legal contract by a conservation body (as defined by the <i>Conservation Land Act</i>) for wetland protection	_____ x 10 = _____
FA of wetland occurring in provincially or nationally protected areas (e.g., parks and conservation reserves)	_____ x 10 = _____
FA of wetland area in Crown/public ownership, not as above	_____ x 8 = _____
FA of wetland area in private ownership, not as above	<u>1</u> x 4 = <u>4</u>

Source of information: _____

Ownership Score (maximum 10 points) 4

2.7 SIZE (SOCIAL COMPONENT)

Total Size of Wetland = 0.93 ha Sum of scores from Subcomponents 2.1, 2.2, and 2.5 = 3+8+10 = 21

Circle the appropriate score from the table below.

Total for Size Dependent Social Features										
	<31	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2-4	1	2	4	8	12	13	14	14	15	16
5-8	2	2	5	9	13	14	15	15	16	16
9-12	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component) 1

2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE

Either or both Aboriginal or Cultural Values may be scored. However, the maximum score permitted for 2.8 is 30 points.

Full documentation of sources must be attached to the data record.

2.8.1 Aboriginal Values

	Significant	= 30 pts
	Not Significant	= 0
✓	Unknown	= 0

Additional Comments/Notes:

2.8.2 Cultural Heritage

	Significant	= 30 pts
	Not Significant	= 0
✓	Unknown	= 0

Additional Comments/Notes:

Aboriginal Values/Cultural Heritage Score
(maximum 30 points) 0

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

Check one of the following four options.

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> | If wetland is a single contiguous coastal wetland, ⇒ score 0 points for this section. |
| <input type="checkbox"/> | If all wetland units of a wetland complex are coastal wetland units, ⇒ score 0 points for this section. |
| <input checked="" type="checkbox"/> | If wetland or wetland complex is entirely isolated in site type, ⇒ score 100 points automatically. |
| <input type="checkbox"/> | Wetland not as above – proceed through ‘steps’ A through L below. |

- (A) Total wetland area = _____ ha
- (B) Size of wetland’s catchment = _____ ha
- (C) Size of other detention areas in catchment = _____ ha
- (D) Size of ‘isolated’ portions of wetland = _____ ha (FA = _____)
- (E) Size of coastal units of wetland complex = _____ ha (FA = _____)

Points for Isolated Portion of Wetland (If not applicable, enter ‘0’):

(F) (FA of D) x 100 pts = _____ pts

Points for Coastal Portion(s) of Wetland (if not applicable, enter ‘0’)

(G) (FA of E) x 100 pts = _____ pts

(H) Size of wetland minus the isolated and coastal portions = {A – D – E} = _____ ha

(I) Number of points available to score ‘rest’ of wetland = {100 – F – G} = _____ pts

(J) Total area of upstream detention areas = {A + C} = _____ ha

(K) Upstream Detention Factor = {(H/J) x 2} = _____ (maximum 1.0)

(L) Attenuation Factor = {(H/B) x 10} = _____ (maximum 1.0)

Flood Attenuation Final Score = {[(K + L) / 2] x I} + F = _____

Flood Attenuation Score (maximum 100 points) 100

3.2 WATER QUALITY IMPROVEMENT

3.2.1 Short Term Water Quality Improvement

Step 1: Determination of maximum initial score

<input type="checkbox"/>	Wetland on one of the 5 defined large lakes or 5 major rivers (Go to Step 5A)
<input checked="" type="checkbox"/>	All other wetlands (Go through Steps 2, 3, 4, and 5B)

Step 2: Determination of Watershed Improvement Factor (WIF)

Calculation of WIF is based on the fractional area (FA) of each site type that makes up the total area of the wetland.

(FA = area of site type/total area of wetland)

FA of isolated wetland	=	1	x 0.5 =	0.5
FA of riverine wetland	=		x 1.0 =	
FA of palustrine wetland with no inflow	=		x 0.7 =	
FA of palustrine wetland with inflows	=		x 1.0 =	
FA of lacustrine on lake shoreline	=		x 0.2 =	
FA of lacustrine at lake inflow or outflow	=		x 1.0 =	

Sum (WIF cannot exceed 1.0) 0.5

Step 3: Determination of catchment Land Use Factor (LUF)

(Choose the first category that fits upstream land use in the catchment.)

<input type="checkbox"/>	Over 50% agricultural and/or urban	=	1.0
<input checked="" type="checkbox"/>	Between 30 and 50% agricultural and/or urban	=	0.8
<input type="checkbox"/>	Over 50% forested or other natural vegetation	=	0.6

LUF (maximum 1.0) 0.8

Step 4: Determination of Pollutant Uptake Factor (PUF)

Calculation of PUF is based on the fractional area (FA) of each vegetation type that makes up the total area of the wetland. Base assessment on the dominant vegetation form for each community except where dead trees or shrubs dominate. In that case base assessment on the dominant live vegetation type.

(FA = area of vegetation type/total area of wetland)

FA of wetland with live trees, shrubs, herbs or mosses (c, h, ts, ls, gc, m)	1	= x	0.75 =	0.75
FA of wetland with emergent, submergent or floating vegetation (re, be, ne, su, f, ff)		= x	1.0 =	
FA of wetland with little or no vegetation (u)		= x	0.5 =	

Sum (PUF cannot exceed 1.0) 0.75

Step 5: Calculation of final score

<input type="checkbox"/>	Wetland on defined 5 major lakes or 5 major rivers	0
<input type="checkbox"/>	All other wetlands – calculate as follows	
	Initial score	60
	Watershed Improvement Factor (WIF)	<u>0.5</u>
	Land Use Factor (LUF)	<u>0.8</u>
	Pollutant Uptake Factor (PUF)	<u>0.75</u>
	Final score: 60 x WIF x LUF x PUF =	_____

Short Term Water Quality Improvement Score
(maximum 60 points) 18

3.2.2 Long Term Nutrient Trap

Step 1:

<input type="checkbox"/>	Wetland on defined 5 major lakes or 5 major rivers = 0 points
<input checked="" type="checkbox"/>	All other wetlands (Proceed to Step 2)

Step 2: Choose only one of the following settings that best describes the wetland being evaluated

<input type="checkbox"/>	Wetland located in a river mouth	= 10 pts
<input type="checkbox"/>	Wetland is a bog, fen, or swamp with more than 50% of the wetland being covered with organic soil	= 10
<input checked="" type="checkbox"/>	Wetland is a bog, fen, or swamp with less than 50% of the wetland being covered with organic soil	= 3
<input type="checkbox"/>	Wetland is a marsh with more than 50% of the wetland covered with organic soil	= 3
<input type="checkbox"/>	None of the above	= 0

Long Term Nutrient Trap Score
(maximum 10 points) 3

3.2.3 Groundwater Discharge

Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points, assign the maximum score of 30). Note: for wetland type, wetland type scored does not have to be the dominant type in the wetland.

Wetland Characteristics	Potential for Discharge		
	None to Little	Some	High
Wetland type	Bog = 0	Swamp/Marsh = 2	Fen = 5
Topography	Flat/rolling = 0	Hilly = 2	Steep = 5
Wetland area:	Large (>50%) = 0	Moderate (5-50%) = 2	Small (<5%) = 5
Upslope catchment area			
Lagg development	None found = 0	Minor = 2	Extensive = 5
Seeps	None = 0	≤ 3 seeps = 2	> 3 seeps = 5
Surface marl deposits	None = 0	≤ 3 sites = 2	> 3 sites = 5
Iron precipitates	None = 0	≤ 3 sites = 2	> 3 sites = 5
Located within 1 km of a major aquifer	N/A = 0	N/A = 0	Yes = 10 No = 0

Additional Comments/Notes:

Mapped as groundwater recharge area.

Groundwater Discharge Score

(maximum 30 points) 7

3.3 CARBON SINK

Check only one of the following:

<input type="checkbox"/>	Bog, fen or swamp with more than 50% coverage by organic soil	= 5 pts
<input type="checkbox"/>	Bog, fen or swamp with between 10 to 50% coverage by organic soil	= 2
<input checked="" type="checkbox"/>	Marsh with more than 50% coverage by organic soil	= 3
<input checked="" type="checkbox"/>	Wetlands not in one of the above categories	= 0

Source of information:

Site Soil survey, minimal organics (<10cm) across site

Carbon Sink Score

(maximum 5 points) 0

3.4 SHORELINE EROSION

CONTROL

From the wetland vegetation map determine the dominant vegetatio type within the erosion zone for lacustrine and riverine site type areas only. Score according to the factors listed below.

Step 1:

<input checked="" type="checkbox"/>	Wetland entirely isolated or palustrine	= 0 pts
<input type="checkbox"/>	Any part of the wetland is riverine or lacustrine	= Go to step 2

Step 2: Choose the one characteristic that best describes the shoreline vegetation (see page 109 for description of "shoreline".)

<input type="checkbox"/>	Trees and shrubs	= 15 pts
<input type="checkbox"/>	Emergent vegetation	= 8
<input type="checkbox"/>	Submergent vegetation	= 6
<input type="checkbox"/>	Other shoreline vegetation	= 3
<input type="checkbox"/>	No vegetation	= 0

Shoreline Erosion Control Score

(maximum 15 points) 0

3.5 GROUNDWATER RECHARGE

3.5.1 Site Type

Wetland > 50% lacustrine (by area) or located on one of the five major rivers		=	0 pts
Wetland not as above. Calculate final score as follows:			
■ FA of isolated or palustrine wetland	=	1	1 x 50 = 50
■ FA of riverine wetland	=		x 20 =
■ FA of lacustrine wetland (not dominant site type)	=		x 0 =

Groundwater Recharge/Wetland Site Type Score
(maximum 50 points) 50

3.5.2 Soil Recharge Potential

Circle only one choice that **best** describes the soils in **the area surrounding the wetland** being evaluated (the soils within the wetland are not scored here).

Dominant Wetland Type	Group A, B, C (sands, gravels, loams)	Group D (clays, substrates in high water tables, shallow substrates over impervious materials such as bedrock)
	Lacustrine or major river	0
Isolated	10	5
Palustrine	7	4
Riverine (not on a major river)	5	2

Groundwater Recharge/Wetland Soil Recharge Potential Score (maximum 10 points) 10

4.0 SPECIAL FEATURES

COMPONENT

4.1 RARITY

4.1.1 Wetland Types

Ecodistrict	Rarity within the Landscape (4.1.1.1)	Rarity of Wetland Type (4.1.1.2)			
		Marsh	Swamp	Fen	Bog
6E-1	60	40	0	80	80
6E-2	60	40	0	80	80
6E-4	60	40	0	80	80
6E-5	20	40	0	80	80
6E-6	40	20	0	80	80
6E-7	60	10	0	80	80
6E-8	20	20	0	80	80
6E-9	0	20	0	80	80
6E-10	20	0	20	80	80
6E-11	0	30	0	80	80
6E-12	0	30	0	60	80
6E-13	60	10	0	80	80
6E-14	40	20	0	40	80
6E-15	40	0	0	80	80
6E-16	60	20	0	80	60
6E-17	40	10	0	30	80
7E-1	60	0	60	80	80
7E-2	60	0	0	80	80
7E-3	60	00	0	80	80
7E-4	80	0	0	80	80
7E-5	60	20	0	80	80
7E-6	80	30	0	80	80

4.1.1.1 Rarity within the Landscape

Choose appropriate score from 2nd column above.

Score (maximum 80 points) 0

4.1.1.2 Rarity of Wetland Type

Score is cumulative, based on presence/absence. Circle all appropriate scores from above table and sum.

Score (maximum 80 points) 0

4.1.2 Species

4.1.2.1 Reproductive Habitat for an Endangered or Threatened Species

Under the "Activity" column, when scoring animal species, record what the animal was doing when observed (e.g., nesting, courtship, singing, etc).

Common Name	Scientific Name	Activity	Date Observed	Info Source

For each species score 250 points. (Score is cumulative, no maximum score)

Additional Notes/Comments:

No endangered or threatened species identified within wetland during the 2017 & 2019 Environmental Impact Statements

Reproductive Habitat for Endangered or Threatened Species (no maximum) 0

4.1.2.2 Traditional Migration or Feeding Habitat for an Endangered or Threatened Species

Under the "Activity" column, when scoring animal species, record what the animal was doing when observed (e.g., nesting, courtship, singing, feeding, resting etc). Dates that species has been recorded using the wetland must be included in the table below.

Common Name	Scientific Name	Activity	Dates Observed	Info Source

For one species score 150 points; for each additional species score 75 points. (Score is cumulative)

Additional Notes/Comments:

No endangered or threatened species documented with in wetland during 2017 + 2019 Environmental Impact statements

Traditional Habitat for Endangered or Threatened Species (no maximum) 0

4.1.2.3 Provincially Significant Animal Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

Additional Notes/Comments:

One species = 50 pts	9 species = 140 pts	17 species = 160 pts
2 species = 80	10 species = 143	18 species = 162
3 species = 95	11 species = 146	19 species = 164
4 species = 105	12 species = 149	20 species = 166
5 species = 115	13 species = 152	21 species = 168
6 species = 125	14 species = 154	22 species = 170
7 species = 130	15 species = 156	23 species = 172
8 species = 135	16 species = 158	24 species = 174
		25 species = 176

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Animal Species
 (no maximum) 0

4.1.2.4 Provincially Significant Plant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

Additional Notes/Comments:

One species = 50 pts	9 species = 140 pts	17 species = 160 pts
2 species = 80	10 species = 143	18 species = 162
3 species = 95	11 species = 146	19 species = 164
4 species = 105	12 species = 149	20 species = 166
5 species = 115	13 species = 152	21 species = 168
6 species = 125	14 species = 154	22 species = 170
7 species = 130	15 species = 156	23 species = 172
8 species = 135	16 species = 158	24 species = 174
		25 species = 176

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Plant Species
 (no maximum) 0

4.1.2.5 Regionally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

One species = 20 pts	4 species = 45 pts	7 species = 58 pts
2 species = 30	5 species = 50	8 species = 61
3 species = 40	6 species = 55	9 species = 64
		10 species = 67

For each significant species over 10 in wetland, add 1 point.

Regionally Significant Species Score
 (no maximum score) 0

4.1.2.6 Locally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

One species = 10 pts	4 species = 31 pts	7 species = 43 pts
2 species = 17	5 species = 38	8 species = 45
3 species = 24	6 species = 41	9 species = 47
		10 species = 49

For each significant species over 10 in wetland, add 1 point.

Locally Significant Species Score
 (no maximum score) 0

4.2 SIGNIFICANT FEATURES AND HABITATS

4.2.1 Colonial Waterbirds

Record all available information. Score the highest applicable category. Include additional information as possible (e.g., nest locations, etc).

Activity	Species	Info Source	Points
Currently nesting			= 50
Known to have nested within the past 5 years			= 25
Active feeding area (great blue heron excluded)			= 15
None known			= 0

Additional Notes/Comments:

no colonial waterbirds nesting with in wetland in 2017 & 2019.

Colonial Waterbird Nesting Score
(maximum 50 points) 0

4.2.2 Winter Cover for Wildlife

Score highest appropriate category. Include rationale/sources of information.

	Provincially significant	= 100 pts
	Significant in Ecoregion	= 50
	Significant in Ecodistrict	= 25
<input checked="" type="checkbox"/>	Locally significant	= 10
	Little or poor winter cover	= 0

Species/habitat/vegetation community scored (e.g., winter deer cover in hemlock swamp, S3 and S4b):

Source of information:

Environmental Impact Statements 2017 & 2019

Winter Cover for Wildlife Score
(maximum 100 points) 0

4.2.3 Waterfowl Staging and/or Moulting Areas

Check highest level of significance for both staging and moulting; add scores for staging and for moulting together for final score. However, maximum score for evaluation under this section is 150 points.

	Staging	Moulting
Nationally/internationally significant	= 150 pts	= 150 pts
Provincially significant	= 100	= 100
Significant in the Ecoregion	= 50	= 50
Significant in Ecodistrict	= 25	= 25
Known to occur	= 10	= 10
Not possible/Unknown	= 0	= 0

Species/habitat/vegetation community scored (e.g., approx 20 mallards in W3):

Source of information:

2017 & 2019 Environmental Impact Statements

Waterfowl Staging/Moulting Score
(maximum 150 points) 0

4.2.4 Waterfowl Breeding

Check highest level of significance.

	Nationally/internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in the Ecoregion	= 50
	Significant in Ecodistrict	= 25
	Habitat Suitable	= 5
✓	Habitat not suitable	= 0

Species/habitat/vegetation community scored (e.g., mallard in W3):

Source of information:

2017 & 2019 EIS reports

Waterfowl Breeding Score
(maximum 100 points) 0

4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area

Check highest level of significance.

	Nationally / internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in Ecoregion	= 50
	Significant in Ecodistrict	= 25
	Known to occur	= 10
✓	Not possible / Unknown	= 0

Species/habitat/vegetation community scored:

Source of information:

2017 & 2019 EIS reports

Passerine, Shorebird or Raptor Stopover Score
(maximum 100 points) 0

4.2.6 Fish Habitat

4.2.6.1 Spawning and Nursery Habitat

Area Factors for Low Marsh, High Marsh and Swamp Communities.

No. of ha of Fish Habitat	Area Factor
< 0.5 ha	0.1
0.5 – 4.9	0.2
5.0 – 9.9	0.4
10.0 – 14.9	0.6
15.0 – 19.9	0.8
20.0 +	1.0

Step 1:

Fish habitat is not present within the wetland

Go to Step 7, Score 0 points

Fish habitat is present within the wetland

Go to Step 2

Step 2: *Choose only one option*

Significance of the spawning and nursery habitat within the wetland is known

Go to Step 3

Significance of the spawning and nursery habitat within the wetland is not known

Go through Steps 4, 5 and 6

Step 3: *Select the highest appropriate category below, attach documentation:*

Significant in Ecoregion

Go to Step 7, Score 100 points

Significant in Ecodistrict

Go to Step 7, Score 50 points

Locally Significant Habitat (5.0+ ha)

Go to Step 7, Score 25 points

Locally Significant Habitat (<5.0 ha)

Go to Step 7, Score 15 points

Source of information:

Step 4: Low Marsh = the 'permanent' marsh area, from the existing water line out to the outer boundary of the wetland.

Low marsh not present

Go to Step 5

Low marsh present

Continue through Step 4, scoring as noted below

Scoring of Low Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each Low Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group**.
3. Use these areas to assign an **Area Factor** for each checked **Vegetation Group**.
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for Low Marsh**.

Scoring for Presence of Key Vegetation Groups – Low Marsh						
Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
5	Duckweed				2	
6	Smartweed-Waterwillow				6	
7	Waterlily-Lotus				11	
8	Waterweed-Watercress				9	
9	Ribbongrass				10	
10	Coontail-Naiad-Watermilfoil				13	
11	Narrowleaf Pondweed				5	
12	Broadleaf Pondweed				8	
Total Score for Low Marsh (maximum 75 points)						

Continue to Step 5

Step 5: High Marsh = the 'seasonal' marsh area, from the water line to the inland boundary of marsh wetland type. This is essentially what is commonly referred to as a wet meadow, in that there is insufficient standing water to provide fisheries habitat except during flood or high water conditions.

	High marsh not present	Go to Step 6
	High marsh present	Continue through Step 5, scoring as noted below

Scoring of High Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each High Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each High Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group**.
3. Use these areas to assign an **Area Factor** (from Table 8) for each checked **Vegetation Group**.
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for High Marsh**.

Scoring for Presence of Key Vegetation Groups – High Marsh						
Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
Total Score for High Marsh (maximum 25 points)						

Continue to Step 6

Step 6:

	Swamp containing fish habitat not present
	Swamp containing fish habitat present

Go to Step 7

Continue through Step 6, scoring as follows

Scoring of Swamp:

1. Determine the total area (ha) of seasonally flooded swamp communities within the wetland containing fish habitat and record below.
2. Determine the total area (ha) of permanently flooded swamp communities within the wetland containing fish habitat and record below.
3. Use these areas to assign an **Area Factor** (from Table 8).
4. Multiply the Area Factor by the **Multiplication Factor** for each row to calculate **Score**.
5. **Sum** all numbers in Score column to get **Total Score for Swamp**.

Scoring Swamps for Fish Habitat (Seasonally flooded; Permanently flooded)					
Swamp Containing Fish Habitat	Present (check)	Total Area (ha)	Area Factor (from Table 8)	Multiplication Factor	Score
Seasonally Flooded Swamp				10	
Permanently Flooded Swamp				10	
Total Score for Swamp (maximum 20 points)					

Continue to Step 7

Step 7: CALCULATION OF FINAL SCORE

NOTE: Scores for Steps 4, 5 and 6 are only recorded if Steps 1 and 3 have not been scored.

- A. Score from Step 1 (fish habitat not present) = 0
- B. Score from Step 3 (significance known) =
- C. Score from Step 4 (Low Marsh) =
- D. Score from Step 5 (High Marsh) =
- E. Score from Step 6 (Swamp) =

Calculation of Final Score for Spawning and Nursery Habitat = A or B or Sum of C, D, and E

<p>Score for Spawning and Nursery Habitat (maximum 100 points) <u> </u></p>
--

4.2.6.2 Migration and Staging Habitat

Step 1:

<input checked="" type="checkbox"/>	Staging or Migration Habitat is not present in the wetland	Go to Step 4, Score 0 points
<input type="checkbox"/>	Staging or Migration Habitat is present in the wetland, significance of the habitat is known	Go to Step 2
<input type="checkbox"/>	Staging or Migration Habitat is present in the wetland, significance of the habitat is not known	Go to Step 3

Step 2: Select the highest appropriate category below. Ensure that documentation is attached to the data record.

<input type="checkbox"/>	Significant in Ecoregion	Score 25 points in Step 4
<input type="checkbox"/>	Significant in Ecodistrict	Score 15 points in Step 4
<input type="checkbox"/>	Locally Significant	Score 10 points in Step 4
<input type="checkbox"/>	Fish staging and/or migration habitat present, but not as above	Score 5 points in Step 4

Source of information:

Step 3: Select the highest appropriate category below based on presence of the designated site type (i.e. does not have to be the dominant site type). Refer to Site Types recorded earlier (section 1.1.3). Attach documentation.

<input type="checkbox"/>	Wetland is riverine at rivermouth or lacustrine at rivermouth	Score 25 points in Step 4
<input type="checkbox"/>	Wetland is riverine, within 0.75 km of rivermouth	Score 15 points in Step 4
<input type="checkbox"/>	Wetland is lacustrine, within 0.75 km of rivermouth	Score 10 points in Step 4
<input type="checkbox"/>	Fish staging and/or migration habitat present, but not as above	Score 5 points in Step 4

Step 4: Enter a score from only one of the three above Steps.

<p>Score for Staging and Migration Habitat (maximum 25 points) <u>0</u></p>

4.3 ECOSYSTEM AGE

	Fractional Area		Score
Bog =		x 25 =	
Fen, on deeper soils; floating mats or marl =		x 20 =	
Fen, on limestone rock =		x 5 =	
Swamp =	1	x 3 =	3
Marsh =		x 0 =	
Total		=	

Ecosystem Age Score (maximum 25 points) 3

4.4 GREAT LAKES COASTAL WETLANDS

Choose one only. Only coastal wetland units may be scored.

Wetland < 10 ha	=	10 pts
Wetland 10-50 ha	=	25
Wetland 51-100 ha	=	50
Wetland > 100 ha	=	75

If the wetland is a complex, identify which wetlands units or wetland communities are being scored as coastal:

Great Lakes Coastal Wetland Score
(maximum 75 points) 0

General Information

Wetland Evaluator(s)

Name: DREW PAULUSSE Affiliation: GEMTEC Consulting Engineers & Scientists Ltd.

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Name: _____ Affiliation: _____

Date(s) wetland visited (in field): Apr 10, Jun 20, Jun 24, Jun 28, Aug 9: 2019

Date evaluation completed: 11-SEP-19

Estimated time devoted to completing the field survey in person hours: 9

Weather Conditions

i) at time of field work: generally temps > 10°C, no precipitation, low winds

ii) summer conditions in general: average to dry, average temperatures,

5.5 AREA OF WETLAND RESTORATION POTENTIAL

Check all that apply. Attach additional pages if necessary.

<input type="checkbox"/>	Area of wetland restoration potential adjacent to evaluated wetland unit(s)
<input type="checkbox"/>	Area of wetland restoration potential within 750m of evaluated wetland unit(s), but not adjacent
<input type="checkbox"/>	Area of wetland restoration potential encountered elsewhere
<input type="checkbox"/>	Area currently functioning as wetland (e.g., showing signs of degradation but still mapped as wetland).
<input type="checkbox"/>	Adjacent Wetland Unit (if applicable): _____
<input type="checkbox"/>	GPS Coordinates of Site: _____

Description of site (e.g., current land use, wetland characteristics of site, etc) and why it is identified as an area of restoration potential:

N/A

Additional Notes/Comments (e.g., adjacent lands, etc)

5.3 SPECIES OF SPECIAL INTEREST

5.3.1 Osprey

Check all that apply:

- | | |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> | Present and nesting |
| <input type="checkbox"/> | Known to have nested in last 5 years |
| <input type="checkbox"/> | Feeding area for Osprey |
| <input checked="" type="checkbox"/> | Not as above |

5.3.2 Common Loon

Check all that apply:

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> | Nesting in wetland |
| <input type="checkbox"/> | Feeding at edge of wetland |
| <input type="checkbox"/> | Observed or heard on lake or river adjoining the wetland |
| <input checked="" type="checkbox"/> | Not as above |

5.4 IMPORTANT DRINKING WATER AREA

- Wetland located within:
(check all that apply)
- | | |
|-------------------------------------|---------------------------|
| <input type="checkbox"/> | Wellhead Protection Area |
| <input type="checkbox"/> | Intake Protection Zone |
| <input checked="" type="checkbox"/> | Significant Recharge Area |
| <input type="checkbox"/> | Vulnerable Aquifer Area |

Source of information:

Omaha mapping & RWCA Source water mapping.

Additional Comments:

5.0 DOCUMENTATION OF
WETLAND FEATURES NOT
INCLUDED IN THE EVALUATION

5.1 INVASIVE SPECIES

Attach documentation of invasive species found in wetland (include location information and a coarse estimate of abundance [F = few, C = fairly common, A = abundant]):

No invasives documented.

5.2 VERNAL POOLS

Documentation of information on vernal pools encountered during the wetland evaluation but not included as part of the evaluated wetland.

Vernal pooling present within wetland; approximately 35% area coverage during Spring.

WETLAND EVALUATION SCORING
RECORD

WETLAND NAME: Smith Wetland

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

<u>13</u>	1.1.1	Growing Degree-Days/Soils
<u>8</u>	1.1.2	Wetland Type
<u>1</u>	1.1.3	Site Type

1.2 BIODIVERSITY

<u>9</u>	1.2.1	Number of Wetland Types
<u>1.5</u>	1.2.2	Vegetation Communities
<u>7</u>	1.2.3	Diversity of Surrounding Habitat
<u>5</u>	1.2.4	Proximity to Other Wetlands
<u>9</u>	1.2.5	Interspersion
<u>0</u>	1.2.6	Open Water Type

1 1.3 SIZE (Biological Component)

54.5 TOTAL (Biological Component)

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

<u>0</u>	2.1.1	Wood Products
<u>0</u>	2.1.2	Wild Rice
<u>0</u>	2.1.3	Commerical Fish (Bait Fish and/or Coarse Fish)
<u>3</u>	2.1.4	Furbearers

8 2.2 RECREATIONAL ACTIVITIES

2.3 LANDSCAPE AESTHETICS

<u>0</u>	2.3.1	Distinctness
<u>7</u>	2.3.2	Absence of Human Disturbance

2.4 EDUCATION AND PUBLIC AWARENESS

<u>0</u>	2.4.1	Educational Uses
<u>0</u>	2.4.2	Facilities and Programs
<u>5</u>	2.4.3	Research and Studies

10 2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

4 2.6 OWNERSHIP

1 2.7 SIZE (Social Component)

2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE

<u>0</u>	2.8.1	Aboriginal Values
<u>0</u>	2.8.2	Cultural Heritage

38 TOTAL (Social Component)

3.0 HYDROLOGICAL COMPONENT

<u>100</u>	3.1 FLOOD ATTENUATION
	3.2 WATER QUALITY IMPROVEMENT
<u>18</u>	3.2.1 Short Term Water Quality Improvement
<u>3</u>	3.2.2 Long Term Nutrient Trap
<u>7</u>	3.2.3 Groundwater Discharge
<u>0</u>	3.3 CARBON SINK
<u>0</u>	3.4 SHORELINE EROSION CONTROL
	3.5 GROUNDWATER RECHARGE
<u>50</u>	3.5.1 Site Type
<u>10</u>	3.5.2 Soil Recharge Potential
<u>188</u>	TOTAL (Hydrological Component)

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

<u>0</u>	4.1.1 Wetland Types
<u>0</u>	4.1.1.1 Rarity within the Landscape
<u>0</u>	4.1.1.2 Rarity of Wetland Type
<u>0</u>	4.1.2 Species
<u>0</u>	4.1.2.1 Reproductive Habitat for an Endangered or Threatened Species
<u>0</u>	4.1.2.2 Traditional Migration or Feeding Habitat for an Endangered or Threatened Species
<u>0</u>	4.1.2.3 Provincially Significant Animal Species
<u>0</u>	4.1.2.4 Provincially Significant Plant Species
<u>0</u>	4.1.2.5 Regionally Significant Species
<u>0</u>	4.1.2.6 Locally Significant Species

4.2 SIGNIFICANT FEATURES AND HABITATS

<u>0</u>	4.2.1 Colonial Waterbirds
<u>0</u>	4.2.2 Winter Cover for Wildlife
<u>0</u>	4.2.3 Waterfowl Staging and/or Moulting Areas
<u>0</u>	4.2.4 Waterfowl Breeding
<u>0</u>	4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area
<u>0</u>	4.2.6 Fish Habitat
<u>0</u>	4.2.6.1 Spawning and Nursery Habitat
<u>0</u>	4.2.6.2 Migration and Staging Habitat

3 4.3 ECOSYSTEM AGE

0 4.4 GREAT LAKES COASTAL WETLANDS

3 TOTAL (Special Features Component)

SUMMARY OF EVALUATION RESULT

Wetland Smith Wetland

54.5 1.0 TOTAL FOR BIOLOGICAL COMPONENT

38 2.0 TOTAL FOR SOCIAL COMPONENT

188 3.0 TOTAL FOR HYDROLOGICAL COMPONENT






3 4.0 TOTAL FOR SPECIAL FEATURES COMPONENT

283.5 TOTAL WETLAND SCORE


FOR MNR USE ONLY	
MNR Reviewer (Name & Position)	
Reviewer Comments	
MNR Approver (Name & Position)	
Approval Date	



LEGEND

-  SUBJECT SITE
-  PROPOSED SEVERANCES
-  250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
-  WATERCOURSE
-  WETLAND

Scale 1:1500




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AND SCIENTISTS

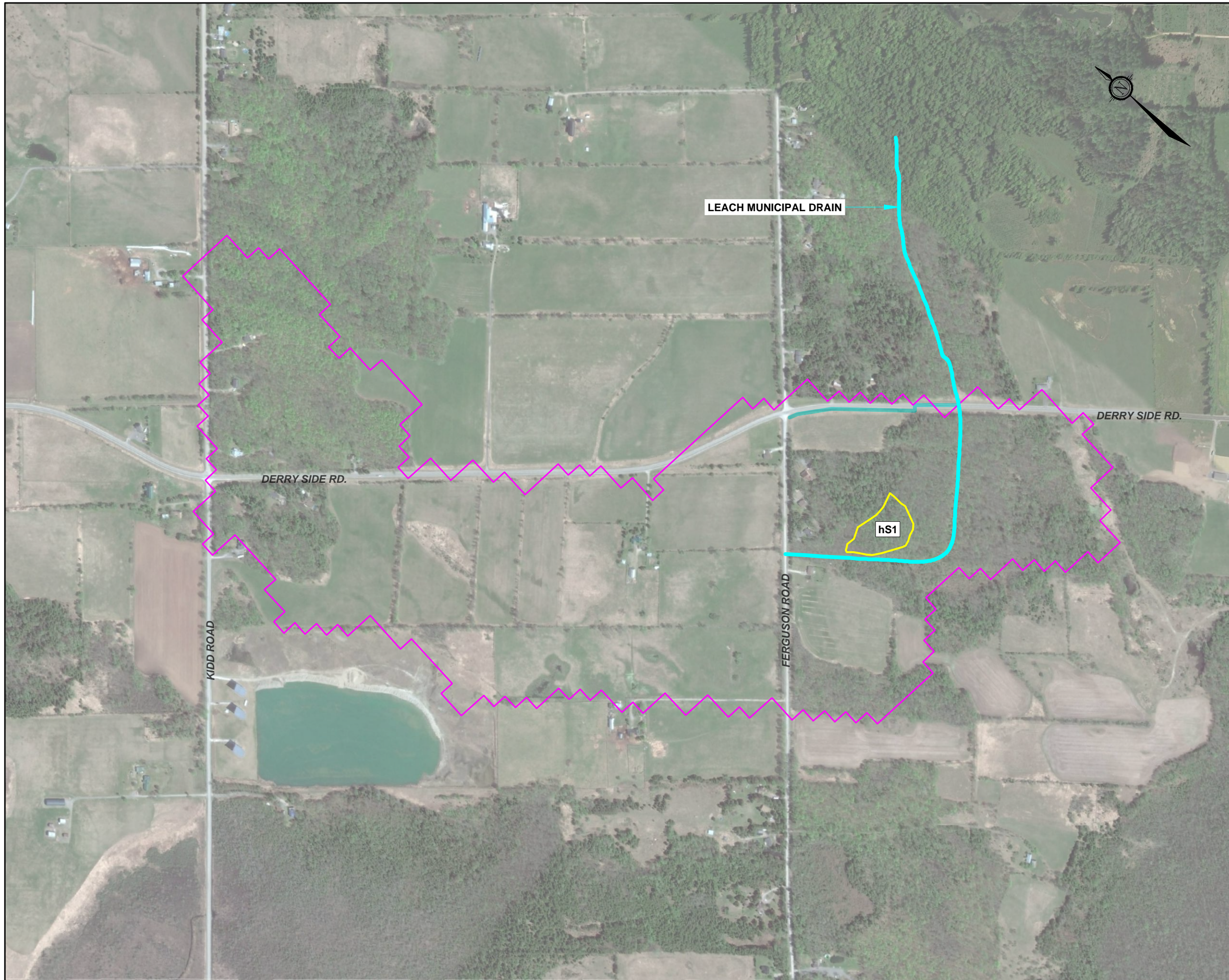
32 Steacie Drive
Ottawa, ON K2K 2A9
Tel: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Drawing **WETLAND BOUNDARY & VEGETATION COMMUNITIES**





Client **S. SMITH**

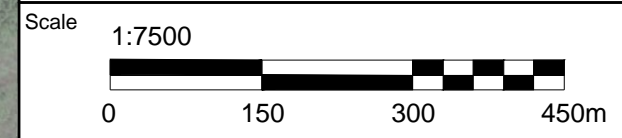
Project	64878.01	WETLAND EVALUATION PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO
Drwn by	P.C.	
Chkd by	T.W.	

Date	SEPTEMBER 2019	Rev.	0	FIGURE A.1
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LEGEND

	SUBJECT SITE
	WATERCOURSE
	WATERSHED/CATCHMENT AREA
	WETLAND




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AND SCIENTISTS

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Drawing		WETLAND CATCHMENT BASIN		
Client		S. SMITH		
Project	64878.01	WETLAND EVALUATION PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO		
Drwn by	P.C.			Chkd by
Date	SEPTEMBER 2019	Rev.	0	FIGURE A.2



LEGEND

- SUBJECT SITE
- PROPOSED SEVERANCES
- 250 METRE BUFFER SHOWING EXTENT OF STUDY AREA
- WATERCOURSE
- WETLAND

Scale 1:1500

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Drawing **WETLAND BOUNDARY & VEGETATION COMMUNITIES**

Client **S. SMITH**

Project 64878.01	WETLAND EVALUATION PROPOSED PLAN OF SUBDIVISION 1009 DERRY SIDE ROAD BECKWITH, ONTARIO
Drwn by P.C.	
Chkd by T.W.	

Date SEPTEMBER 2019	Rev. 0	FIGURE A.1
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Site: Smith Wetland

Observers: Drew Paulusse

Date: 9-Aug-19

Field No: 1 Wetland Type: S Site Type: I Forms (dominant*): A*, ts, gc
 Open Water(%): high _____ low 0 average _____ Organics: 10 cm f type Soil M.R. 6
 Soil: 1 S, P, S Water Table: 9999 cm Mottles: 10 cm 40 % Gley: 20 cm 30 %
 2 _____ Water Table: _____ cm Mottles: _____ cm _____ % Gley: _____ cm _____ %
 Presence of Seepage: Presence of Iron Precipitates: Presence of Lagg: Presence of Marl:

Forms (Circle those: ≥25% or ≥10% of dh,dc) Species (dominant species¹, secondary species², species present^P) Form %

<u>(h)</u>	<u>silver maple, red maple, Freeman's maple, cedar</u>	<u>90</u>
c		
dh, dc		
ts	<u>silver maple, red maple, Freeman's maple</u>	<u>5</u>
ls		
ds		
gc	<u>Carex rostrata, Carex spp., Poa spp.</u>	<u>5</u>
m		
re		
ne		
be		
f		
ff		
su		

Rare Species: N/A

Wildlife Records (sighting^s, tracks^t, vocals^v, scat^{sc}):

Comments:

Field No: _____ Wetland Type: _____ Site Type: _____ Forms (dominant*): _____
 Open Water(%): high _____ low _____ average _____ Organics: _____ cm _____ type Soil M.R. _____
 Soil: 1 _____ Water Table: _____ cm Mottles: _____ cm _____ % Gley: _____ cm _____ %
 2 _____ Water Table: _____ cm Mottles: _____ cm _____ % Gley: _____ cm _____ %
 Presence of Seepage: Presence of Iron Precipitates: Presence of Lagg: Presence of Marl:

Forms (Circle those: ≥25% or ≥10% of dh,dc) Species (dominant species¹, secondary species², species present^P) Form %

h		
c		
dh, dc		
ts		
ls		
ds		
gc		
m		
re		
ne		
be		
f		
ff		
su		

Rare Species:

Wildlife Records (sighting^s, tracks^t, vocals^v, scat^{sc}):

Comments:

WETLAND DATA SUMMARY FORM

Wetland Name Smith Wetland

Page 1 of 1

Map Code										Field Code										GPS Coordinate										Dominant Form					Forms					# Forms					Dominant Species										Area (ha)										Low Est.					High Est.					Mean					Open Water (ha)										Soil										Site Type										Habitat Type					Key Veg Group																																																																
/																														HS1																																																												M					TS, qc					3					Silver maple, red maple, Fraxinus nigra										0.93										0					35					17.5					0										S, FS										I										NA					NA				

Photolog



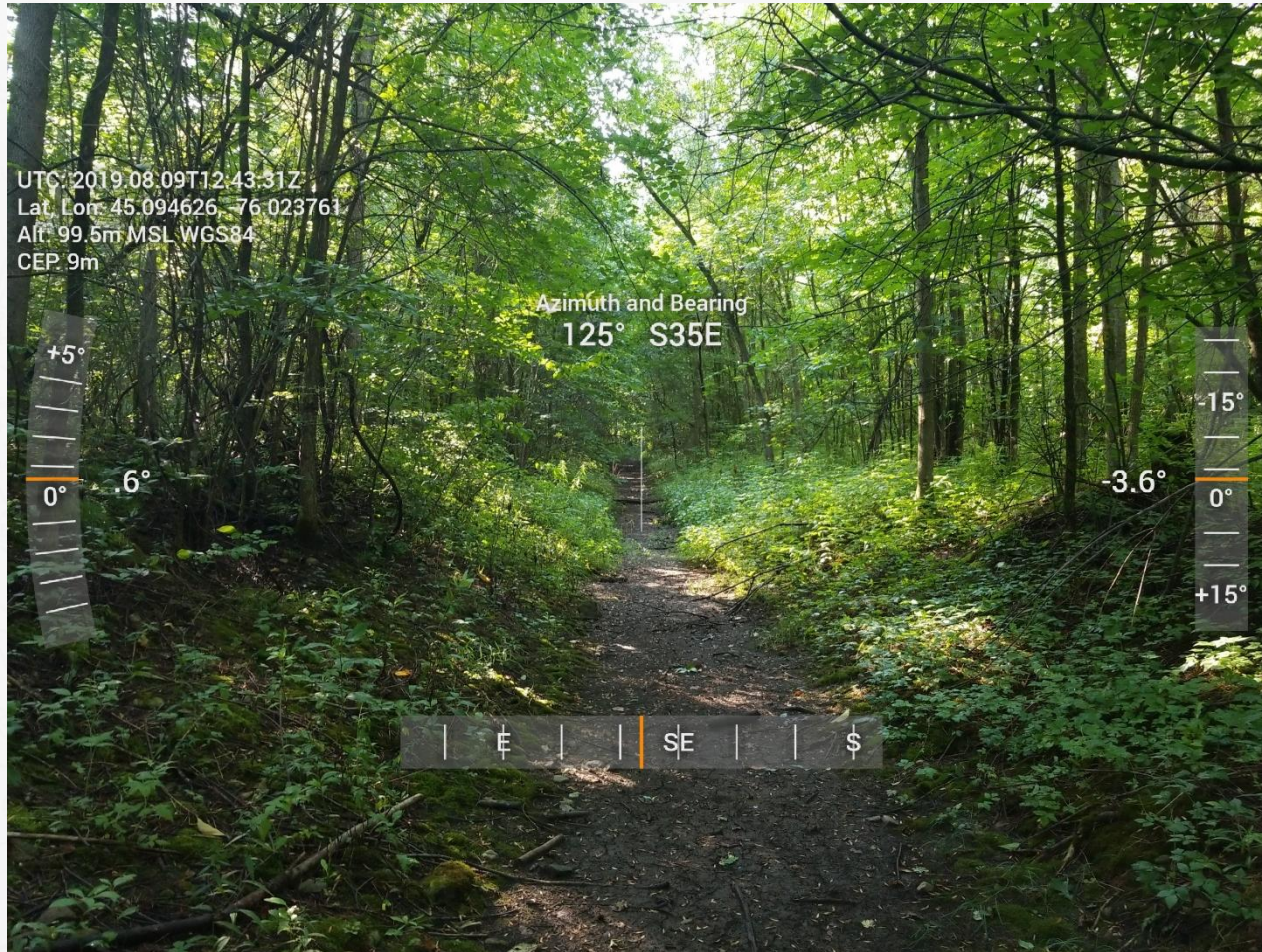
Boundary between upland and wetland community



Typical view of hS1 wetland community



Typical view of hS1 wetland community



View of Leach Municipal Drain



APPENDIX F

CVs for Key Personnel



GEMTEC

Drew Paulusse, B.Sc.

Senior Biologist / Manager of Environmental Services

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

Education

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

Professional Experience

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

Professional Affiliations and Technical Training

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





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

Project Highlights

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





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





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

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





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

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





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Taylor Warrington, B.Sc.

Junior Biologist

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

Education

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

Professional Experience

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

Professional Affiliations and Technical Training

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

Project Highlights

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





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

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



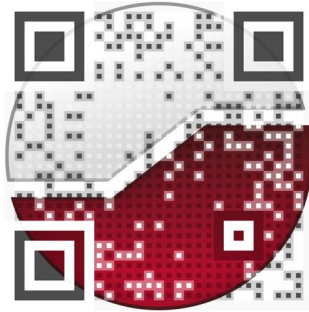


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- ***Natural Heritage Inventory and Environmental Impact Assessment, Combermere Lodge Limited, Barry's Bay, Ontario (2017-2018):*** Field biologist responsible for the completion of a Natural Heritage Inventory and Environmental Impact Assessment completed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



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