



**Environmental Impact Study
3879 Town Line
Marchmont, Township of Severn
County of Simcoe**

Prepared for:
Highlevel Construction Ltd.

Prepared by:
Azimuth Environmental
Consulting, Inc.

January 2018

AEC 16-113



Environmental Assessments & Approvals

January 4, 2018

AEC 16-113

Highlevel Construction Ltd.
P.O. Box 301
Orillia, ON
L3V6J6

Attention: David Meeks

**Re: Environmental Impact Study for 3879 Town Line – Marchmont, Township
of Severn, Simcoe County**

Dear Mr. Meeks:

As requested, we have completed an Environmental Impact Study for the above noted property, as required by the Township of Severn.

The following report provides the results of our assessment.

If you require additional information please do not hesitate to contact us.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jim Broadfoot, H. B.Sc.
Terrestrial Ecologist



Table of Contents

	page
Letter of transmittal.....	i
1.0 INTRODUCTION	1
2.0 PLANNING CONTEXT	1
2.1 Provincial Planning Policy	1
2.2 Endangered Species Act	2
2.3 Township of Severn.....	3
3.0 STUDY APPROACH	4
3.1 Study Area	4
3.2 Background Data	4
3.3 Vegetation Community Mapping and Surveys	5
3.4 Wildlife Surveys	5
3.4.1 Mammals	5
3.4.2 Birds.....	5
3.4.3 Amphibians.....	6
3.5 Species at Risk.....	6
3.6 Aquatic Habitat Assessment	6
4.0 EXISTING CONDITIONS.....	6
4.1 Land Use	6
4.1.1 On-site Land Use	6
4.1.2 Adjacent Land Use	7
4.2 Topography and Soils.....	7
4.3 Terrestrial Resources.....	7
4.3.1 Vegetation.....	7
4.3.2 Wetlands and Vernal Pools.....	8
4.3.3 Wildlife.....	8
4.3.3.1 Mammals	8
4.3.3.2 Birds.....	8
4.3.3.3 Amphibians.....	9
4.3.4 Species at Risk.....	9
4.4 Aquatic Habitat Assessment	9
4.4.1 Mapped Drainage Feature (Outlet 1).....	9
4.4.2 Unmapped Drainage Feature (Outlet 2)	10



5.0 NATURAL HERITAGE FEATURES AND FUNCTIONS	11
5.1 Habitat for Threatened and Endangered Species.....	11
5.2 Wetlands and Drainage Features	11
5.3 Significant Wildlife Habitat	11
6.0 PROPOSED DEVELOPMENT	12
7.0 IMPACT ASSESSMENT.....	13
7.1 Habitat of Endangered and Threatened Species.....	13
7.1.1 Butternut	13
7.1.2 Bats	13
7.2 Wetlands and Drainage Features	14
7.2.1 Mapped Drainage Feature (Outlet 1).....	14
7.2.2 Wetland and Unmapped Drainage Feature (Outlet 2)	14
7.3 Significant Wildlife Habitat	16
7.3.1 Bat Maternity Colonies.....	16
7.3.2 Woodland Bird Breeding Habitat.....	16
8.0 RECOMMENDATIONS	17
9.0 POLICY AND REGULATION CONFORMITY	18
9.1 Provincial Policy Statement	18
9.2 Ontario’s <i>Endangered Species Act, 2007</i>	18
9.3 Severn Sound Official Plan	19
10.0 CONCLUSIONS	19
11.0 REFERENCES	20



List of Figures

- Figure 1 Site Location
- Figure 2 Environmental Features
- Figure 3 Grading Plan Overlay

List of Tables

- Table 1 Vegetation Community Description
- Table 2 Plant List
- Table 3 Significant Woodland Assessment
- Table 4 Bird List
- Table 5 Results of Evening Calling Amphibian Surveys
- Table 6 Species at Risk Assessment
- Table 7 Significant Wildlife Habitat Assessment

Photographs

- Photograph 1 Vernal Pool Area/Wetland
- Photograph 2 Outlet 1
- Photograph 3 View of Seep (looking south into property)
- Photograph 4 View of Seep (looking north toward ditch)
- Photograph 5 Grate in South Ditch of Millwood Road
- Photograph 6 Outlet of Ditch at North End of Park
- Photograph 7 East Ditch of Gillette Drive
- Photograph 8 Outlet 2

List of Appendices

- Appendix A: Terms of Reference
- Appendix B: Project Field Staff
- Appendix C: Species at Risk Information Request
- Appendix D: Environmental Features Background Mapping
- Appendix E: Draft Plan of Subdivision



1.0 INTRODUCTION

Azimuth Environmental Consulting, Inc. (Azimuth) was retained to complete an Environmental Impact Study (EIS) related to a draft plan of subdivision proposed for a 10.86ha property located at 3879 Town Line, Marchmont, in the Township of Severn (the Township) (Part Lot 1 Conc. 1 [North]) (Figure 1).

It is our understanding that a scoped EIS was requested by the Township to address the potential for impact to natural heritage features or functions of the property and adjacent lands. The scope of work/terms of reference for this EIS was established in consultation with the Township, County of Simcoe and Severn Sound Environmental Association (SSEA), (Appendix A).

2.0 PLANNING CONTEXT

In the following sections we summarize the range of planning policies and regulations related to natural heritage that apply to the proposed development.

2.1 Provincial Planning Policy

The Provincial Policy Statement (PPS) (MMAH 2014) provides policy direction related to natural heritage features and functions. The Ontario *Planning Act* requires that planning and development decisions are consistent with the PPS. The following policies are relevant to this project:

According to Section 2.1.4, development and site alteration shall not be permitted in:

- Significant wetlands in Ecoregions 5E, 6E and 7E, and,
- Significant coastal wetlands.

According to Section 2.1.5, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted in:

- Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E, and 7E;
- Significant woodlands in Ecoregions 6E and 7E;
- Significant valleylands in Ecoregions 6E and 7E;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest; and
- Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).



Section 2.1.6 of the PPS states that development and site alteration is not permitted in fish habitat except in accordance with federal and provincial requirements.

Section 2.1.7 of the PPS states that development and site alteration shall not be permitted in habitat of Endangered (END) and Threatened (THR) species, except in accordance with provincial and federal requirements.

Section 2.1.8 states no development and site alteration will be permitted on lands adjacent to natural heritage features and areas defined above unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated there will be no negative impacts on the natural features and ecological functions.

Regarding natural heritage features and areas other than fish habitat, the PPS defines negative impact as “degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities”.

Ecological integrity is defined in the Natural Heritage Reference Manual (NHRM) (OMNR 2010) as “the condition of an ecosystem in which (a) the structure, composition and function are unimpaired by the stresses from human activity, (b) natural ecological processes are intact and self-sustaining and (c) ecosystem evolution is occurring naturally”. Ecosystem health is not defined within the 2014 PPS or associated guidance documents.

It is the responsibility of the Province of Ontario and/or the Municipality to designate areas identified within Sections 2.1.4 and 2.1.5 of the PPS as ‘significant’. The PPS, NHRM and Ecoregion 6E SWH Criteria Schedule (MNR 2015a) were used to identify candidate significant natural heritage features considered applicable to the property and/or adjacent lands and assess potential negative impacts on those features and their ecological function(s).

2.2 Endangered Species Act

Ontario’s *Endangered Species Act, 2007* (ESA) provides regulatory protection to END and THR species, prohibiting harassment, harm and/or killing of individuals and destruction of their habitats. Habitat is broadly characterized within the ESA as the area prescribed by a regulation as the habitat of the species or an area on which the species depends, directly or indirectly, to carry on its life processes including reproduction, rearing of young, hibernation, migration or feeding.



The various schedules of the ESA identify Species at Risk (SAR) in Ontario. These include species listed as Extirpated, END, THR and Special Concern (SC). Only species listed as END and THR receive protection from harm and destruction to habitat on which they depend.

Species listed under Ontario Regulation 230/08 of the ESA are addressed in this report.

2.3 Township of Severn

In accordance with the Township of Severn Official Plan (OP; Schedule A – South Land Use), the proposed development is contained within a designated “settlement area”, and zoned further as a “settlement living area”. A small portion on the northern boundary of the property is designated as an “Environmental Protection Area” (Schedule A6) as part of a drainage feature mapped in the area.

Section C1.4.2 states that “Development and site alterations are prohibited on Environmental Protection Area lands (except as otherwise permitted by this Plan) unless it can be demonstrated in an Environmental Impact Study (EIS) satisfactory to the Township in consultation with appropriate agencies that there will be no negative impacts on the natural features or their ecological functions and therefore that the biodiversity of the Natural Heritage System is maintained”.

Section C1.4.4 states that “Lands designated Environmental Protection within Settlement Areas as shown on Schedule A, are water courses of varying degrees of importance and may include wetlands. Some of the watercourses have limited ecological importance and function only as seasonal drainage courses. To determine the importance and function of the watercourse, an EIS is required prior to development. Notwithstanding Section C1.4.2, watercourses may be removed, altered or relocated without an Official Plan Amendment subject to favourable results of the EIS and provided that a Storm Water Management Plan (SWMP) is prepared. The EIS and SWMP shall demonstrate, to the satisfaction of the Township, with input from appropriate agencies, that removal, alteration or relocation of the watercourse and the proposed development, will not create negative drainage impacts on the surrounding area, and, further, the proposed development must take place subject to an approval process under the *Planning Act*”.

Section C1.6 states that “Development and site alteration shall not be permitted on adjacent lands to the natural features and ecological functions, unless the adjacent lands have been evaluated by an EIS completed to the satisfaction of the Township in consultation with appropriate agencies in accordance with Section C1.7 of this Plan and it has demonstrated that there will be no negative impacts to the natural features and ecological functions and hence the biodiversity of the Natural Heritage System.



Adjacent lands are the lands adjacent to natural features which are likely to contain ecological functions necessary to sustain the feature and within which potential impacts of a development proposal must be considered. For the purposes of this Official Plan, adjacent lands are defined as all lands within:

- 120 metres from the boundary of provincially significant wetlands (PSW);
- 120 metres from the boundary of significant habitat of endangered species and threatened species;
- 50 metres from the boundary of other wetlands that have been evaluated by the Ministry of Natural Resources;
- 50 metres from the boundary of an area of natural and scientific interest (ANSI);
- 50 metres from the boundary of a significant woodland;
- 50 metres from the boundary of a significant valley land;
- 50 metres from the boundary of significant fish habitat area; and,
- 50 metres from the boundary of significant wildlife habitat.

Section 54 of the Township of Severn Official Plan states that no development and site alteration shall be permitted on these adjacent lands unless an EIS and/or a geotechnical study which includes the adjacent lands is completed and approved by the Township in consultation with appropriate agencies”.

3.0 STUDY APPROACH

The following activities were completed in accordance with the Terms of Reference established for this study by the SSEA (Appendix A).

In keeping with these Terms of Reference, *curriculum vitae* of staff that collected data are presented in Appendix B.

3.1 Study Area

The vegetation, wildlife and aquatic habitat studies described below were applied to the overall property. Characteristics of natural heritage features and functions of adjacent lands were assessed through interpretation of aerial images and inferred from visual inspection of features at the boundaries of the property and adjacent public roadways. Considerations of adjacent natural heritage features and functions included lands within approximately 5km of the property.

3.2 Background Data

Background information review for this EIS included data from:



- Aerial images (Google Earth, Simcoe County Interactive Maps);
- The Ministry of Natural Resources & Forestry (MNRF) Natural Heritage Information Centre (NHIC) Make-A-Map: Natural Heritage Areas application [website];
- MNRF's NHIC Data application [website];
- A MNRF SAR Information Request submitted on June 20, 2016 with MNRF reply on July 18, 2016 (Appendix C)
- Atlas of the Breeding Birds of Ontario (OBBA) [website];
- Simcoe County Official Plan (2016) [website] and Schedules; and,
- Severn Township Official Plan (2010) [website] and Schedules.

3.3 Vegetation Community Mapping and Surveys

The methods of the Ecological Land Classification for Southern Ontario (Lee *et al.*, 1998 [ELC]) were used to classify vegetation community types on the property. Vegetation classification of adjacent lands was inferred from on-site data in conjunction with air photo interpretation.

Vascular plant surveys were completed as reconnaissance searches to compile a list of species by ELC community. Special attention was given to SAR that could potentially be on-site, such as American Ginseng (*Panax quinquefolius*) (END), Butternut (*Juglans cinerea*) (END) and Broad Beech Fern (*Phegopteris hexagonoptera*) (SC). Targeted vegetation and ELC surveys for the study were completed on April 21, Aug 24 & Sept 20, 2016 (J. Broadfoot & B. Peloso). Additional vegetation observations were made during other visits to the property (M. Francis).

3.4 Wildlife Surveys

3.4.1 Mammals

Lists of mammals potentially utilizing the property and adjacent lands were compiled from direct observations and interpretations of sign (*i.e.*, tracks, scats, evidence of feeding) made during all field surveys (J. Broadfoot, L. Moran, B. Peloso, M. Francis).

3.4.2 Birds

Two dawn breeding bird surveys were completed in 2016; on June 9 (J. Broadfoot) and June 22 (L. Moran), using point count protocol based on the Ontario Breeding Bird Atlas Guide for Participants (OBBA 2001). Eleven point count stations (Figure 2) were established to cover all habitat types on the property and all birds seen or heard were recorded at each station during a 5- minute period. Species observed while on-route to the next station and species detected during other surveys were recorded and included within our results. Breeding evidence was assessed based on the criteria of the OBBA



(2001). Though there was no potential habitat for Eastern Whip-poor-will or Common Nighthawk on site and the MNRF did not identify these SAR as concern with respect to the subject lands (Appendix C), an evening survey was conducted on June 22 (J. Broadfoot) to assess use of the property and adjacent lands by these nocturnal bird species. This survey was conducted under near full moon conditions. A control site was surveyed on the same evening (J. Broadfoot) at a nearby location.

3.4.3 Amphibians

A sampling station was established in proximity to an area of vernal pooling located on, and adjacent to the southcentral and eastern sections of the property as shown on Figure 2. Azimuth completed three evening calling amphibian surveys in 2016 on the following dates: April 30 (J. Broadfoot), May 19 (K. Zgurzynski) and June 22 (J. Broadfoot) according to the Marsh Monitoring Program (Bird Studies Canada 2008) protocol to assess relative abundance of calling amphibians utilizing the vernal pool habitat of the property and adjacent lands.

3.5 Species at Risk

A SAR Information Request was submitted on June 20, 2016, and an MNRF reply was received on July 18, 2016 (Appendix C). A comprehensive, habitat based SAR assessment was completed based on the list of SAR of concern in the area as noted by MNRF, and SAR list for Simcoe County.

3.6 Aquatic Habitat Assessment

Multi-season and multi-year site visits were completed to identify drainage features and areas of surface water accumulation/vernal pooling on and adjacent to the property (J. Broadfoot). Data regarding drainage feature characteristics (channel dimensions, substrate, continuity, potential barriers, *etc.*) were collected. Sara Murphy (Senior Aquatic Ecologist) evaluated drainage feature characteristics from a fish habitat perspective in accordance with guidance documents of Fisheries and Oceans Canada (DFO).

4.0 EXISTING CONDITIONS

4.1 Land Use

4.1.1 On-site Land Use

The property is currently forested, with no dwellings or other infrastructure in place. The property is traversed by numerous access lanes, some of which appear to be utilized by local residents as hiking trails. A cleared path – evidence of a former utility corridor – traverses the central section of the property (Figure 2).



4.1.2 Adjacent Land Use

As seen on Figure 2, land to the north is developed as a residential subdivision. Lands to the east are primarily treed but contain single-family dwellings. Lands to the south contain a mix of tree cover and open land as well as an active Hydro line corridor. Lands to the west contain single-family dwellings.

4.2 Topography and Soils

The property is relatively flat and contains no valley or slope features. Topography decline is to the northeast and north. According to SoilEng (2017) the elevation relief across the property is approximately 11m.

Data collected by SoilEng indicates that the “surface soil consists of predominantly sandy silt to silt matrix, commonly rich in clasts and often high in total matrix carbonate content”.

4.3 Terrestrial Resources

4.3.1 Vegetation

Table 1 describes the vegetation communities identified on the property as shown on Figure 2. Table 2 provides a list of vascular plants by ELC community.

None of the vegetation communities are types considered rare provincially (no sand barrens, alvars, prairies, *etc.*).

The woodlands of the property and adjacent lands have not been identified by the municipality as Significant Woodland, and application of provincial criteria do not identify the woodlands as significant (Table 3).

Four Butternut trees (END) were observed on the property and several Butternuts were observed in two locations adjacent to the property, as shown on Figure 2. Butternut #2 (22cm DBH) appeared dead when observed on November 29, 2017. Butternut #1 (60cm DBH) is relatively heavily infected with canker fungus, and Butternut #3 (36cm DBH) is in very poor condition having extensive heart rot and crown dieback. Butternut #4 (40cm DBH) is infected with canker fungus but displays no outward signs of declining health. Two of the four Butternuts observed on adjacent lands south of the property are dead (one fallen). The other two are infected but living. The Butternuts on adjacent lands near the southwest corner of the property are living but could not be assessed further from the limits of the property. Aside from Butternut, none of the remaining vascular plant



species documented are SAR or species considered provincially rare (*i.e.*, SRANK not S1-S3 or SH).

4.3.2 Wetlands and Vernal Pools

The MNRF has mapped portions of the property as unevaluated wetland (Appendix D). Azimuth's field investigations revealed that the property does contain low-lying areas subject to vernal pooling (Figure 2, Photo 1). These vernal pools and associated drainage feature do contain some wetland indicator species; however, the associated communities generally display floristic characteristics of upland deciduous forests. In keeping with vegetation classification standards of Lee *et al.* (1998), Azimuth has classified portions of this area of vernal pooling, where pooling is estimated to cover >20% of the ground surface, as mineral deciduous swamp (SWD). The area of vernal pool coverage is expected to vary slightly among years in response to annual variations in snowfall and spring rainfall amounts. Field data from June 9, 2016 indicate that most vernal pools were completely dry. The remaining pools containing much reduced pool volume – wetted area and depth. All pools were dry when observed on August 24, 2016 and November 29, 2017.

4.3.3 Wildlife

4.3.3.1 Mammals

Mammals observed were as follows: Grey Squirrel (*Sciurus carolinensis*, S5), Red Squirrel (*Tamiasciurus hudsonicus*, S5), Porcupine (*Erethizon dorsatum*, S5), Raccoon (*Procyon lotor*, S5), and Eastern Cottontail (*Sylvilagus floridanus*, S5). None of these species are SAR or species considered provincially rare. All are relatively common locally.

4.3.3.2 Birds

The results of breeding bird surveys indicated that 31 species of birds were utilizing habitat of the property and adjacent lands (Table 4). Of these, six species are forest breeding birds considered area-sensitive by the MNRF: Pileated Woodpecker; Hairy Woodpecker; Ovenbird; Pine Warbler; White-breasted Nuthatch; and Red-breasted Nuthatch.

Eastern Meadowlark (THR) was detected calling from grassland habitat of farmland on adjacent lands to the south. The habitat of the property is not suitable for this species as grassland habitat is not present. Eastern Wood-pewee (SC) was detected within forest habitat of the property and adjacent lands.

Nocturnal surveys for SAR birds yielded no observations. Observation from a control site in Simcoe County on the same evening confirmed that conditions during the survey



were amenable to calling by Whip-poor-will indicating that the null result from the property and adjacent lands was not due to poor survey timing.

4.3.3.3 Amphibians

Amphibian activity was documented within vernal pool habitat of the property and adjacent lands to the south during 2 of the 3 evening calling amphibian surveys (Table 5). Results of calling amphibian surveys revealed call level codes of 3 (full chorus) for a single species only - Spring Peeper. None of the species of amphibians recorded on or adjacent to the property is a SAR, or species considered provincially rare.

4.3.4 Species at Risk

Our assessment (Table 6) confirmed the presence of Butternut (END) and Eastern Wood-pewee (SC) on and adjacent to the property, and indicated that the property and adjacent lands have the potential to function as maternity roost habitat for END bats. Eastern Meadowlark (THR) was identified within grassland habitat on adjacent lands to the south but not on the property. Eastern Meadowlark is not as an issue related to the proposed development, as the property does not contain suitable habitat for this species..

4.4 Aquatic Habitat Assessment

4.4.1 Mapped Drainage Feature (Outlet 1)

Background mapping depicts a drainage feature originating in the north western section of the property and flowing off site in a northerly direction beneath Millwood Road, and ultimately through residential areas of Marchmont toward the North River, a straight line distance of approximately 600m. The results of field studies revealed that the small “stub” of the feature mapped on the property occurs in a seepage area (discussed below) and that there is no defined channel in this portion of the property. Drainage is confined to a ditch along the rear of residential lots that front onto Millwood Road as shown on Figure 2 (Photo 2). The seepage noted on the property is located adjacent to the ditch (Figure 2, Photo 3). The seep drains to the ditch through stone that borders the property boundary (Photo 4). The ditch bends northward directing flow between existing residential lots to the south ditch of Millwood Road. Flow is conveyed eastward within the south ditch of Millwood Road before being discharged into a grate opposite the walkway into the Marchmont Community Park (Photo 5). From here there is no above ground feature, and flow is piped approximately 200m beneath the park before daylighting within the park just south of Avery Lane (Photo 6). From this location drainage is conveyed within a grassed ditch along the east side of Gillett Drive (Photo 7) where it continues as ditch flow north of Marchmont Road.



Volume of flow associated with this ditch feature is low for much of its length. Ditches are vegetated throughout and/or modified as landscape features of residential lots (Photos 2, 5 - 7). Flow is restricted to isolated wetted sections through most of the year. The relatively long piped section and low volume of flow effectively disconnect drainage from the North River. Given the disturbed nature of the feature, and conveyance function as ditch relief from a small isolated area of the property that remains disconnected from a watercourse and fish habitat downstream, the feature in the vicinity of the property is not considered fish habitat under the Federal *Fisheries Act*.

4.4.2 Unmapped Drainage Feature (Outlet 2)

Field studies indicated that there is an unmapped drainage feature that collects flow from the area of vernal pool formation in the south eastern section of the property and adjacent lands to the south as shown on Figure 2. Flows are conveyed easterly to a discharge location in the north eastern section of the property as shown on Figure 2 (Photo 8). Flow in the drainage feature is considered ephemeral in response to snow melt and general moist conditions of spring. The alignment of the feature shown on Figure 2 was established on May 8, 2017 as a series of GPS points aligned along defined sections of the drainage feature. Lands up-gradient of the drainage feature contain vernal pools that supply water to the feature.

Observations in 2016 indicate that the drainage feature was dry throughout its length on June 9 and remained so throughout that summer. The channel was dry on November 29, 2017 and showed no sign of periodic flow during the autumn (*i.e.*, channel bottom fully covered by fallen leaves – undisturbed by flow). Channel characteristics were recorded on April 18, 2016 at the downstream end of the drainage feature where it exits the property as follows: wetted width 120cm, wetted depth 10cm; flow continuous and clear, substrate – detritus/downed woody debris > silt > sand > gravel. No fish were observed in the drainage feature or associated vernal pools.

The North River is located over 450m to the east of the Outlet 2 where it exits the property. Characteristics of the drainage feature as it flows through adjacent lands toward the North River are unknown, and hence it is uncertain if there is an overland/barrier free connection to the river. Based on the highly ephemeral nature of the feature and the distance to the North River, it is unlikely that the reach of Outlet 2 located on the property, or on nearby adjacent lands, functions as direct fish habitat. However, given the volume of ephemeral flow conveyed off site by Outlet 2, we cautiously assume that the unmapped drainage feature does not host fish directly, but may contribute flows to downstream areas where fish occur. As such, the feature is conservatively identified as indirect fish habitat given the hydraulic connection to the North River as overland flow, and is assumed to be afforded protection in accordance with the Federal *Fisheries Act*



5.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

Azimuth's field studies, in combination with a review of background information and application of natural heritage evaluation criteria indicate that the following environmental features and/or functions are associated with the property and adjacent lands:

5.1 Habitat for Threatened and Endangered Species

- Butternut, 4 on property, several on adjacent lands (Figure 2); and,
- END bat species, potentially associated with mature woodlands of the property and adjacent lands (*i.e.*, FOD 6-5, SWD and FOC1, Figure 2).

5.2 Wetlands and Drainage Features

The area of vernal pool formation on the property represents wetland habitat according to the criteria of the ELC. Given that the MNRF has identified areas of unevaluated wetlands on the property and adjacent lands, the area in this EIS mapped as wetland (*i.e.*, SWD on Figure 2) depicts the limits of MNRF Unevaluated Wetland based on field observations.

The mapped drainage feature (Outlet 1) is confined to a ditch aligned along a portion of the northern property boundary before joining roadside drainage and becoming piped for a considerable distance through adjacent lands to the north. The results of field studies revealed an unmapped drainage feature (Outlet 2) draining the area of vernal pool formation/eastern section of the property (Figure 2). The results of our assessments indicate that: Outlet 1 does not have characteristics of fish habitat – direct or indirect. Outlet 2 conveys seasonal drainage that may be considered indirect fish habitat under the assumptions that ephemeral flow it conveys off site may reach areas where fish occur downstream at the North River.

5.3 Significant Wildlife Habitat

As per Table 7, the woodlands of the property and adjacent lands potentially function as Significant Wildlife Habitat with respect to the following:

- Bat Maternity Colonies (also an END species issue);
- Woodland Area-sensitive Bird Breeding Habitat; and,
- Special Concern and Rare Wildlife Species: Eastern Wood-pewee (woodland breeding bird).



6.0 PROPOSED DEVELOPMENT

A draft plan of subdivision has been prepared for the property by MHBC Planning (Appendix E). The plan includes 19 residential lots aligned along a centrally located street accessed from Townline Road to the west, terminating at a cul-de-sac located in the eastern third of the property. The plan includes a right of way aligned between Lots 16 and 17 in anticipation of future development of adjacent lands to the south. Most lots are regularly shaped (rectangular), the exception being Lot 12 – the eastern boundary of which was configured to avoid habitat of the area of vernal pool formation/wetland (vegetation community SWD, Figure 3).

The development plan establishes a 2.57ha block of Open Space land on the eastern portion of the property. The limits of this Open Space Block were configured to protect the vernal pool/wetland habitat of the property and its associated drainage feature – Outlet 2 (Figure 3). The eastern section of the property also contains a 1.08ha Stormwater Management Block (SWM) block as shown on Figure 3. As per the grading plan (CCT GS-1), the footprint of the SWM pond takes up roughly 50% of the area of Block 1 providing opportunity for tree preservation within the SWM block (discussed below).

As presented in Section 8.4 of the Functional Servicing Report (FSR), (CCT 2017) “a multi-stage approach to providing water quality and quantity control is proposed including the use of roof leaders directed to pervious front and rear lot areas (at-source control) combined with enhanced flat-bottom grass swales (conveyance control) and a wet SWM facility (end of pipe control)”. Based on the FSR design, grassed swales will convey flows to Outlet 1, and to the SWM facility as shown on the grading plan (Dwg GS-1, CCT). Discharge from the SWM facility will occur to the unmapped drainage feature identified in the eastern portion of the property at Outlet 2 (Figure 3).

As discussed in the FSR, all of the residential lots are to be municipally serviced with water but serviced with individual septic systems. SoilEng (2017) assessed hydrogeological considerations related to the proposed development, including water and nutrient balance. According to SoilEng (2017) “based on the mass balance calculation for the 19 proposed lots, the nitrate concentration assessed for the downgradient property boundary is 13.07 mg/L based on use of conventional sewage system loading and it is 8.07 mg/L for use of tertiary treatment sewage system loading from individual septic systems at each proposed lot”. Therefore, tertiary systems are required to comply with the Ontario Drinking Water Standard of 10 mg/L.

As per the grading plan (Dwg GS-1, CCT) there are opportunities for tree preservation within Blocks 1 and 2 as discussed above, as well as along the rear of lots as follows –



5m tree buffer at rear of Lots 1 – 11, and 10m buffer at rear of Lots 13 – 19. Opportunities exist for tree preservation along the side yards of Lots 1, 2, 6 – 11, 13 – 19. By our calculations, tree preservation opportunities on residential lots amounts to approximately 1.3ha.

7.0 IMPACT ASSESSMENT

7.1 Habitat of Endangered and Threatened Species

7.1.1 Butternut

There are four Butternut trees located on the property and several were observed in two separate located on adjacent lands to the south (Figure 3). Butternuts 1, 2 and 3 occur in areas where they would be impacted by the proposed development. All three of these trees are in poor condition, each showing signs infection by butternut canker disease and hence are expected to score as Category 1/non-retainable trees under a Butternut Health Assessment (BHA). Butternut #4 shows signs of infection but is in relatively good condition and occurs within Open Space Block 2 where it would be protected (located approximately 50m from proposed development – SWM outlet). The Butternut trees located on adjacent lands are situated close enough to areas of proposed development (*i.e.*, within approximately 25-50m) where MNRF guidelines indicate establishing health/condition is required to establish if any authorizations under Ontario’s ESA would be needed. Completing a BHA for adjacent land trees requires landowner permission. We recommend that a BHA is completed for Butternuts 1-4 on the property and that landowner permission is sought to permit assessment of adjacent land trees. The results would establish requirements for protection/compensation under the regulations of the ESA in advance of development approved for the site.

7.1.2 Bats

Potential bat habitat (mature trees containing cavities, *etc.*) was noted in mature woodland cover of the eastern and western sections of the property (both areas of woodland present in 1954, rest of property open land – see 1954 air photo in Appendix D). Mature woodland cover on the western end of the site is composed on conifer forest (FOC1), (Figure 2). In contrast, mature woodland cover on the eastern end of the property is composed of deciduous forest/swamp (FOD6-5/SWD), (Figure 2). According to the MNRF (MNRF 2015b), preferred habitats for establishment of maternity roosts have warm-hot microclimates to optimize gestation and postnatal growth of offspring. Therefore, when selecting woodland habitats bats tend to avoid closed canopied coniferous woodlands, which typically present cooler microclimates – preferring deciduous and mixed woodlands. The proposed development retains all of vegetation communities FOD6-5 and SWD that contain an abundance of large trees



containing cavities and other structural elements of value as potential bat maternity roost habitat (large Red Oak in particular). Therefore, the proposed development avoids all the woodland habitat of the property of potential value to bats as maternity roost habitat.

7.2 Wetlands and Drainage Features

7.2.1 Mapped Drainage Feature (Outlet 1)

The mapped drainage feature is confined to a ditch bordering Lots 2-5 (Figure 3). Drainage is derived from the rear of existing residential lots associated with Millwood Road and the northeastern section of the property and adjacent lands (Catchments 101 and Ext. 1 [Predevelopment Drainage Plan - CCT DP-1, External Drainage Plan – CCT EX-1]) *via* Outlet 1.

As per the FSR, the total drainage area directed to Outlet 1 is proposed to be reduced from 5.3ha to 4.2ha to eliminate the need for quantity controls at Outlet 1. As per the Preliminary Grading and Servicing Plan (CCT GS-1), surface drainage from Catchment 201 is directed to Outlet 1 *via* a system of swales. Outlet 1 is connected to the existing ditch at the rear of Lots 5 and 6 in the approximate location of an existing low point where small volumes of overland flow and seepage were observed (Figure 3).

An Enhanced Grass Swale is proposed between Lots 2 and 3 (CCT GS-1) within a 6.0m wide drainage easement to allow for future maintenance. The enhancement of the swale relates to incorporation of a 0.5m wide flat-bottom to reduce the velocity of runoff and promote filtering and settling of sediment, as quality control.

The proposed development maintains flows to the ditch (Outlet 1) as per existing conditions and no physical alteration of the feature is proposed. Therefore, the proposed development can be achieved with no negative direct or indirect impact to the ditch or flows that are ultimately conveyed to the North River.

Outlet 1 is not considered fish habitat (direct or indirect), and hence no considerations with respect to impact to fish habitat are provided.

7.2.2 Wetland and Unmapped Drainage Feature (Outlet 2)

The proposed development protects the area of vernal pool formation/unevaluated wetland habitat on the property. Areas of minor encroachment into wetland may occur along the southern limits of Lot 12 (limits of vernal pool area expected to vary among years) and the SWM Pond Outlet as shown on Figure 3. The results of our field studies and assessments indicated that this unevaluated wetland provides no wetland specific significant wildlife habitat functions (no significant levels of amphibian breeding activity,



waterfowl nesting, turtle habitat, *etc.*) and hence the potential minor encroachment into the wetland results in no impact to significant wetland habitat functions.

The proposed development maintains the flow path of surface water from external drainage area EX-1 onto the property and hence off-site contributions of water to the associated drainage feature and wetland (Outlet 1/Outlet 2) are not impacted. Further, by protecting large areas of habitat on the eastern end of the property as Block 2 (Open Space), snow melt and spring rainfall that are important contributors to vernal pool formation, will continue to provide volumes of water needed to maintain wetland hydrology as derived from the site.

The SWM design directs surface water eastward toward the wetland/drainage feature as per existing conditions, maintaining existing surface water contributions to the wetland/drainage feature. As per Section 8.4.2 of the FSR, “the proposed water quality SWM plan for the site consisting of an enhanced grass swale (Outlet 1), a wet SWM facility (Outlet 2), and at source controls including directing roof downspouts to pervious landscaped areas throughout the site (Outlets 1 and 2) will exceed the Ministry of Environment and Climate Change (MOECC) requirements for enhanced level water quality control” (CCT 2017). Work by SoilEng (2017) confirms that use of tertiary treatment sewage systems will render nitrate concentration for the down gradient property boundary below design standards and given that the vernal pool area/wetland and associated drainage feature are located near the downgradient property boundary, nutrient impacts to these features are not anticipated.

The proposed development and approach to servicing and surface water management have been designed to maintain the hydrology and water quality of the area of vernal pool formation/wetland and the quantity, quality and discharge location of ephemeral flows conveyed toward the North River. The proposed development requires no alterations to the existing outlet/drainage feature and the SWM facility can be constructed under dry summer conditions with no requirement for in water work. Therefore, the proposed development does not have potential to impact the indirect fish habitat function cautiously attributed to the feature through our assessment.

Development of a SWM facility can impose impacts to fish and fish habitat during construction, while site clearing and grading works are underway most commonly associated with sediment mobilization to drainage features. For this reason, DFO includes SWM development as a project type that requires review to determine if the project has the potential to impact fish habitat. In accordance with the DFO Self Assessment screening tool, development of SWM ponds may require review by DFO should any work occur below the high water mark of a nearby waterbody. For this



development, the pond is a land based facility that will not occur below the high water mark of the drainage feature, therefore the pond itself does not require fisheries permitting.

The functionality of the pond and drainage to the feature (Outlet 2) must comply with MOECC criteria for the protection of water quality and quantity. As per the FSR (CCT, 2017), this criteria can be met, in which case there is no expectation that the pond will adversely impact the drainage feature.

CCT's Grading Plan identifies an emergency overflow swale and piped outlet from the pond to the creek. Additional details that identify potential impacts to the riparian zone of the drainage feature and banks are at this stage of the project unknown. Depending on the SWM design for discharge to the drainage feature, there may be a requirement for inwater work, or mitigation measures to ensure protection of the feature during inwater, or near water work.

Based on the above, the build and operation of the pond will not require submission and review by DFO, as long as the pond remains beyond the high water line of the creek, operation adheres to MOECC criteria, and standard best management practices (BMPs) are employed for working around water, (such as sediment and erosion controls to mitigate off site impacts). It is recommended that at the detailed design stage a review of the outlet connection between the SWM facility and creek be completed by a qualified fisheries biologist, to evaluate if the activities required to construct an overflow weir and piped discharge from the pond to the creek has the potential to impact fish habitat under the *Fisheries Act*, in accordance with DFO's self assessment review criteria.

7.3 Significant Wildlife Habitat

7.3.1 Bat Maternity Colonies

Considered above in Section 7.1.2 in the context of END bats.

7.3.2 Woodland Bird Breeding Habitat

The results of our field work and SWH assessment indicated that woodlands of the property, as part of a continuous area of woodland cover of approximately 32ha – function as breeding habitat for area-sensitive forest breeding birds as well as for Eastern Wood-pewee (woodland breeding bird not considered area-sensitive). The proposed development maintains 2.57ha of existing woodland cover in Block 2 (Open Space) and opportunities exist to retain existing woodland cover in upwards of half of the area of Block 1 (an additional 0.5ha) for a total of approximately 3ha of woodland retained on-site and connected to continuous woodland cover extending off site. This leaves an extensive block of continuous woodland cover of approximately 30ha in the area,



portions of which contain areas of 100m interior of value to some area-sensitive woodland breeding birds. Therefore, the proposed development maintains woodland cover on-site that is connected to extensive amounts of continuous forest cover in the area and thus the property and adjacent lands will continue to function as breeding habitat for area-sensitive woodland breeding birds and woodland breeding birds in general – including Eastern Wood-pewee.

8.0 RECOMMENDATIONS

- Complete a BHA of the four Butternuts located on the property as well as the Butternuts observed on adjacent lands (with landowner permission[s]) and take actions to permit the approved development as per the findings of the BHA and requirements of Ontario's ESA;
- Contact the MNR Midhurst District to discuss our conclusions with respect to protection of potential bat maternity roosting habitat on the eastern end of the property and establish if END bats have been adequately addressed relative to the requirements of the ESA and if not to define what additional work and/or permitting might be required based on current provincial direction with respect to bats and bat habitat;
- At the detailed design stage of the SWM facility, complete a DFO self assessment to review whether inwater or near water activities are required to convey flow from the SWM pond to the drainage feature, and determine if DFO review is required;
- Schedule early development of the SWM pond to allow the pond to provide functional SWM controls during construction;
- Post approval, and at the time of survey work to lay out the limits of approved lots, streets, the SWM pond and outlet, *etc.* – complete a tree preservation plan to identify groups of trees for retention (*i.e.*, those in rear and side yard area as per the grading plan [CCT GS-1]), individual trees of high quality (*i.e.*, large, good health, free of defects [lean, twist, *etc.*]) that could potentially be retained as landscape trees on approved lots, and to establish tree protection zones within Blocks 1 and 2;
- Cut trees outside of the bird nesting and bat maternity roost seasons to avoid contravention of the *Migratory Birds Convention Act*, 1994 (federal), *Fish and Wildlife Conservation Act*, 1997 (provincial) and Ontario's ESA. In woodland setting the SSEA generally specifies that trees are not cut between February 1 and August 31 to avoid impacts to bird nests (early nesting woodland raptors included). The MNR considers the bat maternity roost season to extend from May 1 through October 15. Therefore, trees should be cut between October 16 and January 31 to avoid potential impacts to nesting birds and roosting bats;



- Complete earth works/SWM pond construction works in proximity to Blocks 1 and 2 during summer dry conditions to reduce the potential for erosion and sedimentation impacts to the wetland/area of vernal pool formation and associated drainage feature (Outlet 2);
- Ensure that construction vehicle re-fueling/maintenance is completed at least 30m from the limits of Blocks 1 and 2 to reduce the potential for accidental spillage of fuel or other products from reaching the wetland/area of vernal pool formation and associated drainage feature (Outlet 2);
- Install erosion and sediment control as per the recommendations of project engineers and as approved by the municipality; and,
- Construct septic systems as per the recommendations of SoilEng (2017);

9.0 POLICY AND REGULATION CONFORMITY

9.1 Provincial Policy Statement

The proposed development results in no negative direct or indirect impacts to significant natural heritage features or functions (*i.e.*, wetlands, woodlands, valleylands, ANSIs, wildlife habitat functions), (Policy 2.1.4, 2.1.5, 2.1.6 & 2.1.8), including potential animal movement corridors/habitat linkages (Policy 2.1.2) and can be achieved with no impact to habitat of END and THR species – **Conforms**

Our assessment indicates that the proposed development is unlikely to result in serious harm to fish under the Federal *Fisheries Act* and hence no federal (*i.e.*, DFO) review appears necessary (Policy 2.1.6). – **Appears to Conform** (to be confirmed through completion of a DFO self assessment at the detailed stage of design of the SWM facility).

9.2 Ontario's *Endangered Species Act, 2007*

Actions can be taken with respect to Butternut (END) trees found on and adjacent to the property that would allow development to proceed – *i.e.*, completion of BHA and follow-up based on the results to secure any authorizations required following the requirements of Section 23.7 of Ontario Regulation 242/08.

The proposed development avoids habitat on the property considered to have the highest potential for use by END bat species as maternity roost habitat. Consultation with the MNRF (Midhurst District) is required to establish if the agency agrees that the avoidance strategy effectively protects habitat of END bats or to establish what additional assessments or permitting the province deems necessary to allow development approved for the lands to proceed.



9.3 Severn Sound Official Plan

The Environmental Protection Area identified on and adjacent to the property relates to the mapped alignment of a drainage feature at Outlet 1. The importance and function of this feature, as well as an unmapped drainage feature on the east side of the property at Outlet 2 (Figure 2) was assessed as part of this EIS, consistent with Section C1.4.4 of the Official Plan. The results of the EIS and FSR indicate that the proposed development and approach to storm water management will result in no alterations to the alignments of flows within either feature and that there will be no negative drainage impacts on the surrounding area, consistent with Section C1.4.2 of the Official Plan - **Conforms**.

10.0 CONCLUSIONS

The proposed development recognizes and protects areas of unevaluated wetland and an unmapped drainage feature located on the eastern end of the property. The hydrology of these wetlands/aquatic habitat features, along with a mapped drainage feature depicted in Official Plan Schedules as occurring within an Environmental Protection Area, is maintained post-development. Opportunities exist within the plan to protect over one third of existing tree cover as woodland/wetland cover on the east end of the property connected with an extensive area of woodland cover that extends off site and as rear and side lot buffers. Additional work is required to assess the health of Butternut (END) trees observed on and adjacent to the property to establish if any ESA related permitting is required to remove three Butternut from the property and for potential harm to adjacent land trees. The proposed development protects woodland cover on the property that has the greatest potential to function as maternity roost habitat for END bat species. The MNRF should be consulted to establish if this avoidance strategy is deemed consistent with the requirements of the ESA or if additional work and/or permitting is required to allow development approved for the lands to proceed.

A fisheries self assessment review of the SWM outlet feature is recommended in detail design, to confirm if DFO review is required. Review should include any proposal to alter the near water zone of the creek (*i.e.*, riparian), and any in-water work such as culverts, overflow connections, swales or headwall structure connections to the drainage feature (Outlet 2).



11.0 REFERENCES

Allan, B., J. Broadfoot, and G. Findlay. 2005. Midhurst District deer yard survey: Huronia Area. MNR, Unpublished Management Report, Midhurst District, Midhurst, ON.

Bird Studies Canada. 2008. Marsh monitoring program participant's handbook for surveying amphibians. Bird Studies Canada, Environment Canada, United States Environmental Protection Agency. 13pp.

CCT. 2017. 3879 Town Line Marchmont Subdivision, Township of Severn – Functional Servicing and Preliminary Stormwater Management Report. Prepared for High Level Construction Ltd. November 2017.

Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario.: First Approximation and its Application. Ontario Ministry of Natural Resource. Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02. 225pp.

MMAH. 2014. 2014 Provincial Policy Statement under the Planning Act. Ministry of Municipal Affairs and Housing. Queen's Printer for Ontario. Toronto, ON. 50pp.

MNRF. 2015a. Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E. Ontario Ministry of Natural Resources and Forestry, Regional Operations Division: Southern Region Resources Section, 300 Water Street, 4th Floor South, Peterborough, Ontario, Canada, K9J 8M5.

MNRF. 2015b. Technical Note Species at Risk (SAR) Bats. MNRF Regional Operations Division. Internal Use Only. June 2015.

MNR. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (Second Edition). Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto, ON. 248pp.

MNR. 2000a. Significant Wildlife Habitat Technical Guide. Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto, ON. 139pp + appendices.

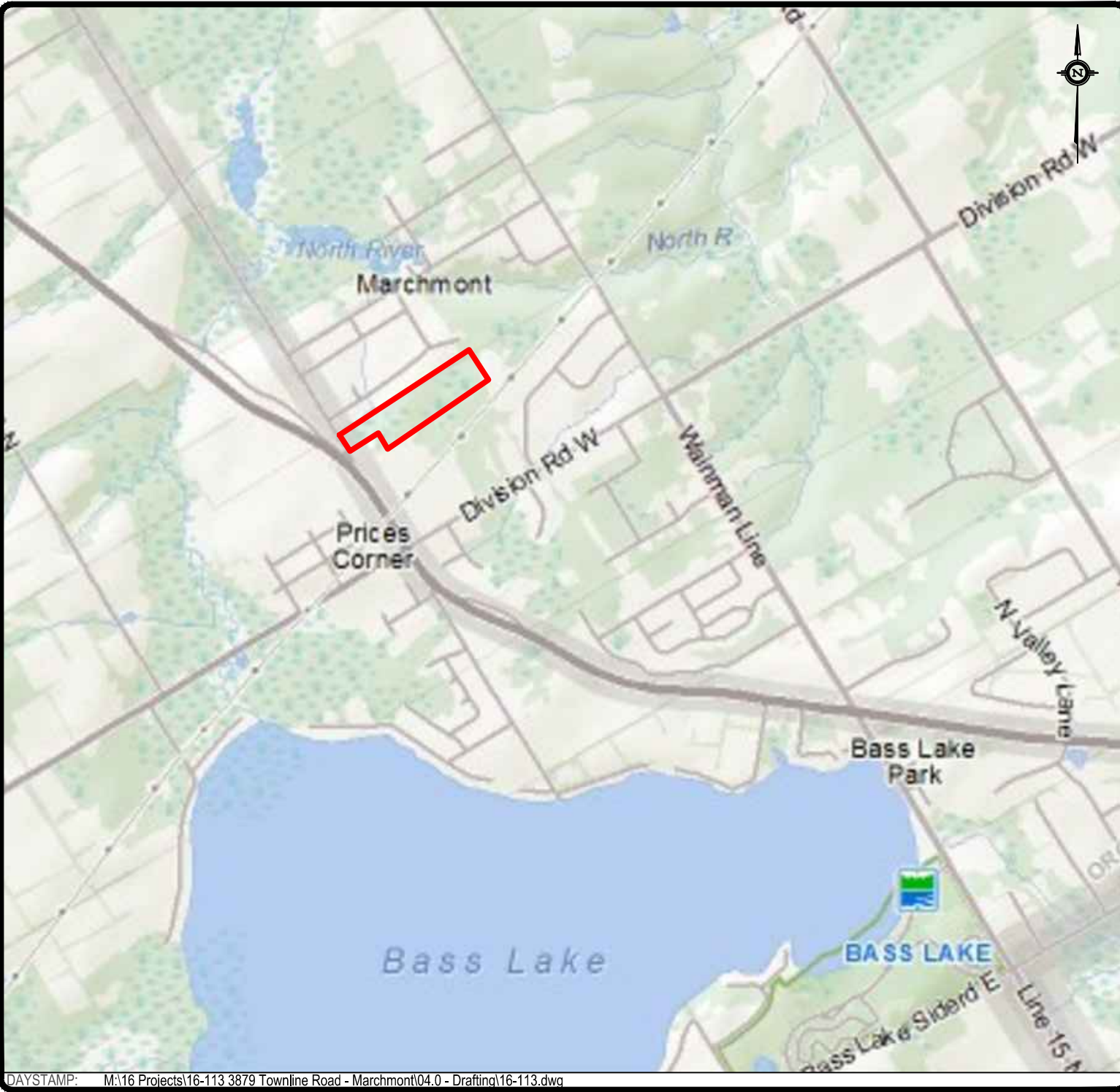
MNR. 2000b. Ontario Deer CD-ROM Version 1.00. Queen's Printer for Ontario, Toronto, ON.



OBBA. 2001. Ontario Breeding Bird Atlas guideline for participants. Federation of Ontario Naturalists, Bird Studies Canada, Ontario Field Ornithologists, Environment Canada, Ontario Ministry of Natural Resources. Guelph, ON. 45pp.

SoilEng. 2017. A Report to High Level Construction Ltd., Hydrogeological Study, Proposed Residential Subdivision 3879 Town Line. Prepared for High Level Construction. November 2017.

Plotted by: MCCARTNEY on April 21, 2016 at 9:42am
File: M:\16 Projects\16-113 3879 Townline Road - Marchmont\04.0 - Drafting\16-113.dwg Layout: Figure 1 PlotScale: 2.5



LEGEND:
— *Approx. Property Boundary*

REG MAP

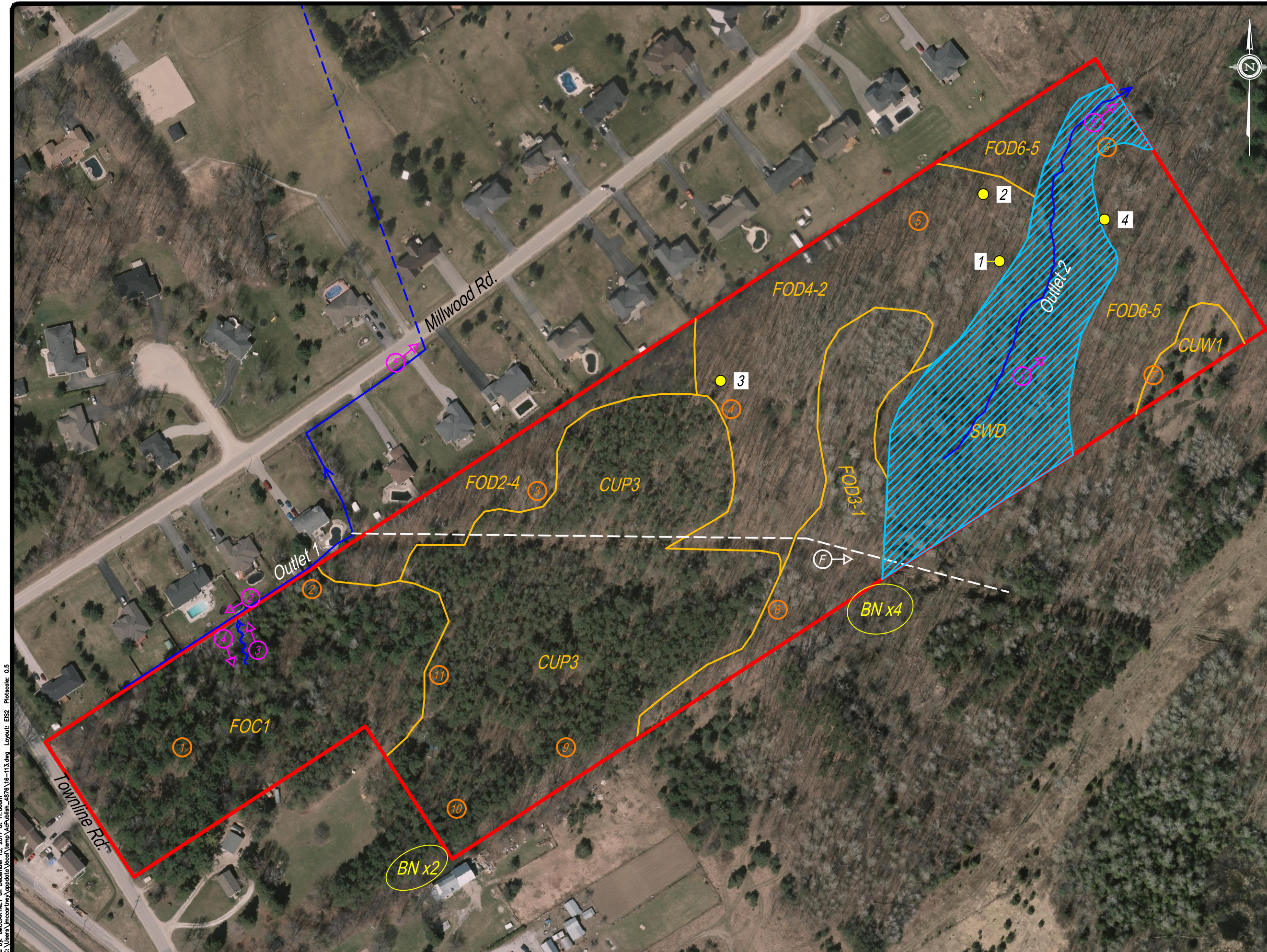
250m 0 750m
HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

3879 Townline Rd.,
Marchmont, ON

DATE ISSUED: April 2016	Figure No.
CREATED BY: JLM	1
PROJECT NO.: 16-113	
REFERENCE: MNR	



- LEGEND:**
- Approx. Property Boundary
 - Drainage Feature
 - - - Piped Section of Drainage Feature
 - ~ Seeps/Drainage
 - - - Old Utility Corridor (white)
 - Vernal Pool Area (Approx.)
 - Bird Point Count Station
 - ← Amphibian Stations and Direction (white)
 - + Photo Number and Direction
 - Butternut Locations
 - x Adjacent Land Butternut Locations (x#)
 - Vegetation Communities
 - CUW1 Mineral Cultural Woodland
 - CUP Coniferous Plantation
 - FOC1 Dry-Fresh Pine Coniferous Forest
 - FOD2-4 Dry-Fresh Oak-Hardwood Deciduous Forest
 - FOD3-1 Dry-Fresh Poplar Deciduous Forest
 - FOD4-2 Dry-Fresh White Ash Deciduous Forest
 - FOD6-5 Fresh-Moist Sugar Maple-Hardwood Deciduous Forest
 - SWD Mineral Deciduous Swamp

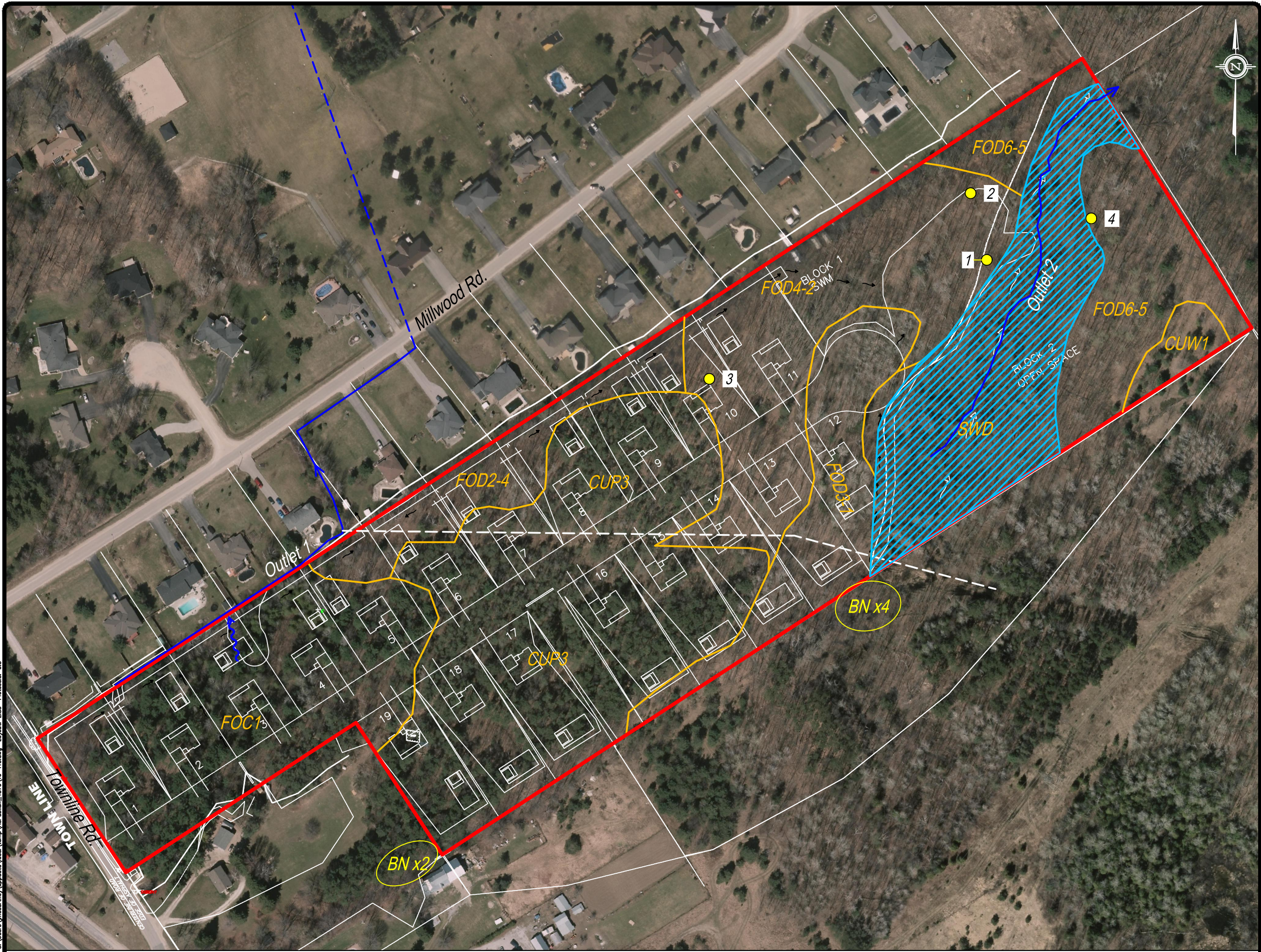


Environmental Features

3879 Townline Road,
Marchmont, ON

DATE ISSUED:	April 2016	Figure No.
CREATED BY:	JLM	2
PROJECT NO.:	16-113	
REFERENCE:	Simcoe County Maps	

Plotted by: MCCARTNEY on December 15, 2017 at 11:06am
 File: C:\Users\jmcartney\AppData\Local\Temp\Aschulian_4876\16-113.dwg Layout: EIS2 PlotScale: 0.5
 DAYSTAMP: M:\16 Projects\16-113 3879 Townline Road - Marchmont\04.0 - Drafting\16-113.dwg



- LEGEND:**
- Approx. Property Boundary
 - Drainage Feature
 - - - Piped Section of Drainage Feature
 - - - Old Utility Corridor (white)
 - Vernal Pool Area
 - Butternut Locations
 - Adjacent Land Butternut Locations (x#)
 - Vegetation Communities
 - CUW1 Mineral Cultural Woodland
 - CUP Coniferous Plantation
 - FOC1 Dry-Fresh Pine Coniferous Forest
 - FOD2-4 Dry-Fresh Oak-Hardwood Deciduous Forest
 - FOD3-1 Dry-Fresh Poplar Deciduous Forest
 - FOD4-2 Dry-Fresh White Ash Deciduous Forest
 - FOD6-5 Fresh-Moist Sugar Maple-Hardwood Deciduous Forest
 - SWD Mineral Deciduous Swamp



AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Development Plan

3879 Townline Road,
Marchmont, ON

DATE ISSUED: July 2017	Figure No.
CREATED BY: JLM	3
PROJECT NO.: 16-113	
REFERENCE: Simcoe County Maps	

Plotted by: MCCARTNEY on December 15, 2017 at 11:06am
 File: C:\Users\jmcartney\AppData\Local\Temp\Aschulian_4876\16-113.dwg Layout: EIS3 PlotScale: 0.5
 DAYSTAMP: M:\16 Projects\16-113 3879 Townline Road - Marchmont\04.0 - Drafting\16-113.dwg

Table 1 - Vegetation Community Description, 3879 Townline Road, Marchmont

Ecological Land Classification						
System	Community Class	Community Series	Ecosite	Vegetation Type	Composition	Ground Cover
Terrestrial	FO, Forest	FOC, Coniferous Forest	FOC1, Dry-Fresh Pine Coniferous Forest	FOC1, Dry-Fresh White Pine-Red Pine Coniferous Forest	Canopy dominated by White Pine, with occasional Trembling Aspen and White Ash. Sub-canopy dominated by White Ash, with occurrence of Trembling Aspen and White Cedar. Understory dominated by White Ash, with occurrence of Sugar Maple, White Cedar and Horse Chestnut. Note: FOC1a is older than FOC1b.	Dense ground cover, dominated by Poison Ivy, with abundance of tree seedlings, particularly White Ash. Occurrence of native species such as False Solomon's Seal, Carrion Flower, Ostrich Fern, Sensitive Fern, Enchanter's Nightshade. Occurrence of non-native species used in gardens, such as Hosta, English Ivy and Creeping Jenny.
Terrestrial	CU, Cultural	CUP, Plantation	CUP3, Coniferous Plantation	N/A	Canopy dominated by Scotch Pine and Red Pine, with occurrence of Red Oak and Sugar Maple. Sub-canopy sparse, dominated by White Ash, White Birch and Basswood. Understory composed by Alternate-leaf Dogwood, White Spruce, White Ash and Hawthorn.	Ground cover sparse. Occurrence of tree seedlings, Canada Mayflower, Oak Fern, Carrion Flower and Arrow-leaved Aster.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD2, Dry-Fresh Oak-Maple-Hickory Deciduous Forest	FOD2-4, Dry-Fresh Oak-Hardwood Deciduous Forest	Polewood. Canopy dominated by Red Oak, with occurrence of Sugar Maple. Sub-canopy dominated by White Ash, with abundance of Red Oak and White Birch. Understory very dense, mainly composed by Hop-hornbeam, Red Oak, and Sugar Maple; with occurrence of White Birch, Fly Honeysuckle, Thimbleberry, Red Raspberry, and Riverbank Grape.	Ground cover sparse. Occurrence of Rough Bedstraw, Violet, St. John's-wort, Heal-all, Woodland and Wild Stramberry, Graceful Sedge, Thimbleweed, Poison Ivy and Starved Aster.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD3, Dry-Fresh Poplar-White Birch Deciduous Forest	FOD3-1, Dry-Fresh Poplar Deciduous Forest	Canopy dominated by Trembling Aspen, with occurrence of Large-toothed Aspen, White Ash, Red Oak, Sugar Maple, Black Cherry, Scotch Pine and Red Pine. Sub-canopy mainly composed by White Ash and Sugar Maple. Understory is open, dominated by White Ash and Sugar Maple, with occurrence of Basswood, American Elm, Sugar Maple, Spreading Dogbane, Juniper, Round-leaved Dogwood and Red-osier Dogwood.	Dominated by Poison Ivy and tree seedlings, particularly White Ash, with an abundance of Canada Mayflower. Occurrence of Round-leaved Pyrola, Evergreen Wood Fern, Star-flowered Solomon's Seal, Christmas Fern, Blue Cohosh.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD4, Dry-Fresh Deciduous Forest	FOD4-2, Dry-Fresh White Ash Deciduous Forest	Canopy dominated by White Ash, with occurrence of Sugar Maple, Red Maple, Red Oak and Trembling Aspen. Sub-canopy dominated by Sugar Maple, with abundance of White Ash, occurrence of White Birch and White Pine. Understory dominated by White Ash and Sugar Maple, with occurrence of several other species, including Basswood, White Pine, Eastern Hemlock, Balsam Fir and Chokecherry.	Dense ground cover. Occurrence of Sensitive Fern, Evergreen Wood Fern, Marginal Fern, False Solomon's Seal, Canada Mayflower, Star-flowered Solomon's Seal, Starved Aster, Scouring Rush.
Terrestrial	FO, Forest	FOD, Deciduous Forest	FOD6, Dry-Fresh Sugar Maple Deciduous Forest	FOD6-5, Fresh_Moist Sugar Maple-Hardwood Deciduous Forest	Canopy dominated by Sugar Maple and White Ash, with occurrence of Trembling Aspen and Red Oak. Sub-canopy dominated by Sugar Maple. Understory very sparse, composed of Basswood, Sugar Maple and White Ash. Occurrence of White Spruce, Choke Cherry, American Elm, Red-osier Dogwood and Virginia Creeper.	Ground cover very sparse. Occurrence of Round-leaved Pyrola, False Solomon's Seal, Cinquefoil, sedges.
Wetland	SW, Swamp	SWD, Deciduous Swamp	N/A - Community does not fit a species ecosite or vegetation type (see composition notes).	N/A	Canopy structure and overall function are representative of upland hardwood forest. However, this community is technically a deciduous swamp due to abundant vernal pooling features. Presence of drainage feature and many vernal pools along this community. Canopy dominated by Sugar Maple with abundance of White Ash and Red Oak and occasional Black Ash and Basswood. Sub-canopy dominated by Sugar Maple, with occurrence of Black Ash, Hop-hornbeam and American Beech. Understory with occurrence of Black Ash, Balsam Fir, American Beech, American Elm and Choke Cherry.	Ground cover dense, a mixture of upland and wetland species, with wetland species occurring around and within vernal pools. Occurrence of several kinds of ferns, Hepatica, Canada Mayflower, Enchanter's Nightshade, Jack-in-the pulpit, Virginia Creeper, Grape, Hop Sedge, Fringed Sedge, Large-flowered Bellwort, Star-flowered Solomon's Seal, Lily of the Valley.

Table 1 - Vegetation Community Description, 3879 Townline Road, Marchmont

Ecological Land Classification						
System	Community Class	Community Series	Ecosite	Vegetation Type	Composition	Ground Cover
Terrestrial	CU, Cultural	CUW, Cultural Woodland	CUW1, Mineral Cultural Woodland	NA	Canopy dominated by White Ash and White Pine, with occurrence of Sugar Maple, Scotch Pine and Basswood. Understory composed by Hawthorn, Red Raspberry, Thimbleberry, Common Buckthorn, Tartarian Honeysuckle, American Elm, Black Cherry, Red-osier Dogwood, Scotch Pine.	Ground cover very dense, composed by Poison Ivy, Scouring Rush, Canada Goldenrod, Common Yarrow, Thimbleweed, Starved Aster, Woodland Strawberry, Black-eyed Susan, Daisy Fleabane, Rose, Thimoty.

Table 2. Vascular Plant List, 3879 Townline Road, Marchmont

Family	Scientific Name	Common Name	FOC1	CUP3	FOD2-4	FOD3-1	FOD4-2	FOD6-5	SWD	CUW1	Conservation Rank Information			
											G-Rank	S-Rank	COSEWIC	MNRF
Aceraceae	<i>Acer negundo</i>	Manitoba Maple	X								G5	S5		
Aceraceae	<i>Acer rubrum</i>	Red Maple					X				G5	S5		
Aceraceae	<i>Acer saccharum</i>	Sugar Maple	X	X	X	X	X	X	X	X	G5	S5		
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac			X						G5	S5		
Anacardiaceae	<i>Toxicodendron radicans</i>	Eastern Poison Ivy	X		X	X	X		X	X	G5	S5		
Apiaceae	<i>Daucus carota</i>	Wild Carrot			X						GNR	SNA		
Apocynaceae	<i>Apocynum androsaemifolium</i>	Spreading Dogbane			X	X				X	G5	S5		
Apocynaceae	<i>Vinca minor</i>	Lesser Periwinkle									GNR	SNA		
Araceae	<i>Arisaema triphyllum</i>	Jack-in-the-pulpit					X		X		G5	S5		
Araliaceae	<i>Hedera helix</i>	English Ivy	X								GNR	SNA		
Asteraceae	<i>Achillea millefolium</i>	Common Yarrow			X					X	G5	SNA		
Asteraceae	<i>Erigeron hyssopifolius</i>	Daisy Fleabane								X	G5	S5		
Asteraceae	<i>Eurybia macrophylla</i>	Large-leaved Aster	X		X						G5	S5		
Asteraceae	<i>Rudbeckia hirta</i>	Black-eyed Susan								X	G5	S5		
Asteraceae	<i>Solidago canadensis</i>	Canada Goldenrod	X		X					X	G5	S5		
Asteraceae	<i>Symphotrichum lateriflorum</i>	Starved Aster			X	X	X			X	G5	S5		
Asteraceae	<i>Symphotrichum urophyllum</i>	Arrow-leaved Aster	X	X	X						G4G5	S4		
Berberidaceae	<i>Caulophyllum thalictroides</i>	Blue Cohosh				X					G4G5	S5		
Betulaceae	<i>Betula alleghaniensis</i>	Yellow Birch	X								G5	S5		
Betulaceae	<i>Betula papyrifera</i>	Paper Birch	X	X	X		X	X	X		G5	S5		
Betulaceae	<i>Ostrya virginiana</i>	Eastern Hop-hornbeam			X				X		G5	S5		
Caprifoliaceae	<i>Lonicera canadensis</i>	Canada Fly Honeysuckle			X						G5	S5		
Caprifoliaceae	<i>Lonicera tatarica</i>	Tartarian Honeysuckle								X	GNR	SNA		
Celastraceae	<i>Euonymus alatus</i>	Winged Spindletree									GNR	SNA		
Clusiaceae	<i>Hypericum perforatum</i>	Common St. John's-wort			X						GNR	SNA		
Cornaceae	<i>Cornus alternifolia</i>	Alternate-leaved Dogwood		X		X					G5	S5		
Cornaceae	<i>Cornus drummondii</i>	Rough-leaved Dogwood				X					G5	S4		
Cornaceae	<i>Cornus stolonifera</i>	Red-osier Dogwood	X	X	X			X		X	G5	S5		
Cupressaceae	<i>Juniperus horizontalis</i>	Creeping Juniper				X				X	G5	S5		
Cupressaceae	<i>Thuja occidentalis</i>	Eastern White Cedar	X		X		X				G5	S5		
Cyperaceae	<i>Carex crinita</i>	Fringed Sedge							X		G5	S5		
Cyperaceae	<i>Carex gracillima</i>	Graceful Sedge			X	X	X				G5	S5		
Cyperaceae	<i>Carex jamesii</i>	James' Sedge							X		G5	S4		
Cyperaceae	<i>Carex lupulina</i>	Hop Sedge							X		G5	S5		
Cyperaceae	<i>Carex plantaginea</i>	Plantain-leaved Sedge	X					X			G5	S5		
Dennstaedtiaceae	<i>Pteridium aquilinum</i>	Bracken Fern					X				G5	S5		
Dryopteridaceae	<i>Athyrium filix-femina</i>	Ladyfern							X		G5	S5		
Dryopteridaceae	<i>Dryopteris carthusiana</i>	Spinulose Wood Fern							X		G5	S5		
Dryopteridaceae	<i>Dryopteris intermedia</i>	Evergreen Wood Fern				X	X		X		G5	S5		
Dryopteridaceae	<i>Dryopteris marginalis</i>	Marginal Wood Fern					X		X		G5	S5		
Dryopteridaceae	<i>Gymnocarpium dryopteris</i>	Common Oak Fern		X							G5	S5		
Dryopteridaceae	<i>Matteuccia struthiopteris</i>	Ostrich Fern	X								G5	S5		
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern	X				X		X		G5	S5		
Dryopteridaceae	<i>Polystichum acrostichoides</i>	Christmas Fern				X					G5	S5		
Equisetaceae	<i>Equisetum hyemale</i>	Common Scouring-rush					X			X	G5	S5		

Family	Scientific Name	Common Name	FOC1	CUP3	FOD2-4	FOD3-1	FOD4-2	FOD6-5	SWD	CUW1	Conservation Rank Information			
											G-Rank	S-Rank	COSEWIC	MNRF
Equisetaceae	<i>Equisetum laevigatum</i>	Smooth Scouring-rush							X		G5	S4		
Equisetaceae	<i>Equisetum pratense</i>	Meadow Horsetail	X								G5	S5		
Fabaceae	<i>Trifolium pratense</i>	Red Clover			X						GNR	SNA		
Fagaceae	<i>Fagus grandifolia</i>	American Beech					X	X	X		G5	S4		
Fagaceae	<i>Quercus rubra</i>	Northern Red Oak	X	X	X	X	X	X	X		G5	S5		
Grossulariaceae	<i>Ribes americanum</i>	Wild Black Currant									G5	S5		
Grossulariaceae	<i>Ribes hirtellum</i>	Smooth Gooseberry		X							G5	S5		
Hippocastanaceae	<i>Aesculus hippocastanum</i>	Horse Chestnut	X				X				GNR	SNA		
Lamiaceae	<i>Clinopodium vulgare</i>	Field Basil									G5	S5		
Lamiaceae	<i>Prunella vulgaris</i>	Self-heal			X	X	X			X	G5	S5		
Liliaceae	<i>Asparagus officinalis</i>	Garden Asparagus			X						G5?	SNA		
Liliaceae	<i>Convallaria majalis</i>	European Lily-of-the-valley							X		G5	SNA		
Liliaceae	<i>Maianthemum canadense</i>	Wild Lily-of-the-valley		X		X	X		X		G5	S5		
Liliaceae	<i>Maianthemum racemosum</i>	False Solomon's-seal	X			X	X	X			G5	S5		
Liliaceae	<i>Maianthemum stellatum</i>	Star-flowered False Solomon's-seal				X	X		X		G5	S5		
Liliaceae	<i>Uvularia grandiflora</i>	Large-flower Bellwort	X						X		G5	S5		
Oleaceae	<i>Fraxinus americana</i>	White Ash	X	X	X	X	X	X	X	X	G5	S4		
Oleaceae	<i>Fraxinus nigra</i>	Black Ash		X					X		G5	S4		
Onagraceae	<i>Circaea lutetiana</i>	Southern Broadleaf Enchanter's-nightshade	X				X		X		G5	S5		
Orchidaceae	<i>Epipactis helleborine</i>	Eastern Helleborine	X								GNR	SNA		
Osmundaceae	<i>Osmunda regalis</i>	Royal Fern							X		G5	S5		
Oxalidaceae	<i>Oxalis stricta</i>	European Wood-sorrel	X		X						G5	S5		
Pinaceae	<i>Abies balsamea</i>	Balsam Fir					X		X		G5	S5		
Pinaceae	<i>Picea glauca</i>	White Spruce		X	X			X			G5	S5		
Pinaceae	<i>Pinus resinosa</i>	Red Pine		X		X					G5	S5		
Pinaceae	<i>Pinus strobus</i>	Eastern White Pine	X	X	X		X			X	G5	S5		
Pinaceae	<i>Pinus sylvestris</i>	Scotch Pine		X	X					X	GNR	SNA		
Pinaceae	<i>Tsuga canadensis</i>	Eastern Hemlock					X				G5	S5		
Plantaginaceae	<i>Plantago major</i>	Common Plantain	X		X		X				G5	S5		
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass			X						GNR	SNA		
Poaceae	<i>Glyceria striata</i>	Fowl Mannagrass							X		G5	S5		
Poaceae	<i>Phleum pratense</i>	Common Timothy								X	GNR	SNA		
Primulaceae	<i>Lysimachia nummularia</i>	Creeping Jennie	X	X							GNR	SNA		
Pteridaceae	<i>Adiantum pedatum</i>	Northern Maidenhair Fern							X		G5	S5		
Pyrolaceae	<i>Pyrola americana</i>	Round-leaved Pyrola				X		X	X		G5	S4?		
Ranunculaceae	<i>Actaea rubra</i>	Red Baneberry							X		G5	S5		
Ranunculaceae	<i>Anemone virginiana</i>	Virginia Anemone			X		X			X	G5	S5		
Rhamnaceae	<i>Rhamnus cathartica</i>	Common Buckthorn	X		X		X			X	GNR	SNA		
Rosaceae	<i>Agrimonia gryposepala</i>	Tall Hairy Groovebur									G5	S5		
Rosaceae	<i>Crataegus sp.</i>	Hawthorn sp.		X	X					X	N/A	N/A		
Rosaceae	<i>Fragaria vesca</i>	Woodland Strawberry		X	X					X	G5	S5		
Rosaceae	<i>Fragaria virginiana</i>	Wild Strawberry			X						G5	S5		
Rosaceae	<i>Geum aleppicum</i>	Yellow Avens					X				G5	S5		
Rosaceae	<i>Potentilla simplex</i>	Old-field Cinquefoil	X		X			X			G5	S5		
Rosaceae	<i>Prunus serotina</i>	Wild Black Cherry				X	X			X	G5	S5		
Rosaceae	<i>Prunus virginiana</i>	Choke Cherry	X			X	X	X	X		G5	S5		
Rosaceae	<i>Rosa sp.</i>	Rose sp.								X	N/A	N/A		

Family	Scientific Name	Common Name	FOC1	CUP3	FOD2-4	FOD3-1	FOD4-2	FOD6-5	SWD	CUW1	Conservation Rank Information			
											G-Rank	S-Rank	COSEWIC	MNRF
Rosaceae	<i>Rubus idaeus</i>	Common Red Raspberry			X		X			X	G5T5	S5		
Rosaceae	<i>Rubus parviflorus</i>	Thimbleberry			X					X	G5	S4		
Rosaceae	<i>Sorbus aucuparia</i>	European Mountain-ash	X		X	X	X				G5	SNA		
Rubiaceae	<i>Galium asprellum</i>	Rough Bedstraw			X		X				G5	S5		
Salicaceae	<i>Populus grandidentata</i>	Large-tooth Aspen				X					G5	S5		
Salicaceae	<i>Populus tremuloides</i>	Trembling Aspen	X		X	X	X	X	X		G5	S5		
Smilacaceae	<i>Smilax herbacea</i>	Herbaceous Carrionflower	X						X		G5	S4		
Smilacaceae	<i>Smilax tamnoides</i>	Hispid Greenbrier	X	X			X				G5	S4		
Solanaceae	<i>Solanum dulcamara</i>	Climbing Nightshade							X		GNR	SNA		
Tiliaceae	<i>Tilia americana</i>	American Basswood		X	X	X		X	X	X	G5	S5		
Ulmaceae	<i>Ulmus americana</i>	American Elm	X	X		X	X	X	X	X	G5?	S5		
Violaceae	<i>Viola sp.</i>	Violet sp.			X						N/A	N/A		
Vitaceae	<i>Parthenocissus quinquefolia</i>	Virginia Creeper	X			X		X	X		G5	S4?		
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape	X	X	X	X	X			X	G5	S5		

Table 3. Significant Woodland Assessment, 3879 Townline Road, Marchmont

CRITERIA	STANDARDS	ASSESSMENT
Woodland Size Criteria		
<ul style="list-style-type: none"> Size refers to the aerial (spatial) extent of the woodland (irrespective of ownership) Woodland areas are considered to be generally continuous even if intersected by narrow gaps 20m or less in width between crown edges. Size value is related to the scarcity of woodland in the landscape derived on a municipal basis with consideration of the differences in woodland coverage among physical sub-units (e.g., watersheds, biophysical regions). Size criteria should also account for differences in landscape-level physiography (e.g., moraines, clay planes) and community vegetation types. 	<p>Where woodlands cover:</p> <ul style="list-style-type: none"> Is less than about 5% of land cover, woodlands 2ha in size or larger should be considered significant Is about 5-15% of land cover, woodlands 4ha in size or larger should be considered significant Is about 15-30% of land cover, woodlands 20ha in size or larger should be considered significant Is about 30-60% of land cover, woodlands 50ha in size or larger should be considered significant Occupies more than 60% of the land, a minimum size is not suggested, and other factors should be considered 	<ul style="list-style-type: none"> Based on aerial photo interpretation, the total woodland cover of Severn Township falls between 30-60%. The estimate of percent forest cover for Wildlife Management Unit 76B that includes the southern portion of Severn Township containing Marchmont plus adjacent areas of Oro-Medonte is 52% based on Ministry of Natural Resources & Forestry data (MNR 2000, Ontario Deer CD-ROM Version 1.00 – Deer Habitat Revises V5 [MS Excel]). Woodlands would need to be 50 ha in size or larger to be considered significant. As per the attached mapping (Appendix D), continuous forest cover in the area measures approximately 32ha. Therefore, the overall woodland would not be considered Significant in the context of the PPS.
Ecological Function Criteria		
Woodland Interior		
<ul style="list-style-type: none"> Interior Habitat more than 100m from the edge (as measured from the limits of a continuous woodland as defined above) is important for some species. For purposes of this criterion, a maintained public road would create an edge even if the opening was not wider than 20m and did not create a separate woodland. 	<p>Woodlands should be considered significant if they have:</p> <ul style="list-style-type: none"> Any interior habitat where woodlands cover less than about 15% of the land cover 2 ha or more of interior habitat where woodlands cover about 15-30% of the land cover 8 ha or more of interior habitat where woodlands cover about 30-60% of the land cover 20 ha or more of interior habitat where woodlands cover about 60% of the land cover 	<ul style="list-style-type: none"> Since landscape contains between 30 and 60% woodland cover, a woodland interior of 8ha or more would compel identification of a woodland unit as significant. Given its shape characteristics the overall woodland does not provide 8 ha or more of interior habitat (see attached mapping). Therefore, the overall woodland would not be considered Significant in the context of the PPS.
Proximity to Other Woodlands or Other Habitats		
<ul style="list-style-type: none"> Woodlands that overlap, abut or are close to other significant natural heritage features or areas could be considered more valuable or significant than those that are not. Patches close to each other are of greater mutual benefit and value to wildlife. 	<p>Woodlands should be considered significant if:</p> <ul style="list-style-type: none"> A portion of the woodland is located within a specific distance (e.g., 30m) of a significant natural feature or fish habitat likely receiving ecological benefit from the woodland and the entire woodland meets the minimum area threshold (e.g., 0.5-20ha, depending on circumstance) 	<ul style="list-style-type: none"> The woodlands of the property and adjacent lands are located within the Marchmont settlement area and are contained within an urban matrix. The woodlands of the property do not overlap with fish habitat, provincially significant wetlands, ANSIs, etc.
Linkages		
<ul style="list-style-type: none"> Linkages are important connections providing for movement between habitats. Woodlands that are located between other significant features or areas can be considered to perform an important linkage function as “stepping stones” for movement between habitats. 	<p>Woodlands should be considered significant if they:</p> <ul style="list-style-type: none"> Are located within a defined natural heritage system or provide a connecting link between two other significant features, each of which is within a specified distance (e.g., 120m) and meets minimum area thresholds (e.g., 1-20ha, depending on circumstance) 	<ul style="list-style-type: none"> The woodlands of the property and adjacent lands are located within the Marchmont settlement area and are contained within an urban matrix. The woodlands of the property do not provide significant wildlife movement corridor function based on provincial criteria.

Table 3. Significant Woodland Assessment, 3879 Townline Road, Marchmont

CRITERIA	STANDARDS	ASSESSMENT
<p>Water Protection</p> <ul style="list-style-type: none"> • Source water protection is important. • Natural hydrological processes should be maintained. 	<p>Woodlands should be considered significant if they:</p> <ul style="list-style-type: none"> • Are located within a sensitive or threatened watershed or a specific distance (e.g., 50m or top of valley bank if greater) or a sensitive groundwater discharge, sensitive recharge, sensitive headwater area, watercourse or fish habitat and meet minimum area thresholds (e.g., 0.5-10ha, depending on circumstance) 	<ul style="list-style-type: none"> • The property is not located in a sensitive groundwater recharge zone, sensitive headwater area, fish habitat, <i>etc.</i>
<p>Woodland Diversity</p> <ul style="list-style-type: none"> • Certain woodland species have had major reductions in representation on the landscape and may need special consideration. • More native diversity is more valuable than less diversity. 	<p>Woodlands should be considered significant if they have:</p> <ul style="list-style-type: none"> • A naturally occurring composition of native forest species that have declined significantly south and east of the Canadian Shield and meet minimum area thresholds (e.g., 1-20ha, depending on circumstance) • A high native diversity through a combination of composition and terrain (e.g., a woodland extending from a hilltop to a valley bottom or to opposite slopes) and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance) 	<ul style="list-style-type: none"> • The woodland unit where the property is located not does contain rare or uncommon species composition.
Uncommon Characteristics Criteria		
<ul style="list-style-type: none"> • Woodlands that are uncommon in terms of species composition, cover type, age or structure should be protected. • Older woodlands (i.e., woodlands greater than 100 years old) are particularly valuable for several reasons, including their contributions to genetic, species and ecosystem diversity. 	<p>Woodlands should be considered significant if they have:</p> <ul style="list-style-type: none"> • A unique species composition or the site is represented by less than 5% overall in woodland area and meets minimum area thresholds (e.g., 0.5ha, depending on circumstance) • A vegetation community with a provincial ranking of S1, S2 or S3 (as ranked by the NHIC and meet minimum area thresholds (e.g., 0.5ha, depending on circumstance) • Habitat (e.g., with 10 individual stems or 100m² of leaf coverage) of a rare, uncommon or restricted woodland plant species and meet minimum area thresholds (e.g., 0.5ha, depending on circumstance): vascular plant species for which the NHIC's Southern Ontario Coefficient of Conservatism is 8, 9 or 10; tree species of restricted distribution such as sassafras or rock elm; species existing only in a limited number of sites within the planning area • Characteristics of older woodlands or woodlands with larger tree size structure in native species meet minimum area thresholds 	<ul style="list-style-type: none"> • The woodlands of the property are not uncommon in terms of species composition, cover types (<i>i.e.</i>, composition of ELC vegetation types), structure or age.

Table 3. Significant Woodland Assessment, 3879 Townline Road, Marchmont

CRITERIA	STANDARDS	ASSESSMENT
	(e.g., 1-10ha, depending on circumstance): older woodlands could be defined as having 10 or more trees/ha greater than 100 years old; larger tree size structure could be defined as 10 or more trees/ha at least 50cm in diameter, or a basal area of 8 or more m ² /ha in trees that are at least 40cm in diameter	
Economic and Social Function Values Criteria		
<ul style="list-style-type: none"> Woodlands that have high economic or social values through particular site characteristics or deliberate management should be protected. 	Woodlands should be considered significant if they have: <ul style="list-style-type: none"> High productivity in terms of economically viable products together with continuous native natural attributes and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance) A high value in special services such as air-quality improvement or recreation at a sustainable level that is compatible with long-term retention and meet minimum area thresholds (e.g., 0.2-10ha, depending on circumstance) Important identified appreciation, education, cultural or historical value and meet minimum area thresholds (e.g., 0.2-10ha, depending on circumstance) 	<ul style="list-style-type: none"> The woodlands of the property and adjacent lands do not have high value in "special services", such as water quality improvement. There is no extraction of economically viable products, or formal education known to occur in the area.

Table 4. Bird Species, 3879 Townline Road, Marchmont

Family	Scientific Name	Common Name	Point Count Station # ¹											Breeding Evidence ²	Conservation Rank ⁴		
			1	2	3	4	5	6	7	8	9	10	11		G-rank	S-rank	SARO Status
Accipitridae	<i>Buteo platypterus</i>	Broad-winged Hawk									FO, ⁵			No	G5	S5B	
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar Waxwing										,H		Possible	S5B	G5	
Cardinalidae	<i>Passerina cyanea</i>	Indigo Bunting							S,		S,H			Probable	S4B	G5	
Cardinalidae	<i>Cardinalis cardinalis</i>	Northern Cardinal							S,		S,H	S,		Probable	S5	G5	
Corvidae	<i>Corvus brachyrhynchos</i>	American Crow	C,	C,C	C,C	C,	C,C	C,C	C,	C,				Probable	S5B	G5	
Corvidae	<i>Cyanocitta cristata</i>	Blue Jay											C,	Possible	S5	G5	
Emberizidae	<i>Spizella passerina</i>	Chipping Sparrow		,C								S,		Possible	S5B	G5	
Emberizidae	<i>Melospiza melodia</i>	Song Sparrow	S,		,C				S,		S,			Possible	S5B	G5	
Emberizidae	<i>Zonotrichia albicollis</i>	White-throated Sparrow							,H					Possible	S5B	G5	
Fringillidae	<i>Carduelis tristis</i>	American Goldfinch							,H		,H	,H	FO,	Possible	S5B	G5	
Icteridae	<i>Quiscalus quiscula</i>	Common Grackle	C,	C,		C,			C,		C,		C,	Possible	S5B	G5	
Icteridae	<i>Sturnella magna</i>	Eastern Meadowlark									,S-Adj			No	S4B	G5	THR
Laridae	<i>Larus argentatus</i>	Herring Gull					FO,							No	S5B,S5N	G5	
Paridae	<i>Poecile atricapillus</i>	Black-capped Chickadee	S,	S,H	S,	,H		S,	S,		S,S		S,	Probable	S5	G5	
Parulidae	<i>Setophaga ruticilla</i>	American Redstart							S,					Possible	S5B	G5	
Parulidae	<i>Oreothlypis ruficapilla</i>	Nashville Warbler						S,						Possible	S5B	G5	
Parulidae	<i>Seiurus aurocapilla</i>	Ovenbird ³		,H	S,	S,S	S,	S,H	S,H	S,S	S,	S,	S,	Probable	S4B	G5	
Parulidae	<i>Setophaga pinus</i>	Pine Warbler ³	S,H		,H								S,	Probable	S5B	G5	
Parulidae	<i>Setophaga pensylvanica</i>	Chestnut-sided Warbler									,H			Possible	S5B	G5	
Phasianidae	<i>Bonasa umbellus</i>	Ruffed Grouse									,H			Possible	S4	G5	
Phasianidae	<i>Meleagris gallopavo</i>	Wild Turkey					H,							Possible	S5	G5	
Picidae	<i>Picoides pubescens</i>	Downy Woodpecker		,H		C,								Possible	S5	G5	
Picidae	<i>Picoides villosus</i>	Hairy Woodpecker										H,		Possible	S5	G5	
Picidae	<i>Dryocopus pileatus</i>	Pileated Woodpecker ³				C,				C,				Possible	S5	G5	
Picidae	<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker ³				,H		C,		C,				Possible	S5B	G5	
Picidae	<i>Colaptes auratus</i>	Northern Flicker							C,					Possible	S4B	G5	
Sittidae	<i>Sitta canadensis</i>	Red-breasted Nuthatch ³	,H											Possible	S5	G5	
Sittidae	<i>Sitta carolinensis</i>	White-breasted Nuthatch ³							S,					Possible	S5	G5	
Sturnidae	<i>Sturnus vulgaris</i>	European Starling							FO,		S,		FO,	Possible	SNA	G5	
Troglodytidae	<i>Troglodytes aedon</i>	House Wren		S,S		,S					,S	S,	S,	Probable	S5B	G5	
Turdidae	<i>Turdus migratorius</i>	American Robin	S,	S,S	S,S	H,H	S,	H,			,S	S,	S,	Probable	S5B	G5	
Tyrannidae	<i>Myiarchus crinitus</i>	Great Crested Flycatcher							C,					Possible	S4B	G5	
Tyrannidae	<i>Contopus virens</i>	Eastern Wood-pewee						S,	S,	,S				Possible	G5	S4B	SC
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed Vireo	S,	S,H	S,H	,H	,H	S,H		C,H		S,H		Probable	S5B	G5	

Survey Conditions:

Survey 1: Date: June 9, 2016; Time: 05:47 - 07:43; Temp.: 5-7C; C.C.: ~10%; Wind: B0-B1 (NW); Prec.: nil; Observer J. Broadfoot

Survey 2: Date: June 22, 2016; Time: 06:20-8:07 Temp.: 13C; C.C.: 0%; Wind: B2-B3; Prec.: nil; Observed L. Moran

¹See Figure 2 for Point Count Station locations

²Highest level of breeding evidence detected based on Ontario Breeding Bird Atlas (OBBA) criteria and Breeding Evidence Codes

³Area-sensitive according to Appendix C of the Significant Wildlife Habitat Technical Guide (MNR, 2000)

⁴Conservation Rank - from Ontario Ministry of Natural Resources & Forestry, Natural Heritage Information Centre and Species at Risk in Ontario Lists

S-rank - S1 - Extremely Rare, S2 - Very Rare, S3 - Rare to Uncommon, S4 - Common, S5 - Very Common SC - Special Concern

G-Rank - G1 - Critically Imperiled, G2 - Imperiled, G3 - Vulnerable, G4 - Apparently Secure, G5 - Secure NAR - Not at Risk

⁵Breeding Evidence Codes: Entry examples **S,S** - Singing Male detected during first survey and second survey; **S** Singing male detected during first survey only, **S** Singing male detected during second survey only

eding Evidence Breeding Evidence Codes

None FO - Species observed Flying Over showing no signs of use of subject or adjacent lands

None X - Species observed, no evidence of breeding

Possible H - Species observed in its breeding season in suitable nesting habitat

see Note S or C - Singing male(s) present (S), or breeding calls heard (C), in suitable nesting habitat in breeding season

Probable P - Pair observed in suitable nesting habitat in nesting season

Probable D - Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.

Probable V - Visiting probable nest site

Probable A - Agitated behaviour or anxiety calls of an adult

Probable B - Brood Patch on adult female or cloacal protuberance on adult male

Probable N - Nest-building or excavation of nest hole.

Confirmed DD - Distraction display or injury feigning.

Confirmed NU - Used nest or egg shells found (occupied or laid within the period of the survey)

Confirmed FY - Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight

Confirmed AE - Adult leaving or entering nest sites in circumstances indicating occupied nest

Confirmed FS - Adult carrying fecal sac.

Confirmed CF - Adult carrying food for young.

Confirmed NE - Nest containing eggs.

Confirmed NY - Nest with young seen or heard

Note : Possible if only one observation of S or C, Probable if evidence of S or C in same place on two or more dates a week or more apart

Table 4 Results of Evening Calling Amphibian Surveys, 3879 Townline Road, Marchmont

Latin Name	Comon Name	Survey 1 ¹		Survey 2 ²		Survey 3 ³		Incidental ⁴	Conservation Rank Information			
		Station 1	Control ⁵	Station 1	Control	Station 1	Control		G-rank	S-rank	COSEWIC Status	SARO Status
<i>Pseudacris crucifer</i>	Spring Peeper	3	3	3	3	0	0		G5	S5		
<i>Anaxyrus americanus</i>	American Toad	0	2(4)	1(1)	1(1)	0	0		G5	S5		
<i>Hyla versicolor</i>	Grey Tree Frog	0	0	1(1)	2(5)	0	0		G5	S5		
<i>Lithobates sylvaticus</i>	Wood Frog	0	2(3)	0	0	0	0	Yes	G5	S5		
<i>Lithobates clamitans</i>	Green Frog	0	0	0	0	0	1(6)		G5	S5		

Call Code Levels

0 = none heard

1 = males could be individually counted

2 = calls overlap but numbers could be estimated

3 = overlapping calls, not possible to estimate numbers involved in chorus.

(#) = number of singing males counted

See Figure 2 for Station 1 location

¹ Date: April 30, 2016; Survey Time: 8:56-9:26; Air Temperature: 12C; Wind: B0; Cloud Cover: 75%; Precipitation: nil; Moon: not visible.

² Date: May 19, 2016; Survey Time: 9:45-10:15; Air Temperature 15C; Wind BF2/NE; Cloud Cover 0%; Precipitation nil; Moon: full/visible.

³ Date: June 22, 2016; Survey Time: 9:38-10:08; Air Temperature: 14C; Wind: B0; Cloud Cover: 75%; Precipitation: nil; Moon: not visible.

⁴ Observed on-site but not detected during calling amphibian surveys

⁵ Data collected from amphibian breeding habitat elsewhere in Simcoe County on same evening (April 30 - Hwy 93 south of Hillsdale, May 19 - Tiffin Street Barrie, June 22 - Orr Lake boat launch)

Table 6. Species at Risk Assessment, 3879 Townline Road, Marchmont

Taxa	Common Name	Scientific Name	SARO Status	General Habitat Requirements	Habitat on Property or Adjacent Lands?	Detected During Field Surveys?	Issue Affecting Proposed Development?
Bird	Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	Large grasslands	No	No	No
Bird	Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	Alvars, large pasturelands with shrub	No	No	No
Bird	King Rail	<i>Rallus elegans</i>	END	Large marsh wetlands	No	No	No
Insect	Hine's Emerald (Dragonfly)	<i>Somatochlora hineana</i>	END	Hine's Emeralds rely on slow-moving, calcareous water with emergent vegetation for egg-laying and larval development. These conditions are associated with fens, marshes or areas where groundwater rises to the surface.	No	Not assessed	No
Mammal	Little Brown Myotis	<i>Myotis lucifugus</i>	END	Winter hibernation - caves, abandoned mines, etc. Summer maternity colony - typically buildings (attics, etc.) but occasionally in tree cavities.	No winter hibernation habitat. Forest contains wildlife cavity trees potentially utilized as maternity roost habitat.	Not assessed	Potentially
Mammal	Northern Long-eared Myotis	<i>Myotis septentrionalis</i>	END	Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - tree cavities.	No winter hibernation habitat. Forest contains wildlife cavity trees potentially utilized as maternity roost habitat.	Not assessed	Potentially
Mammal	Tr-colored Bat	<i>Perimyotis subflavus</i>	END	Winter hibernation - caves, abandoned mines, etc.. Summer - day roosts and maternity colonies in older forest and occasionally in barns or other structures.	No winter hibernation habitat. Forests relatively young but contain wildlife cavity trees potentially utilized as roost habitat.	Not assessed	Potentially
Mammal	Eastern Small-fotted Bat	<i>Myotis leibii</i>	END	Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - talis slopes, rock outcrops.	No winter hibernation habitat. No maternity roost habitat.	Not assessed	No
Plant	Butternut	<i>Juglans cinerea</i>	END	Forests, fencerows	Yes	Yes	Yes
Plant	Forked Three-awned grass	<i>Aristida basiramea</i>	END	Grasslands, open lands, trails (localized distribution)	Yes (Adjacent Lands)	No	No
Plant	Eastern Prairie Fringed-orchid	<i>Platanthera leucophaea</i>	END	Grasslands, wet meadows, alvars, fens	No	No	No
Plant	American Ginseng	<i>Panax quinquefolius</i>	END	Mature forest cover	Yes	No	No

Taxa	Common Name	Scientific Name	SARO Status	General Habitat Requirements	Habitat on Property or Adjacent Lands?	Detected During Field Surveys?	Issue Affecting Proposed Development?
Reptile	Spotted Turtle	<i>Clemmys guttata</i>	END	Wetlands with open water	No	No	No
Bird	Cerulean Warbler	<i>Dendroica cerulea</i>	THR	Large blocks of continuous forest/swamp cover	Yes	No	No
Bird	Eastern Meadowlark	<i>Sturnella magna</i>	THR	Grasslands	Yes (Adjacent Lands)	Yes (Adjacent Lands)	No
Bird	Barn Swallow	<i>Hirundo rustica</i>	THR	Grasslands, pastures, graminoid and other open wetlands	Yes (Adjacent Lands)	No	No
Bird	Bank Swallow	<i>Riparia riparia</i>	THR	Riparian habitat with sand banks for nesting	No	No	No
Bird	Bobolink	<i>Dolichonyx oryzivorus</i>	THR	Grasslands	Yes (Adjacent Lands)	No	No
Bird	Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover.	No	No	No
Bird	Least Bittern	<i>Ixobrychus exilis</i>	THR	Large marsh wetlands	No	No	No
Bird	Louisiana Waterthrush	<i>Seiurus motacilla</i>	THR	Mature forest associated with rivers	No	No	No
Fish	Lake Sturgeon	<i>Acipenser fulvescens</i>	THR	Georgian Bay and connected rivers	No	No	No
Reptile	Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	Wetlands with open water	No	No	No
Reptile	Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	THR	Forests, sand barrens and wetlands providing breeding habitat for primary prey (i.e., American Toad and other amphibians)	No suitable mix of habitat types or large population of breeding amphibians in area.	No	No
Bird	Eastern Wood-pewee	<i>Contopus virens</i>	SC	Forests, treed swamps	Yes	Yes	Yes
Bird	Wood Thrush	<i>Hylocichla mustelina</i>	SC	Forests, treed swamps	Yes	No	No
Bird	Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	Shrublands/thickets, forest edges	No	No	No
Bird	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	Large grasslands	No	No	No
Bird	Common Nighthawk	<i>Chordeiles minor</i>	SC	Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover.	No	No	No
Bird	Black Tern	<i>Chlidonias niger</i>	SC	Large marsh wetlands	No	No	No
Plant	Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	SC	Prefers rich, undisturbed deciduous forest, particularly mature beech-maple forests, typically occurs in moister situations such as lower valley slopes, bottomlands and even swamps.	Yes	No	No

Table 4

Taxa	Common Name	Scientific Name	SARO Status	General Habitat Requirements	Habitat on Property or Adjacent Lands?	Detected During Field Surveys?	Issue Affecting Proposed Development?
Reptile	Snapping Turtle	<i>Chelydra serpentina</i>	SC	Lakes, ponds, marshes and slow moving rivers, various wetlands with open water	No	No	No
Reptile	Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	Wetlands with open water	No	No	No
Reptile	Northern Map Turtle	<i>Graptemys geographica</i>	SC	Lakes	No	No	No

Table 7. Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E, 3879 Townline Road, Marchmont

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
<p>Waterfowl Stopover and Staging Areas (Terrestrial)</p> <p>Rationale:Habitat important to migrating waterfowl.</p>	<p>American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall</p>	<p>CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.</p>	<p>Fields with sheet water during Spring (mid-March to May).</p> <ul style="list-style-type: none"> Fields flooding during springmelt and run-off provide important invertebrate foraging habitat for migrating waterfowl. Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. Reports and other information available from Conservation Authorities Sites documented through waterfowl planning processes (eg. EHJV implementation plan) Field Naturalist Clubs Ducks Unlimited Canada Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area 	<p>Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”</p> <ul style="list-style-type: none"> Any mixed species aggregations of 100 or more individuals required. The flooded field ecosite habitat plus a 100-300m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat. Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). SWHMiSTIndex #7 provides development effects and mitigation measures. 	<p>Habitat of property and adjacent lands does not meet ELC ecosite criteria. No nesting waterfowl observed.</p>
<p>Waterfowl Stopover and Staging Areas (Aquatic)</p> <p>Rationale:Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.</p>	<p>Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck</p>	<p>MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7</p>	<ul style="list-style-type: none"> Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Environment Canada. Naturalist clubs often are aware of staging/stopover areas. OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. Sites documented through waterfowl planning processes (eg. EHJV implementation plan) Ducks Unlimited projects Element occurrence specification by Nature Serve: http://www.natureserve.org Natural Heritage Information Centre (NHIC) Waterfowl Concentration Areas 	<p>Studies carried out and verified presence of:</p> <ul style="list-style-type: none"> Aggregations of 100⁺ or more of listed species for 7 days⁺, results in > 700 waterfowl use days. Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH The combined area of the ELC ecosites and a 100m radius area is the SWH Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). SWHMiSTIndex #7 provides development effects and mitigation measures. 	<p>Property and adjacent lands do not provide ponds, lakes or bays, etc. of value to migrating waterfowl.</p>

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Shorebird Migratory Stopover Area Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	<ul style="list-style-type: none"> Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Western hemisphere shorebird reserve network. Canadian Wildlife Service (CWS) Ontario Shorebird Survey. Bird Studies Canada Ontario Nature Local birders and naturalist clubs Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area 	Studies confirming: <ul style="list-style-type: none"> Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMiST Index #8 provides development effects and mitigation measures. 	No suitable habitat on or adjacent to property.
Raptor Wintering Area Rationale: Sites used by multiple species of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	<p><u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW.</p> <p><u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).</p>	<ul style="list-style-type: none"> The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites (hawk/owl) need to be > 20 ha with a combination of forest and upland. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water, large trees and snags available for roosting <p><u>Information Sources:</u></p> <ul style="list-style-type: none"> OMNRF Ecologist or Biologist Field Naturalist Clubs Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area Data from Bird Studies Canada Results of Christmas Bird Counts Reports and other information available from Conservation Authorities. 	Studies confirm the use of these habitats by: <ul style="list-style-type: none"> One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMiST Index #10 and #11 provides development effects and mitigation measures. 	Property does not provide combination of fields and woodlands. Field habitat to the south covers less than 15ha and given its setting and location in a heavy snow accumulation area would not be wind swept with limited snow depth. Not a significant Raptor Wintering Area.
Bat Hibernacula Rationale: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	<ul style="list-style-type: none"> Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered as SWH The locations of bat hibernacula are relatively poorly known. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF for possible locations and contact for local experts Natural Heritage Information Center (NHIC) Bat Hibernaculum Ministry of Northern Development and Mines for location of mine shafts. Clubs that explore caves (eg. Sierra Club) University Biology Departments with bat experts. 	<ul style="list-style-type: none"> All sites with confirmed hibernating bats are SWH. The habitat area includes a 200m radius around the entrance of the hibernaculum, for most development types and 1000m for wind farms Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects. SWHMiST Index #1 provides development effects and mitigation measures. 	No suitable habitat on or adjacent to property.

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
<p>Bat Maternity Colonies</p> <p>Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.</p>	<p>Big Brown Bat Silver-haired Bat</p>	<p>Maternity colonies considered SWH are found in forested Ecosites.</p> <p>All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM</p>	<ul style="list-style-type: none"> • Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts. 	<ul style="list-style-type: none"> • Maternity Colonies with confirmed use by; • >10 Big Brown Bats® • >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #12 provides development effects and mitigation measures. 	<p>Habitat of the property and adjacent lands contains mature tree cover. Forest communities of the western section of the property (FOC1) and eastern section of the property (vernal pool area – SWD3 and FOD6-5) provide potentially suitable habitat for bat maternity colonies (relatively large trees providing cavities). Property and adjacent lands provide potential Bat Maternity Colony habitat.</p>
<p>Turtle Wintering Areas</p> <p>Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Midland Painted Turtle</p> <p>Special Concern: Northern Map Turtle Snapping Turtle</p>	<p>Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO</p> <p>Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.</p>	<ul style="list-style-type: none"> • For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC) 	<ul style="list-style-type: none"> • Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) • Congregation of turtles is more common where wintering areas are limited and therefore significant • SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat. 	<p>Habitat in the study area does meet ELC criteria for vegetation communities. Vernal pools dry out during summer and contain appear to be spring filling. Therefore, property and adjacent lands do not provide permanent water of depth that would prevent freezing. No turtles observed in vernal pool during repeated observations. Not a Turtle Wintering Area.</p>

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
<p>Reptile Hibernaculum</p> <p>Rationale; Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.</p>	<p>Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake</p> <p>Special Concern: Milksnake Eastern Ribbonsnake</p> <p>Lizard: Special Concern (Southern Shield population): Five-lined Skink</p>	<p>For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats.</p> <p>Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.</p> <p>For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3</p>	<ul style="list-style-type: none"> For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures . <p><u>Information Sources</u></p> <ul style="list-style-type: none"> In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). Reports and other information available from Conservation Authorities. Field Naturalists clubs University herpetologists Natural Heritage Information Center (NHIC) OMNRF ecologist or biologist may be aware of locations of wintering skinks 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH SWHMIST Index #13 provides development effects and mitigation measures for snake hibernacula. Presence of any active hibernaculum for skink is significant. SWHMIST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat. 	<p>Habitat within the study area is not suitable as snake or Fived-lined Skink hibernacula. The property lacks surface rock features, potentially significant anthropogenic features (e.g. building foundations), or wetlands with potential over-wintering features. No snakes observed on property during repeated observations. Not a significant Reptile Hibernaculum area.</p>
<p>Colonially -Nesting Bird Breeding Habitat (Bank and Cliff)</p> <p>Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.</p>	<p>Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)</p>	<p>Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns.</p> <p>Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1</p>	<ul style="list-style-type: none"> Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas Bird Studies Canada; <i>NatureCounts</i> http://www.birdscanada.org/birdmon/ Field Naturalist Clubs. 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. A colony identified as SWH will include a 50m radius habitat area from the peripheral nests Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMIST Index #4 provides development effects and mitigation measures 	<p>No cliffs/eroding banks on or adjacent to the property.</p>

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
<p>Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs)</p> <p>Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron</p>	<p>SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1</p>	<ul style="list-style-type: none"> Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas, colonial nest records. Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony Aerial photographs can help identify large heronries. Reports and other information available from CAs. MNRF District Offices. Local naturalist clubs. 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of 5 or more active nests of Great Blue Heron or other listed species. The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells SWHMIST Index #5 provides development effects and mitigation measures. 	<p>None of listed species observed during breeding bird surveys and no nests of listed species observed on or adjacent to the property during repeated observations.</p>
<p>Colonially -Nesting Bird Breeding Habitat (Ground)</p> <p>Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.</p>	<p>Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird</p>	<p>Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).</p> <p>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)</p> <p>MAM1 – 6; MAS1 – 3; CUM CUT CUS</p>	<ul style="list-style-type: none"> Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Ontario Breeding Bird Atlas ,rare/colonial species records. Canadian Wildlife Service Reports and other information available from CAs. Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area MNRF District Offices. Field Naturalist clubs. 	<p>Studies confirming:</p> <ul style="list-style-type: none"> Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. Presence of 5 or more pairs for Brewer's Blackbird. Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMISTcxl Index #6 provides development effects and mitigation measures. 	<p>Property and adjacent lands do not provide suitable habitat.. None of listed species observed utilizing habitat of the property or adjacent lands for breeding.</p>
<p>Migratory Butterfly Stopover Areas</p> <p>Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.</p>	<p>Painted Lady Red Admiral</p> <p><u>Special Concern</u> Monarch</p>	<p>Combination of ELC Community Series; need to have present one Community Series from each land class:</p> <p><u>Field:</u> CUM CUT CUS</p> <p><u>Forest:</u> FOC FOD FOM CUP</p> <p>Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.</p>	<p>A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario.</p> <ul style="list-style-type: none"> The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF (NHIC) Agriculture Canada in Ottawa may have list of butterfly experts. Field Naturalist Clubs Toronto Entomologists Association Conservation Authorities 	<p>Studies confirm:</p> <ul style="list-style-type: none"> The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. SWHMIST Index #16 provides development effects and mitigation measures. 	<p>Property is not located within 5km of Lake Ontario.</p>

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
<p>Landbird Migratory Stopover Areas</p> <p>Rationale: Sites with a high diversity of species as well as high numbers are most significant.</p>	<p>All migratory songbirds. Canadian Wildlife Service Ontario website.</p> <p>All migratory songbirds. Canadian Wildlife Service Ontario website:</p>	<p>All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD</p>	<p>Woodlots need to be >10 ha in size and within 5 km of Lake Ontario.</p> <ul style="list-style-type: none"> If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant Sites have a variety of habitats; forest, grassland and wetland complexes. The largest sites are more significant Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH . <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Bird Studies Canada Ontario Nature Local birders and naturalist club Ontario Important Bird Areas (IBA) Program 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMIST Index #9 provides development effects 	<p>Property is not located within 5km of Lake Ontario.</p>
<p>Deer Yarding Areas</p> <p>Rationale: Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.</p>	<p>White-tailed Deer</p>	<p>Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC.</p> <p>Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT</p>	<ul style="list-style-type: none"> Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60% cxciv. OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual" Woodlots with high densities of deer due to artificial feeding are not significant. 	<p>No Studies Required:</p> <ul style="list-style-type: none"> Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNR offices or via Land Information Ontario (LIO). Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNR will complete these field investigations. If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMIST Index #2 provides development effects and mitigation measures. 	<p>Property and adjacent lands occur in area where snow depths typically exceed 40cm for more than 60 days. No Deer Yarding Area mapped on or adjacent to the property by the MNR Midhurst District (Allen <i>et al.</i> 2005). No evidence of significant browsing of woody stems on or adjacent to property typically associated with winter deer yard use.</p>

Wildlife Habitat	Wildlife Species	Candidate SWW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Deer Winter Congregation Areas Rationale: Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	<ul style="list-style-type: none"> Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands . If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . Woodlots with high densities of deer due to artificial feeding are not significant□. <u>Information Sources</u> <ul style="list-style-type: none"> MNRF District Offices LIO/NRVIS 	Studies confirm: <ul style="list-style-type: none"> Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMIST Index #2 provides development effects and mitigation measures. 	Property and adjacent lands occur in area where snow depths typically exceed 40cm for more than 60 days – see evaluation related to Deer Yarding Area above.

Table 2.2 - Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Cliffs and Talus Slopes Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources</u> <ul style="list-style-type: none"> The Niagara Escarpment Commission has detailed information on location of these habitats. OMNRF District Natural Heritage Information Center (NHIC) has location information available on their website Field Naturalist clubs Conservation Authorities 	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Cliffs or Talus Slopes SWHMIST Index #21 provides development effects and mitigation measures. 	No cliffs or talus on or adjacent to property.
Sand Barren Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	A sand barren area >0.5ha in size. <u>Information Sources</u> <ul style="list-style-type: none"> MNRF Distircts. Natural Heritage Information Center (NHIC) has location information available on their website. Field Naturalist clubs Conservation Authorities 	<ul style="list-style-type: none"> Confirm any ELC Vegetation Type for Sand Barrens Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.) SWHMISTIndex #20 provides development effects and mitigation measures. 	No sand barrens on or adjacent to property.

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
<p>Alvar</p> <p>Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.</p>	<p>ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2</p> <p>Five Alvar Species: 1) <i>Carex crawei</i> 2) <i>Panicum philadelphicum</i> 3) <i>Eleocharis compressa</i> 4) <i>Scutellaria parvula</i> 5) <i>Trichostema brachiatum</i></p> <p>These indicator species are very specific to Alvars within Ecoregion 6E</p>	<p>An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover</p>	<p>An Alvar site > 0.5 ha in size.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Alvars of Ontario (2000), Federation of Ontario Naturalists. Ontario Nature – Conserving Great Lakes Alvars. Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts Field Naturalist clubs. Conservation Authorities. 	<ul style="list-style-type: none"> Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses SWHMiST Index #17 provides development effects and mitigation measures. 	<p>No Alvar habitat on or adjacent to property.</p>
<p>Old Growth Forest</p> <p>Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.</p>	<p>Forest Community Series: FOD FOC FOM SWD SWC SWM</p>	<p>Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.</p>	<p>Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Forest Resource Inventory mapping OMNRF Districts. Field Naturalist clubs Conservation Authorities Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. Municipal forestry departments 	<p>Field Studies will determine:</p> <ul style="list-style-type: none"> If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. Determine ELC vegetation types for the forest area containing the old growth characteristics SWHMiST Index #23 provides development effects and mitigation measures. 	<p>Habitat in the study area does not meet criteria for tree maturity or woodlot size. Property was historically farmed and hence most of forest cover is relatively young/successional.</p>
<p>Savannah</p> <p>Rationale: Savannahs are extremely rare habitats in Ontario.</p>	<p>TPS1 TPS2 TPW1 TPW2 CUS2</p>	<p>A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.</p>	<p>No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts Field Naturalist clubs. Conservation Authorities. 	<p>Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used.</p> <ul style="list-style-type: none"> Area of the ELC Ecosite is the SWH. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). SWHMiST Index #18 provides development effects and mitigation measures. 	<p>No savannah habitat on or adjacent to property..</p>
<p>Tallgrass Prairie</p> <p>Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.</p>	<p>TPO1 TPO2</p>	<p>A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.</p>	<p>No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts 	<p>Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used</p> <ul style="list-style-type: none"> Area of the ELC Ecosite is the SWH. Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). SWHMiST Index #19 provides development effects 	<p>No prairie habitat on or adjacent to property..</p>

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
			<ul style="list-style-type: none"> Field Naturalist clubs. Conservation Authorities. 	and mitigation measures.	
Other Rare Vegetation Communities Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M The OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) has location information available on their website OMNRF Districts Field Naturalist clubs. Conservation Authorities. 	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. <ul style="list-style-type: none"> Area of the ELC Vegetation Type polygon is the SWH. SWHMiST Index #37 provides development effects and mitigation measures. 	No rare vegetation communities on o adjacent to property.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Nesting Area Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. <ul style="list-style-type: none"> Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> <ul style="list-style-type: none"> Ducks Unlimited staff may know the locations of particularly productive nesting sites. OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. Reports and other information available from Conservation Authorities. 	Studies confirmed: <ul style="list-style-type: none"> Presence of 3 or more nesting pairs for listed species excluding Mallards, or; Presence of 10 or more nesting pairs for listed species including Mallards. Any active nesting site of an American Black Duck is considered significant. Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. SWHMiST Index #25 provides development effects and mitigation measures. 	No nesting waterfowl detected on or adjacent to property during breeding bird surveys.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat Rationale:	Osprey Special Concern Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. <ul style="list-style-type: none"> Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. 	Studies confirm the use of these nests by: <ul style="list-style-type: none"> One or more active Osprey or Bald Eagle nests in an area. Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the 	No Osprey or Bald Eagle detected on or adjacent to property during breeding bird surveys and no stick nests found.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.			<ul style="list-style-type: none"> Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. Nature Counts, Ontario Nest Records Scheme data. OMNRF Districts. Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented Reports and other information available from Conservation Authorities. Field Naturalists clubs 	<p>SWH.</p> <ul style="list-style-type: none"> For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH , maintaining undisturbed shorelines with large trees within this area is important . For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. , Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat To be significant a site must be used annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #26 provides development effects and mitigation measures 	
<p>Woodland Raptor Nesting Habitat</p> <p><u>Rationale:</u> Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.</p>	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	<p>All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer</p> <ul style="list-style-type: none"> Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF Districts. Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. Check data from Bird Studies Canada. Reports and other information available from Conservation Authorities. 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 1 or more active nests from species list is considered significant. Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH . (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) Barred Owl – A 200m radius around the nest is the SWH. Broad-winged Hawk and Coopers Hawk– A 100m radius around the nest is the SWH. Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. SWHMiST Index #27 provides development effects and mitigation measures. 	No woodland raptor species detected utilizing habitat of the property or adjacent lands for nesting and no stick nests found.
<p>Turtle Nesting Areas</p> <p><u>Rationale:</u> These habitats are rare and when identified will often be the only breeding site for local</p>	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1	<ul style="list-style-type: none"> Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 5 or more nesting Midland Painted Turtles One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. The area or collection of sites within an area of 	No suitable habitat located on or adjacent to property. No turtles observed on or adjacent to the property during repeated observations.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
populations of turtles.		SAM1 SAF1 BOO1 FEO1	<p>dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.</p> <ul style="list-style-type: none"> Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. Natural Heritage Information Center (NHIC) Field Naturalist clubs 	<p>exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH.</p> <ul style="list-style-type: none"> Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. SWHMIST Index #28 provides development effects and mitigation measures for turtle nesting habitat. 	
<p>Seeps and Springs</p> <p><u>Rationale:</u> Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.</p>	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	<p>Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.</p> <ul style="list-style-type: none"> Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Topographical Map. Thermography. Hydrological surveys conducted by Conservation Authorities and MOE. Field Naturalists clubs and landowners. Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped. 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of a site with 2 or more seeps/springs should be considered SWH. The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. SWHMIST Index #30 provides development effects and mitigation measures 	Area of seepage noted along northern property boundary as shown on Figure 2. Only 1 seepage area detected therefore property does not meet defining criteria of 2 or more seep/spring. Seep area planted with non-native garden plants and otherwise landscaped and hence does not support a variety of native plant or animal species. Not a significant seepage area.
<p>Amphibian Breeding Habitat (Woodland).</p> <p><u>Rationale:</u> These habitats are extremely important to amphibian biodiversity within a landscape and often represent the</p>	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	<ul style="list-style-type: none"> Presence of a wetland, pond or woodland pool (including vernal pools) >500m² (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat 	<p>Studies confirm;</p> <ul style="list-style-type: none"> Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated 	Results of calling amphibian surveys revealed Call Level Code for only one of the listed species (Spring Peeper). Not significant Woodland Amphibian Breeding habitat.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
only breeding habitat for local amphibian populations		Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	<u>Information Sources</u> <ul style="list-style-type: none"> Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. OMNRF District. OMNRF wetland evaluations Field Naturalist clubs Canadian Wildlife Service Amphibian Road Call Survey Ontario Vernal Pool Association: http://www.ontariovernalpools.org 	around suitable breeding habitat within or near the woodland/wetlands. <ul style="list-style-type: none"> The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. SWHMiST Index #14 provides development effects and mitigation measures. 	
Amphibian Breeding Habitat (Wetlands) <u>Rationale:</u> Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	<ul style="list-style-type: none"> Wetlands >500m² (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> <ul style="list-style-type: none"> Ontario Herpetofaunal Summary Atlas (or other similar atlases) Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. OMNRF Districts and wetland evaluations Reports and other information available from Conservation Authorities. 	Studies confirm: <ul style="list-style-type: none"> Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. The ELC ecosite wetland area and the shoreline are the SWH. A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMiST Index #15 provides development effects and mitigation measures. 	Habitat of property and adjacent lands do not provide ELC communities listed.
Woodland Area-Sensitive Bird Breeding Habitat <u>Rationale:</u> Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha, <ul style="list-style-type: none"> Interior forest habitat is at least 200 m from forest edge habitat. <u>Information Sources</u> <ul style="list-style-type: none"> Local bird clubs. Canadian Wildlife Service (CWS) for the location of forest bird monitoring. Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species Reports and other information available from Conservation Authorities. 	Studies confirm: <ul style="list-style-type: none"> Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. Conduct field investigations in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" SWHMiST Index #34 provides development effects and mitigation measures. 	Woodlands of property and adjacent lands function as possible/probable breeding habitat for 3 of the listed species. Property and adjacent lands function as habitat for Woodland Area-sensitive Bird Breeding Habitat.

2.4 -Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH Defining Criteria	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources		
<p>Marsh Breeding Bird Habitat</p> <p>Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.</p>	<p>American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan</p> <p>Special Concern: Black Tern Yellow Rail</p>	<p>MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1</p> <p>For Green Heron: All SW, MA and CUM1 sites.</p>	<ul style="list-style-type: none"> Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF District and wetland evaluations. Field Naturalist clubs Natural Heritage Information Center (NHIC) Records. Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas. 	<p>Studies confirm:</p> <ul style="list-style-type: none"> Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or or1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #35 provides development effects and mitigation measures 	<p>Property and adjacent lands do not provide suitable habitat for marsh breeding birds. None of the listed species observed on or adjacent to the property during breeding bird surveys.</p>
<p>Open Country Bird Breeding Habitat Sources Defining Criteria</p> <p>Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.</p>	<p>Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow</p> <p>Special Concern Short-eared Owl</p>	<p>CUM1 CUM2</p>	<p>Large grassland areas (includes natural and cultural fields and meadows) >30 ha</p> <ul style="list-style-type: none"> Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas Reports and other information available from Conservation Authorities. 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 2 or more of the listed species. A field with 1 or more breeding Short-eared Owls is to be considered SWH. The area of SWH is the contiguous ELC ecosite field areas. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #32 provides development effects and mitigation measures 	<p>Property does not provide grassland habitat and grasslands to the south are relatively small (much less than 30ha). None of the listed species observed on or adjacent to the property during breeding bird surveys.</p>
<p>Shrub/Early Successional Bird Breeding Habitat</p> <p>Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.</p>	<p>Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher</p> <p>Special Concern: Yellow-breasted Chat Golden-winged Warbler</p>	<p>CUT1 CUT2 CUS1 CUS2 CUW1 CUW2</p> <p>Patches of shrub ecosites can be complexed into a larger habitat for some bird species</p>	<p>Large field areas succeeding to shrub and thicket habitats >10ha c/xiv in size.</p> <ul style="list-style-type: none"> Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> Agricultural land classification maps, Ministry of Agriculture. Local bird clubs. Ontario Breeding Bird Atlas Reports and other information available from Conservation Authorities. 	<p>Field Studies confirm:</p> <ul style="list-style-type: none"> Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. The area of the SWH is the contiguous ELC ecosite field/thicket area. Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” SWHMiST Index #33 provides development effects and mitigation measures. 	<p>Property does not provide field areas succeeding to shrub/thicket habitat. Adjacent lands to the south provide relatively small areas of shrub/thicket cover (<10ha). . None of the listed species observed on or adjacent to the property during breeding bird surveys.</p>

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Terrestrial Crayfish Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (Fallicambarusfodiens) Devil Crayfish or Meadow Crayfish; (Cambarus Diogenes)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. <ul style="list-style-type: none"> Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources</u> <ul style="list-style-type: none"> Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. PremekHamr for the WWF and CNF March 1998 	Studies Confirm: <ul style="list-style-type: none"> Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult SWHMiSTIndex #36 provides development effects and mitigation measures. 	No crayfish chimneys observed during multiple site visits.
Special Concern and Rare Wildlife Species Rationale: These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites <u>Information Sources</u> <ul style="list-style-type: none"> Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca Ontario Breeding Bird Atlas Expert advice should be sought as many of the rare spp. have little information available about their requirements. 	Studies Confirm: <ul style="list-style-type: none"> Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. SWHMiST Index #37 provides development effects and mitigation measures. 	Eastern Wood-pewee (SC) detected as a possible breeder in forest habitat of the property and adjacent lands. Property and adjacent lands function as habitat for Special Concern and Rare Wildlife – Eastern Wood-pewee.

2.5 - Animal Movement Corridors

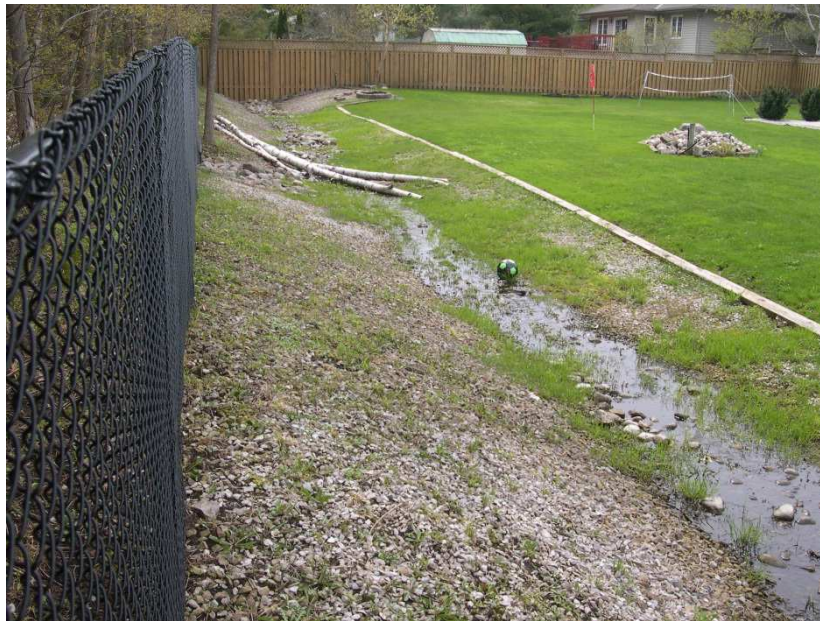
Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
<p>Amphibian Movement Corridors</p> <p>Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.</p>	<p>Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog</p>	<p>Corridors may be found in all ecosites associated with water.</p> <ul style="list-style-type: none"> Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1 	<p>Movement corridors between breeding habitat and summer habitat.</p> <ul style="list-style-type: none"> Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat –Wetland) of this Schedule. <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Office. Natural Heritage Information Center (NHIC). Reports and other information available from Conservation Authorities. Field Naturalist Clubs. 	<ul style="list-style-type: none"> Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. SWHMIST Index #40 provides development effects and mitigation measures 	<p>Property and adjacent lands not functioning as Significant Wildlife Habitat with respect to Amphibian Breeding Habitat – Woodland or Wetland.</p>
<p>Deer Movement Corridors</p> <p>Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.</p>	<p>White-tailed Deer</p>	<p>Corridors may be found in all forested ecosites.</p> <p>A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.</p>	<p>Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule.</p> <ul style="list-style-type: none"> A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <p><u>Information Sources</u></p> <ul style="list-style-type: none"> MNRF District Office. Natural Heritage Information Center (NHIC). Reports and other information available from Conservation Authorities. Field Naturalist Clubs. 	<ul style="list-style-type: none"> Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors. SWHMIST Index #39 provides development effects and mitigation measures 	<p>Property and adjacent lands not functioning as Deer Yard habitat. Property located in urban area. No logical landscape connection through property or adjacent lands conveying deer to or from area Deer Yarding Areas.</p>

2.6 -Exceptions for EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	Candidate			Confirmed SWH	Assessment
		Ecosites	Habitat Description	Habitat Criteria and Information	Defining Criteria	
<p>6E-14</p> <p>Rationale: The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears.</p>	<p>Mast Producing Areas</p> <p>Black Bear</p>	<p>All Forested habitat represented by ELC Community Series:</p> <p>FOM FOD</p>	<ul style="list-style-type: none"> Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. Forested habitats need to be large enough to provide cover and protection for black bears 	<p>Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech),</p> <p><u>Information Sources</u> Important forest habitat for black bears may be identified by OMNRF.</p>	<p>All woodlands > 30ha with a 50% composition of these ELC Vegetation Types are considered significant:</p> <p>FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5</p> <p>SWHMiST Index #3 provides development effects and mitigation measures.</p>	<p>Property is not located on Bruce Peninsula.</p>
<p>6E-17</p> <p>Rationale: Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population</p>	<p>Lek</p> <p>Sharp-tailed Grouse</p>	<p>CUM CUS CUT</p>	<ul style="list-style-type: none"> The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated. 	<p>Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland.</p> <ul style="list-style-type: none"> Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting <p><u>Information Sources</u></p> <ul style="list-style-type: none"> OMNRF district office Bird watching clubs Local landowners Ontario Breeding Bird Atlas 	<p>Studies confirming lek habitat are to be completed from late March to June.</p> <ul style="list-style-type: none"> Any site confirmed with sharp-tailed grouse courtship activities is considered significant The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat SWHMiST Index #32 provides development effects and mitigation measures 	<p>Property is not located on Manitoulin Island.</p>



PHOTOGRAPH 1. Vernal Pools (May 8, 2017).



PHOTOGRAPH 2. Outlet 1 (mapped drainage feature) (May 8, 2017).



PHOTOGRAPH 3. Seep (May 8, 2017).



PHOTOGRAPH 4. Seep (May 8, 2017).



PHOTOGRAPH 5. Grate in south ditch of Millwood Road conveying flow into pipe buried within adjacent park (May 8, 2017)).



PHOTOGRAPH 6. Outlet of mapped drainage feature at north end of park (May 8, 2017).



PHOTOGRAPH 7. Alignment of mapped drainage feature in east ditch of Gillett Drive (May 8, 2017).



PHOTOGRAPH 8. Unmapped drainage feature (Outlet 2) as it discharges from property to the east (May 8, 2017).



APPENDICES

Appendix A: Terms of Reference

Appendix B: Project Field Staff

Appendix C: Species at Risk Information Request

Appendix D: Environmental Features Background Mapping

Appendix E: Draft Plan of Subdivision



APPENDIX A

Terms of Reference

Mike Francis

From: Thompson, Tiffany [Tiffany.Thompson@simcoe.ca]
Sent: June 2, 2016 11:05 AM
To: Jim Broadfoot; Michelle Hudolin
Cc: Andrew Fyfe; Eldon Theodore; Westendorp, Nathan; Marek, Greg
Subject: RE: Proposed Term of Reference, Scoped NHA for development of property at 3879 Townline Rd. in Marchmont, Township of Severn

Good Morning Everyone,

As my colleague Greg Marek noted below, I am the County Planner assigned to this subdivision file. Following a review of the proposed terms of reference for the scoped NHA for 3879 Townline Road in Marchmont, the approach proposed by Azimuth along with the additional clarification items by the SSEA and Township are agreeable to the County. I would note an additional item to be included would be an assessment of the existing woodland and consideration of the significant woodland criteria as established by the MNRF and as required by the PPS.

I am certain that the NHA will also include a reference to the existing site conditions/development permissions along with details of the proposed development.

Please ensure that I am circulated on all correspondence related to the NHA as well as all other studies and submissions. If anything further is required at this time, do not hesitate to contact me.

Regards, Tiffany

Tiffany Thompson BES MCIP RPP
Planner II
County of Simcoe, Planning Department
1110 Highway 26, Midhurst, Ontario L0L 1X0
Phone: 705-726-9300 Ext. 1185 Fax: 705-727-4276
Email: tiffany.thompson@simcoe.ca
www.simcoe.ca

From: Marek, Greg
Sent: Thursday, June 02, 2016 9:32 AM
To: 'Jim Broadfoot' <Jim@Azimuthenvironmental.Com>; Michelle Hudolin <mhudolin@midland.ca>
Cc: Andrew Fyfe <AFyfe@townshipofsevern.com>; Wierzba, Tomasz <Tomasz.Wierzba@simcoe.ca>; Eldon Theodore <etheodore@mhbcpplan.com>; Thompson, Tiffany <Tiffany.Thompson@simcoe.ca>; Westendorp, Nathan <Nathan.Westendorp@simcoe.ca>
Subject: RE: Proposed Term of Reference, Scoped NHA for development of property at 3879 Townline Rd. in Marchmont, Township of Severn

Good morning,

Tiffany Thompson from the County's planning department has been assigned to this file. Please copy her with all correspondence regarding this proposed subdivision application.

Her contact information is as follows:

Tiffany Thompson BES MCIP RPP
Planner II

County of Simcoe, Planning Department
1110 Highway 26, Midhurst, Ontario L0L 1X0
Phone: 705-726-9300 Ext. 1185 Fax: 705-727-4276
Email: tiffany.thompson@simcoe.ca
www.simcoe.ca

Tomasz Wierzba and myself can be removed from your copy list.

Thank you.

Greg Marek, MCIP, RPP

Planner III
County of Simcoe, Planning Department
Phone: 705-726-9300 x1362

 Please consider the environment before printing my email.

From: Jim Broadfoot [<mailto:Jim@AzimuthEnvironmental.Com>]
Sent: Thursday, June 02, 2016 9:25 AM
To: Michelle Hudolin
Cc: Andrew Fyfe; Marek, Greg; Wierzba, Tomasz; Eldon Theodore
Subject: RE: Proposed Term of Reference, Scoped NHA for development of property at 3879 Townline Rd. in Marchmont, Township of Severn

Michelle Hudolin, Wetlands & Habitat Biologist
SSEA

Hello Michelle:

Preliminary site visits in April 2016 revealed an ephemeral drainage feature originating in the eastern section of the property and conveying spring surface water flows off site to the east. Azimuth proposes the following field work to address this drainage feature within the NHA:

- Mapping of alignment of the drainage feature on the property and as it flows off site (to the extent possible based on observations from the property).
- Summer observations to assess seasonality of flow.
- Collection of channel morphometry data (bank flow with, bank flow depth, etc.) for sections of the drainage feature having a defined channel.
- Description of channel substrate.
- Provision of photos of the drainage feature within the NHA report.
- Assessment of fish habitat function of the drainage feature.

Please advise if the SSEA requires additional studies to address the unmapped drainage feature.

Thank you.

Jim Broadfoot, Terrestrial Ecologist

Please note we have moved office, e-mail and phone numbers remain the same
Azimuth Environmental
642 Welham Road
Barrie, ON

L4N 9A1
(705) 721-8451 x 206
Mobile (705) 427-3422

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering

From: Michelle Hudolin [<mailto:mhudolin@midland.ca>]
Sent: May-31-16 1:05 PM
To: Jim Broadfoot
Cc: Andrew Fyfe; Marek, Greg; Wierzba, Tomasz (Tomasz.Wierzba@simcoe.ca); Eldon Theodore
Subject: RE: Proposed Term of Reference, Scoped NHA for development of property at 3879 Townline Rd. in Marchmont, Township of Severn

Hello Jim,

The Severn Sound Environmental Association (SSEA) and the Township of Severn have reviewed the proposed Terms of Reference you provided for the Natural Heritage Evaluation at 3879 Town Line in Marchmont on 15-Apr-2016.

As a result of our discussions, the Terms of Reference have been slightly modified (see highlighted/italicized text added to your email below). Information in square brackets is provided to you for clarification.

If any watercourses or Species At Risk are identified during field visits, please notify SSEA as soon as possible so that we can assess the need for any additional field work or specific surveys that may be required. As you are aware, information on the location of many federal and provincial Species At Risk (SAR) should be treated as sensitive data, and in these cases, information must be disclosed to the municipality and applicable agencies in a manner that does not make it part of public record (e.g., mapping/ information provided separate from the main report, subject to restricted access).

All field work will be described to the following standards:

- Date, time, and duration of field work/survey [incl. start time, end time of site investigations]
- Sampling locations and/or area searched [i.e., identified on a map]
- Purpose of field work and survey protocol(s) used/ summary of investigation methods
- Relevant temperature and weather conditions during site investigations [cloud cover, wind speed, precipitation (type and amount)]
- Personnel involved [name and qualifications]

With the modifications (below) and additions noted above in this email, the proposed scope of work for the Natural Heritage Evaluation is acceptable to SSEA and the Township. The County of Simcoe may have additional requirements or comments.

Please contact me if you have any questions or need clarification.

Thank you.
Michelle

Michelle Hudolin

Wetlands & Habitat Biologist
Severn Sound Environmental Association
67 Fourth Street
Midland ON L4R 3S9
Tel: 705-527-5166 ext. 202
Fax: 705-527-5167
Email: mhudolin@midland.ca
Web-site: www.severnsound.ca

This message is intended for the individual to whom it is addressed and may contain information that is confidential and exempt from disclosure under the Municipal Freedom of Information and Protection of Privacy Act. If you are not the intended recipient, please do not forward, copy or disclose this message to anyone and delete all copies and attachments received. If you have received this communication in error, please notify the sender immediately.

Be Green! Read from the screen.

Please don't print this email or attachments unless you really need to.

From: Jim Broadfoot [<mailto:Jim@Azimuthenvironmental.Com>]

Sent: April-15-16 2:27 PM

To: Michelle Hudolin

Cc: afyfe@townshipofsevern.com; Wierzba, Tomasz; David Meeks (highlevelconstruction@gmail.com); Eldon Theodore (etheodore@mhbcpplan.com)

Subject: Proposed Term of Reference, Scoped NHA for development of property at 3879 Townline Rd. in Marchmont, Township of Severn

Michelle Hudolin, Wetlands & Habitat Biologist
Severn Sound Environmental Association

Hello Michelle:

Azimuth has been retained to complete a Natural Heritage Evaluation (NHE) for a residential subdivision proposed on a property located at 3879 Townline Rd. in Marchmont. The proponent (Highlevel Construction) has consulted with the Township (Andrew Fyfe) and has been advised that the NHE is to be "scoped". Azimuth confirmed with Andrew Fyfe that the Severn Sound Environmental Association (SSEA) is the appropriated organization to be providing input to define a terms of reference/scope for the NHE. The municipality also advised that the County of Simcoe was to be included in project scoping (hence copy to Tomasz Weizba, Planning Information Analyst, on this e-mail).

The property is approximately 10ha in size and tree covered throughout (see map attached). Simcoe County mapping indicates that "MNR Unevaluated Wetland" units have been delineated on some portions of the property. There are no mapped watercourses located on or adjacent to the property. Based on these characteristics we recommend the following scope of work for the EIS:

- Submit an Information Request to the Ministry of Natural Resources & Forestry (MNRF) Midhurst District to identify Species at Risk (SAR) of concern in the area and establish if significant natural heritage features or functions have been identified on or adjacent to the property;
- Complete a SAR assessment based on data provided by the MNRF and available in other background data for the area and as identified through field studies;
- Conduct an early spring site-visit to: assess the accuracy of the MNRF's mapping of wetland habitat on the property (as reflected on Simcoe County GIS mapping) and establish if the property provides potential amphibian breeding habitat (*i.e.*, vernal/temporary pools, ponds, etc.); and assess if the site contains an abundance of wildlife cavity trees (a potential issue in regard to habitat of SAR bats);

- If the early spring site-visit reveals potential for amphibian breeding, complete evening calling amphibian surveys following the methods of the Marsh Monitoring Program (April, May, June 2016);
- Conduct two dawn breeding bird surveys (June, 2016) to determine if the property and adjacent lands function as habitat for SAR and/or area-sensitive species;
- Conduct one evening survey in June (2016) under full to near full moon conditions to address the potential for the following SAR birds that may utilize habitat on or adjacent to the property: Eastern Whip-poor-will (Threatened); Common Nighthawk (Special Concern);
- Map *and describe* vegetation communities of the property using the protocols of the Ecological Land Classification (ELC) for southern Ontario based on a June site visit, *to Vegetation Type; [for lands identified as Significant Woodlands, ELC must include descriptions of species, composition, and age structure];*
- Conduct two vascular plant surveys (June, July 2016);
- Assess the health of any Butternut trees identified on-site according to provincial Butternut Health Assessment guidelines (June/July 2016);
- Record other wildlife observations (mammals, reptiles, amphibians & birds) and assess wildlife habitat function of the property according to the Significant Wildlife Habitat Ecoregion 6E Criteria of the MNRF *[Identify, map and describe potential Significant Wildlife Habitat (SWH) within the study area, and provide sufficient detail to determine whether these areas meet the current criteria for candidate or confirmed SWH];*
- Map vegetation communities and other environmental features (e.g. drainage features, wetlands, areas of ground water discharge, etc.) on an air photo base;
- Assess the potential direct and indirect impacts of development proposed for the property on sensitive or significant environmental features identified in background and site-specific data; and ,
- Compile a list of recommendations to avoid and/or mitigate the potential for negative environmental impacts.

We look forward to your response.

Please do not hesitate to call to discuss.

Thank you,

Jim Broadfoot, Terrestrial Ecologist

Please note we have moved office, e-mail and phone numbers remain the same

Azimuth Environmental

642 Welham Road

Barrie, ON

L4N 9A1

(705) 721-8451 x 206

Mobile (705) 715-7105

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering



APPENDIX B

Project Field Staff



JIM BROADFOOT

H. B.Sc. (Wildlife Biology), Fish and Wildlife Technologist
Terrestrial Ecologist

PROFILE

1997 - Present	Terrestrial Ecologist, Azimuth Environmental Consulting Inc.
1991 - 2002	Broadfoot Consulting
1988 - 1991	Field Biologist, Cooperative Deer Study, OMNR, Wildlife Research Section
1987 - 1988	Marketing Director, Wildlife Telemetry Systems, Lotek Engineering Inc
1984 - 1987	Field Biologist, Cooperative Deer Study, OMNR, Wildlife Research Section
1983	Biologist, OMNR, Wildlife Branch, Fur Management Unit
1982	Biologist, Statistical Analysis, OMNR, Wildlife Branch, Fur Management Unit
1979 - 1980	Research Technician, Rabies Research Unit, OMNR, Wildlife Research Section
1978	Research Technician, Predator Ecology Unit, OMNR, Wildlife Research Section
1981 - 1984	H. B.Sc. (Wildlife Biology), University of Guelph
1978 - 1979	Fish and Wildlife Technology Diploma, Sir Sandford Fleming College
1976 - 1978	Fish and Wildlife Technician Diploma, Sir Sandford Fleming College

EXPERIENCE

1997 – Present Terrestrial Ecologist, Azimuth Environmental Consulting Inc.

- Completed numerous projects requiring expertise in vegetation community classification, wetland boundary delineation, biological inventories, fisheries assessments and detailed assessment of potential direct, indirect and cumulative impacts of developments including residential/industrial, linear corridor construction and maintenance (i.e., roadways, pipelines, etc.) and aggregate extraction/mining;
- Completed peer review of projects potentially impacting aquatic, wetland and terrestrial environments related to development including aggregate resources/mining;
- Obtained Federal *Fisheries Act* approvals for projects affecting fish habitat;
- Completed numerous Species At Risk (SAR) assessments related to development including residential/industrial development, roadway expansion and maintenance, bridge/culvert replacements, etc.;
- Completed SAR net benefits permit applications under Ontario's *Endangered Species Act, 2007* (i.e., Section 17.2.c);
- Completed numerous Butternut health assessments to assess tree retention status under Ontario's *Endangered Species Act, 2007*;
- Completed environmental inspections and environmental compliance monitoring for highway construction, road and bridge construction projects and water control structures in regard to fish habitat and SAR;
- Prepared numerous restoration plans to enhance the function of riparian, wetland and woodland protection buffers and naturalized storm water management facilities;
- Assisted many municipalities in the development of environmental policies as part of the Official Plan revision process;
- Appeared as an expert witness at numerous Ontario Municipal Board hearings and mediation sessions;



- Designed and implemented and on-going vegetation monitoring program for the National Capital Commission (NCC) to assess temporal trends in vegetation composition of forest ecosystems of Ottawa's Greenbelt with emphasis on the impact of browsing and grazing by deer ;
- Delineated significant habitat of an endangered turtle species based on the results of radio-telemetry studies;
- Assisted the NCC and Parks Canada in decision making related to management of high density deer herds.

1991 – 2002 Broadfoot Consulting

- Development of a spatial raccoon rabies model incorporating GIS interface and explicit disease control routines in conjunction with Queen's University GIS Department.
- Worked on a team to develop a decision support system for Ontario deer managers. System includes a risk assessment tool, data archive, population model, habitat supply and harvest demand models and deer harvest prescriptions.
- Assessed the feasibility and logistics of restoring elk populations in Ontario.
- Moose Habitat Supply Analysis: Development of spatial moose habitat supply model for the Great Lakes St. Lawrence Forest Region using Forest Resources Inventory data and raster based GIS.
- White-tailed Deer Habitat Supply Analysis: Development of the algorithm and functional relationships for a habitat supply model for White-tailed Deer structured around the use of Forest Resources Inventory Data.
- White-tailed deer study, Bruce Peninsula National Park: Assessment of current deer population size, regulating factors, habitat quality and supply & development of an innovative, ecosystem based approach to deer management.
- Meaford Tank Range: Assessment of wildlife populations and their habitat with emphasis on White-tailed Deer and Coyotes.
- FACT Sheets and Technical Bulletins: Options for the control of deer damage to agricultural crops in Ontario.

1978 – 1991 Field Biologist/Technician, OMNR, Wildlife Research Section

- Modelling - Co-ordinated and participated in co-operative project (Wildlife Research/Queen's University) to develop a computer simulation model of deer population dynamics to be used by OMNR field staff. The model considered all aspects of deer biology including seasonal range dynamics and density dependant feedback on mortality and reproduction. Developed algorithm and code for a model to simulate overwinter deer mortality and estimate winter range carrying capacity.
- Field Work - Supervised and conducted radio-tracking studies and co-ordinated and conducted forage biomass experiments regarding White-tailed Deer. Carried out field studies to define various aspects of the ecology of Ontario's rabies vectors including Red Fox, Striped Skunk, Raccoon and Coyote. Participated in development of oral rabies vaccine prototype bait preparation and aerial delivery system for the province. Performed necropsies on rabies vectors. Captured, radio-tagged and radio-tracked Black Bears in central Ontario and Polar Bears in Hudson Bay Lowlands. Trapped raccoons with new humane trap designs. Field tested the feasibility of the remote capture radio-collar design.



PROFESSIONAL AFFILIATIONS, CERTIFICATION & TRAINING

- Ontario Wetland Evaluation System Certification, OMNR
- Butternut Health Assessor
- Class 2 Electrofishing Certification, OMNR
- Standard First Aid – Level A CPR, St. John Ambulance
- Grass Identification Workshop – Royal Botanical Gardens, 2012
- Training Course, GIS in Infrastructure Management - GEOMATICS Canada, 1997

COMMITTEES

- 2006 - 2014 Province of Ontario - Rabies Advisory Committee (Chair)
- 1988 - 1994 Chairman (1991 - 1994) Sir Sandford Fleming College, Fish and Wildlife Program Advisory Committee
- 1987 Sir Sandford Fleming College, Fish and Wildlife Program Review Committee

PUBLICATIONS (Peer Reviewed)

Broadfoot, J.D., R.C. Rosatte, and D.T. O'Leary. 2001. Raccoon and skunk population models for urban disease control planning in Ontario, Canada. *Ecological Applications*, 11:295-303.

Gilon, G., S.G. Gransden, D. Lynn, J. Broadfoot, and R. Scroggins. 1999. A behavioural toxicity test using the ciliated protozoan *Tetrahymena thermophila*. I.: method description. *Environmental Toxicology and Chemistry*, 18:1813-1816.

Addison, E.M., R.F. McLaughlin, and J.D. Broadfoot. 1998. Effect of winter tick (*Dermacentor albipictus*) on blood characteristics of moose (*Alces alces*). *Alces*, 34:189-199.

Broadfoot, J.D., E.M. Addison, R.F. McLaughlin, and D.J.H. Fraser. 1997. Flehmen in captive moose calves (*Alces alces*). *Alces*, 33:43-47.

Broadfoot, J.D., Joachim, D.G., Addison, E.M., and K.S. MacDonald. 1996. Weights and measurements of selected body parts, organs and long bones of 11-month-old moose. *Alces*, 32:173-184.

Broadfoot, J.D., D.R. Voigt, and T.J. Bellhouse. 1996. White-tailed deer summer dispersion areas in Ontario. *Can. Field Nat.* 110:298-302.

Voigt, D.R., and J.D. Broadfoot. 1995. Effect of cottage development on deer winter habitat on Lake Muskoka. *Can. Field Nat.* 109:201-204.

Addison, E.M., R.F. McLaughlin, and J.D. Broadfoot. 1994. Growth of moose calves (*Alces alces americana*) not infested and infested with winter ticks (*Dermacentor albipictus*). *Can. J. Zool.* 72:1469-1476.

Voigt, D.R., and J. Broadfoot. 1983. Locating pup-rearing dens of red foxes with radio-equipped woodchucks. *J. Wildl. Manage.* 47(3):858-859.



LISA A. MORAN

B.Sc (Env)

Terrestrial Ecologist

PROFILE

2006-Present	Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.
2005	Environmental Scientist, MacViro Consultants Inc.
2003	Ecologist, Nottawasaga Valley Conservation Authority
1999-2003	B.Sc.Env, University of Guelph, Environmental Science

EXPERIENCE

2006 – Present Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.

Complete Project Management for projects requiring expertise in biological inventories of amphibians, birds, wildlife and vegetation, evaluation of ecological systems, impact assessment and development of management measures for Environmental Impact Studies. The range of projects completed includes municipal road repair/expansion projects, large-scale residential/commercial/industrial development, individual lot severances, linear corridors including pipelines (i.e. Union Gas) and water mains, site restoration, natural heritage studies within larger planning areas, storm water planting plans and naturalization plans. Other activities undertaken since joining Azimuth include:

- Evaluation of ecological systems using the Ecological Land Classification system and/or Forest Ecosystems of Central Ontario including plant community classification, floral and wildlife (birds, amphibians, and mammals) inventories, wetland boundary delineation, and identification of Significant Natural Heritage Features to assess the potential for post development direct, indirect and cumulative impacts for use in Class Environmental Assessments, Environmental Impact Assessments, and Natural Heritage Evaluations;
- Co-ordination and completion of Natural Heritage Evaluations within the Oak Ridges Moraine, Greenbelt and Niagara Escarpment to investigate the potential for impacts associated with development and determine conformity with the Oak Ridge Moraine Conservation Plan, Greenbelt Plan and the Niagara Escarpment Plan. One component to these studies includes the identification of the minimum vegetation protection zones required to protect the identified Key Natural Heritage and Key Hydrologic Features;
- Project Management for projects located within terrestrial, and wetland environs primarily for the development of Environmental Impact Assessments and acquisition of Municipal, Provincial and Federal environmental approvals;
- Identification of significant natural heritage features through acquisition of available background information and air photo interpretation;
- Liaise with municipalities, government agencies and private developers/land owners;
- Creation of vegetation enhancement plans for a variety of projects including forest edge management and storm water treatment ponds;
- Species at Risk assessments and in consultation with MNR, species specific SAR surveys investigating the potential for significant habitat for species at risk as listed by the Endangered Species Act, 2007, O.Reg 230/08;
- Identification and assessment of the Natural Heritage Features within the City of Toronto's trail network for the City of Toronto Natural Trail Management Strategy. These features were then ranked according to their sensitivity to help divert development away from the



most sensitive features;

- Terrestrial Ecologist working with Union Gas on the Owen Sound Replacement Project, Leamington Pipeline, and the Panhandle Pipeline. Responsible for obtaining relevant background information, identification of the key natural heritage features, assessing the study area for potential SAR habitat, identify potential impacts of the pipeline, devise mitigation measures, consult with the Ministry of Natural Resources to discuss construction mitigation to avoid permits issued under the ESA, liaise with local Conservation Authority to provide environmental information and ascertain compensation measures required, provide natural heritage expertise for the public/agency consultation including Public Information Sessions, impact mitigation study on preferred route, and preparation of the Environmental Report, subject to review by the Ontario Energy Board.

2005-2006 Environmental Scientist, MacViro Consultants Inc.

- Collecting stream flow, baseflow, water temperatures and groundwater level data as well as assessing stream health conditions; Co-coordinating and leading field teams, collecting field surveys, installing stream flow monitoring and telemetry equipment, surveying, preparing and maintaining temperature data loggers.

2003-2005 Ecologist, Nottawasaga Valley Conservation Authority

- Natural Heritage Strategy: Contribute to the development of a Geographic Information Systems (GIS) based model to be used for a Natural Heritage Strategy (NHS); Interpret air photos, orthophotography and satellite imagery to delineate natural features on the landscape; Use ArcMap to input and generate data to construct layers for the NHS model.

PROFESSIONAL AFFILIATIONS, CERTIFICATION & TRAINING

- Designated Butternut Health Assessor – Forest Gene Conservation Association/Ontario Ministry of Natural Resources and Forestry (OMNRF)
- Reptile and Amphibian Field Survey Training Course – OMNRF
- Ontario Wetland Evaluation System Certification – OMNRF
- Ecological Land Classification Training Course – OMNRF
- *Salix* Workshop, Goldenrods and Asters Workshop, Field Botanists of Ontario
- Native Shrub Identification Workshop, University of Guelph Arboretum
- Water Quality Analyst Certification, Ministry of the Environment
- Warbler Identification Workshop, University of Guelph Arboretum
- Breeding Bird Atlas and Christmas Bird Count Participant



MIKE FRANCIS

H. B.Sc.

Terrestrial Ecologist

PROFILE

2016 - Present	Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.
2015 - 2016	Coordinator, Conservation Biologist, Nature Conservancy of Canada
2014-2015	Conservation Technician, Nature Conservancy of Canada
2014-2015	Conservation Coordinator, Long Point Basin Land Trust
2013	Environmental Technician, Lake Simcoe Region Conservation Authority
2010-2013	Area Crew Leader / Coordinator, GTEL Engineering

EXPERIENCE

2016 – Present Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.

- Preparing Environment Impact Studies, including preparing proposals, collecting field data, and compiling reports for clients;
- Conducting assessments and screenings for Species at Risk and Significant Wildlife Habitat in Ontario;
- Conducting vegetation surveys, including delineating and evaluating vegetation communities using the Ecological Land Classification for Southern Ontario; and
- Preparing Tree Re-planting Plans for urban development mitigation.

2015 – 2016 Conservation Biologist / Coordinator, Nature Conservancy of Canada

- Conservation planning, including preparing Property Management Plans and Natural Area Conservation Plans;
- Evaluating prospective property acquisitions based on their conservation and ecological value;
- Coordinating staff, including an Assistant Biologist and Conservation Interns;
- Coordinating field teams through SAR surveys, restoration activities, Ecological Land Classification, and general property monitoring; and
- Coordinating and implementing volunteer and public outreach events.

2014 – 2015 Conservation Technician, Nature Conservancy of Canada

- Extensive mapping and monitoring of various Species at Risk;
- Vegetation monitoring, including: transect/plot surveys, baseline vegetation inventories;
- Conducting outreach, including: liaising with private donors and leading property tours;
- Invasive species management, including: mapping, monitoring, and eradication of various invasive plantspecies (*Giant Hogweed*, *Dog Strangling Vine*, *Garlic Mustard*, *Purple Loosestrife*); and
- Stream bank stabilization and in-stream habitat restoration.

2014 – 2015 Conservation Coordinator, Long Point Basin Land Trust

- Collecting, compiling and analyzing reptile observation data for the land trust's 'Conserving Carolinian Reptiles' program;
 - Researching nature reserves, including conducting inventory of species and evaluating / mapping vegetation communities;
 - Preparing Property Management Plans and grant funding reports;
 - Constructing and monitoring various artificial habitat structures; and
 - Liaising with landowners, partner organizations, and land trust volunteers to develop relationships and increase the profile of the organization.
-



2013 Environmental Technician, Lake Simcoe Region Conservation Authority

- Identifying and collecting data on stream deficiencies across York Region;
- Surveying stream profiles to document changes in physical features;
- Assessing risks to nearby infrastructure and recommending steps for mitigation;
- Developing procedures for future monitoring of documented sites;
- Preparing summary reports of field data; and
- Liaising with the client to ensure timely delivery of the program.

2010-2013 Area Coordinator, GTEL Engineering

- Locating, classifying, and assessing the environmental and human risk of natural gas leaks;
- Collecting air samples and evaluating soil conditions at suspected leak sites;
- Leading surveying crews, training staff, and coordinating workloads;
- Daily and weekly input of data onto spreadsheets; and
- Liaising with clients and landowners regarding each natural gas leak evaluation.

PROFESSIONAL AFFILIATIONS, CERTIFICATIONS AND TRAINING

• Class 2 Backpack Electrofishing Crew Leader	2016
• Pesticide Applicator License (Landscape & Forestry)	2014
• Ecological Land Classification Certificate	2015
• Emergency First Aid with CPR A + AED	2014
• Ontario Reptile & Amphibian Training Course	2016



BRUNA PELOSO

M. Sc., H. B.Sc. (Biology)

Terrestrial Ecologist

PROFILE

2015 - Present Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.
2013 - 2015 Species-at-Risk Biologist, Canadian Wildlife Service – Environment Canada
2013 Environmental Field Technician, Rouge Park
2012 - 2013 Environmental Biologist, Tarandus Associates Environmental Consultants
2012 - 2013 Environmental Management Certification, University of Toronto
2011 Aquatic Field Technician and Benthic Lab Technician, TRCA
2010 - 2011 Herbarium Technician, Royal Ontario Museum (ROM)
2009 - 2010 Volunteer Research Assistant, Faculty of Forestry, University of Toronto
2007 - 2009 Master of Science – Remote Sensing of Environment, Brazilian National Institute for Space Research (INPE) – accredited by the University of Toronto
2002 - 2005 Honours Bachelor of Science – Major: Biology, Minor: Ecology, Federal University of Sao Carlos (UFSCar), Brazil - accredited by the University of Toronto

EXPERIENCE

2015 – Present Terrestrial Ecologist, Azimuth Environmental Consulting, Inc.

Components of projects located within terrestrial, and wetland environs primarily for the development of Class Environmental Assessments, Environmental Impact Assessments, and Natural Heritage Evaluations for the acquisition of Municipal, Provincial and Federal environmental approvals. Responsible for carrying out records reviews, participating in agency consultation, developing and executing field programs, data collection, data processing, and synthesizing technical reports.

Activities include:

- Terrestrial biological inventory and evaluation of ecological systems using the Ecological Land Classification system including plant community classification, floral and wildlife (birds, amphibians, reptiles and mammals) inventories, wetland boundary delineation and identification of Significant Natural Heritage Features; in order to assess post-development impact upon Species at Risk, evaluate the presence of unique habitats. Projects include impact assessments and development of management measures for Environmental Impact Studies, Environmental Assessments, and acquisition of Municipal, Provincial and Federal environmental approvals;
- Completion of Species at Risk Assessments in compliance with the Endangered Species Act and in consultation with MNRF;
- Creation of vegetation enhancement plans for projects including storm water treatment ponds and forest edge management;
- Liaison with municipalities, government agencies and private developers.

2013 – 2015 Species-at-Risk Biologist, Canadian Wildlife Service - EC

Assisted with the development of Species at Risk Recovery Strategy documents and Management Plans. Activities included:

- Research and review scientific literature; process, analyse and summarize biological/ecological data and information (including Critical Habitat); write technical reports; provide comments and advice during the development of documents. Worked on the development of Recovery Strategies for Virginia Mallow, Purple Twayblade; Blanding's Turtle, Eastern Musk Turtle,



Spotted Turtle, Spiny Softshell Turtle, Queensnake; Rusty-Patched Bumble Bee, amongst others; and on the development of Management Plan for Northern Map Turtle

- Lead on the Management Plans for Houghton's Goldenrod and Blue Ash
- Policy analysis and application of several statutes and acts, focusing on Species at Risk Act and Migratory Birds Convention Act;
- Review of funding program applications for species at risk, such as Habitat Stewardship Program (HSP)
- Preparation of contracts and review of deliverables, such as recovery planning documents, critical habitat and survey/monitoring data •
- Data management duties, such as tracking progress on data entry, creation of metadata and quality control of database

2013 Environmental Field Technician, Rouge Park (volunteer)

Performed Effectiveness Monitoring and Ecological Land Classification on Rouge Park's restoration sites. Identified SAR, helping the park to prioritize areas for conservation.

2012-2013 Environmental Biologist, Tarandus Associates Environmental Cons.

Conducted biological research on proposed development sites to determine the impact on existing habitats; outline preservation areas and/or to create an inventory of existing wildlife. Performed field work including biological assessments, SAR screening, Ecological Land Classification (ELC) and Wetland Evaluation (OWES); and synthesized technical reports. Contracted out by the Infrastructure Ontario, municipalities, construction firms and private landowners.

2011 Aquatic Field Technician and Benthic Lab Technician, TRCA

Held a dual-role for TRCA's Watershed Monitoring Program comprising of fieldwork and lab work. Acquired habitat data and performed sampling for channel structure, substrate and bank conditions (Ontario Stream Assessment Protocol - OSAP); collected samples of benthic invertebrates (OSAP); performed backpack electrofishing and fish identification; sorted and identified collected invertebrate specimens (Ontario Benthos Biomonitoring Network), and performed QA/QC on co-workers' lab work

2011 – 2011 Herbarium Technician, Royal Ontario Museum (ROM)

Organized, managed and optimized the ROMs' botanical collection data, according to Canadensys requirements; performed data entry and georeferenced hundreds of specimens for that project. The main goal of Canadensys project is to make specimen information, held by Canadian universities and Museums, readily available to users through a network of databases.

PROFESSIONAL AFFILIATIONS, CERTIFICATION & TRAINING

• Butternut Health Assessor (BHA), FGC/MNRF	2014
• Reptile and Amphibian Field Survey Training Course, MNRF/ON Nature	2014
• Data Sensitivity Training, NHIC/MNRF	2013
• Ecological Land Classification Certification (ELC), MNRF	2012
• Ontario Wetland Evaluation System Certification (OWES), MNRF	2012
• Ontario Stream Assessment Protocol Certification (OSAP), TRCA	2011
• Ontario Benthos Biomonitoring Network (OBBN), MNRF	2011
• Member of the Field Botanists of Ontario	2012 (since)



KASIA ZGURZYNSKI

NPD, CSC, Red Seal Certified Landscape Horticulturist
Botanist

PROFILE

2015 - Present Botanist, Azimuth Environmental Consulting, Inc.
2013 – 2015 Environmental Horticulturist/Proprietor, Earthy Gardens
2013 Grower, Jeffery's Greenhouses
2012 Environmental Horticulture Research Assistant, Vineland Research and Innovation Centre
2009 - 2012 Horticulture (NPD) (Honours), Niagara Parks Botanical Gardens and School of Horticulture
2007 Environmental Research Assistant, Niagara Research
2006 - 2009 Environmental Technician Field and Laboratory, Niagara College

EXPERIENCE

2015 – Present Botanist, Azimuth Environmental Consulting, Inc.

- Conduct vegetative field surveys for clients, as part of Environmental Site Assessment and Natural Heritage Inventories, as well as for general documentation over time
- Prepare planting plans to fulfil mitigation requirements, as mandated by governing authorities
- Identify vascular plant species for colleagues, using collected samples and photographs
- Develop and maintain an herbarium of collected vascular plant species from various field studies, to assist with identification and documentation

2013 – 2015 Environmental Horticulturist/Proprietor, Earthy Gardens

- Landscape consultation, design, installation, and maintenance, using ecologically sensitive methods, while increasing creature comfort of both clients and wildlife
- Consult on community projects related to horticulture as a tool in poverty alleviation, and for use in therapeutic and educational settings
- Conduct nature tours and group hikes for a wide range of audiences, including school children, people with physical and developmental disabilities, and general interest groups

2013 Grower, Jeffery's Greenhouses

- Controlled favourable conditions for a variety of ornamental plant species, using specialized fertilization and irrigation techniques
- Practiced Integrated Pest Management (IPM), specializing in Biological Control as a self-sustained system within the greenhouses, and monitoring for signs and symptoms of insect pest populations

2012 Environmental Horticulture Research Assistant, Vineland Research and Innovation Centre

- Assisted with project design and development, in order to help obtain optimal fertilizer requirements for common horticultural species
- Participated in water analysis, measuring leaching fertilizer concentrations against nutrient sequestration
- Helped to install and maintain the irrigation system to provide cultural requirements to each plant specimen, while standardizing fertilizer input according to project specifications



2009 - 2012 Horticulture (NPD) (Honours), Niagara Parks Botanical Gardens and School of Horticulture

This is a 36-month diploma school, which emphasizes both academic and practical program achievements, with regular evaluation of horticultural skill development. 70% of course time is dedicated to maintaining the Niagara Parks Botanical Gardens and becoming competent in a broad range of horticultural skills.

- Gained experience in plant taxonomy and botany, landscape maintenance, arboriculture, plant pathology, greenhouse operations, propagation, landscape design, hardscape construction, etc.
- Prepared an independent study on native plants in place of alien ornamentals in horticulture
- Focused particularly on ecological gardening and native plants
- Main project was successfully proposing wetland ecology garden, and long-term based project development
- Completed an internship with Sassafras Farms, a nursery which specializes in native plants and ecosystem restoration

2007 Environmental Research Assistant, Niagara Research

- Built a successful snapping turtle (*Chelydra serpentina*) nesting habitat, with the research team and student volunteers, using guidelines provided by The Toronto Zoo - Adopt a Pond program
- Conducted a vegetative survey of the Niagara Escarpment toe, to establish a baseline for gauging changes over time
- Monitored for bird populations at regular intervals throughout the research term
- Built a weather station within the lagoon system, and monitored weather patterns daily
- Restructured the lagoon shore using logs to prevent erosion, and planted native vegetation for increased biomass and root infiltration, providing shore stability and wildlife habitat, as well as increased environmental remediation function of the lagoon system

2006 - 2009 Environmental Technician Field and Laboratory, Niagara College

- Gained experience with Environmental Site Assessments, Ecological Land Classification Systems, applications of environmental laws and regulations, ecological monitoring based on the Environmental Monitoring and Assessment Network (EMAN) protocols, scientific report writing, etc.
- Co-created a wetland vascular plant nursery in the research greenhouse, regularly monitoring plants for germination and vigour
- Gained a detail oriented sampling and analysis technique within the laboratory setting
- Focused particularly on wetland ecology and restoration, using the onsite remediation lagoon system as a topic of study for various reports, mainly interested in the impact of vegetative biomass in sequestration of toxins and nutrients



PROFESSIONAL AFFILIATIONS, CERTIFICATION & TRAINING

2014 – Present	Vice President, Niagara Parks School of Horticulture Alumni Association
2013 – Present	Certified Seed Collector, Ontario Urban Forestry Council (OMNR)
2013 – Present	Landscape Horticulturist, The Interprovincial Red Seal Program
2013 – Present	Grower Pesticide Safety Certificate, University of Guelph
2011 – Present	Advisory Committee Member, Malcolmson Eco Park (City of St. Catharines)
2011 – Present	Member, North American Native Plant Society
2011 – Present	Member, Carolinian Canada Coalition
2011	Seed Collection and Processing Certification Workshop, Tallgrass Ontario
2010	Wetland Restoration Workshop, Royal Botanical Gardens
2006	Co-Chairperson, Niagara Environmental Corps (NEC)

PUBLICATIONS AND PRESENTATIONS

- Zgurzynski, K. 2015. The Annual Meeting of the Minds: Growing Toward a New Year with the Alumni. *Horticultural Herald*. **43, 2**: 1
- Zgurzynski, K. 2015. Legacy Prairie Garden Grand Opening: An Ecological Unveiling. *Horticultural Herald*. **43, 1**: 1
- Zgurzynski, K. 2012. Gardening to Promote Biodiversity: Using Native Plants in Place of Alien Ornamentals. *The Pin Oak*. **14**: 4-7
- Zgurzynski, K. 2012. Native Plants in the Landscape. Presented to The Peninsula Field Naturalists Club. Nov. 2012
- Zgurzynski, K. 2012. Using Native Plants Species in Place of Alien Ornamentals. Presented to the Niagara Parks Botanical Gardens and School of Horticulture. Jan. 2012
- Zgurzynski, K. 2011. Wetland Ecology. Presented to The Master Gardeners Club. April 2011
- Zgurzynski, K. 2010. Frogs and Toads: Our Companions in the Garden. Presented to The Niagara Parks Botanical Gardens and School of Horticulture as part of the Earth Day Speaker Series. May 2010
- Zgurzynski, K. 2010. Frogs and Toads: Our Sensitive Companions. *The Pin Oak*. **12**: 3-4

HONORS AND AWARDS

- | | |
|------|--|
| 2013 | Recipient of the Trillium Green Leadership Award for work with Malcolmson Eco-Park |
| 2012 | Recipient of the Barnsley-Pierce Memorial Scholarship for exemplifying a love and respect for horticulture and a passion to share that love and respect with the community at large |
| 2012 | Recipient of the Ontario Parks Association Student Award of Recognition for committing to the protection of parks and environment and dedication to horticulture by respect for green space and natural heritage |
| 2012 | Recipient of the Niagara Parks Student Association Best Supervisor Award |
| 2012 | Recipient of the Beatrice Catharine Martin Scholarship for the highest combined mark in Commercial Production Greenhouse and Tropical Plants |
| 2011 | Recipient of the Garden Club of Ancaster Award for achieving the highest total mark in Greenhouse Floriculture Practical I |
| 2010 | Nominated by two instructors for the McGraw-Hill Ryerson Student Scholarship Program, for Ecological Stewardship |



APPENDIX C

Species at Risk Information Request



Environmental Assessments & Approvals

June 2, 2016

AEC 16-113

VIA E-MAIL ONLY

Ministry of Natural Resources & Forestry
Midhurst District
2284 Nursery Road
Midhurst, Ontario
L0L 1X0

Attention: Midhurst SAR Team

**RE: Species at Risk Information Request Related to a Proposed Residential
Subdivision 3879 Town Line Road - Marchmont, Simcoe County**

To Whom it May Concern:

Azimuth Environmental Consulting (Azimuth) has been retained to prepare a scoped Environmental Impact Study (EIS) for a plan of residential subdivision located within the settlement area of Marchmont. We are sending this letter as a component of the Species at Risk (SAR) assessment for this property.

EXISTING CONDITIONS

The property covers approximately 10.5ha and is located at 3879 Town Line Road within the settlement area of Marchmont (see attached Figure). Lands are designated as “Settlement Living Area” under the Township of Severn Official Plan.

Site investigations completed in April 2016 revealed the following:

- The property is forest covered throughout containing coniferous, mixed and deciduous forest. Coniferous/mixedwood communities are dominated by Eastern White Pine with Red Pine and Scotch Pine. Coniferous stand origin appears to have resulted from planting. Deciduous forest communities are located on the eastern section of the property and are represented by poplar successional forest



and mature tolerant hardwood forest containing Northern Red Oak, Sugar Maple and White Ash.

- Simcoe County Mapping indicated coverage of much of the property by “MNR Unevaluated Wetland” (see attached Figure). Field studies indicate that much of the area mapped as wetland is actually forest. An area of vernal pool formation and associated surface drainage occurs within the forest cover of the eastern section of the property. Ground cover vegetation in the area of vernal pools drainage channels is dominated by upland plant species.
- The property is vacant but abuts a residential subdivision to the north associated with Millwood Road.
- There are no mapped watercourses on or adjacent to the property.
- The property is located over 400m from the closest MNR Evaluated Wetland unit (located to the north – see attached Figure).

PROPOSED DEVELOPMENT

The property is envisioned to be developed throughout as a residential subdivision similar to lands to the north and elsewhere within Marchmont.

Access would be from Town Line Road.

The development would likely require some form of surface water management – i.e., Storm Water Management facility, etc.

Sewer and water services would be developed in keeping with existing services within the settlement area.

BACKGROUND SAR DATA

On-line from the NHIC database and Ontario Breeding Bird Atlas, and the Species at Risk list for Simcoe County (2009) indicate that the following species have the potential to occur in the area: Common Nighthawk; Whip-poor-will; Chimney Swift; Red-headed Woodpecker; Eastern Wood-pewee; Bank Swallow; Barn Swallow; Wood Thrush; Golden-winged Warbler; Cerulean Warbler, Canada Warbler; Bobolink; Eastern Meadowlark; Least Bittern; Black Tern; Loggerhead Shrike; Eastern Hog-nosed Snake; Eastern Milksnake; Eastern Ribbonsnake; Massasauga; Five-lined Skink; Musk Turtle a.k.a. Stinkpot; Northern Map Turtle; Blanding’s Turtle; Snapping Turtle; Spotted Turtle; Bittern; and Engelmann’s Quillwort. There appear to be no Restricted Species record for the area on file with the NHIC.

Given our understanding of the habitat requirements of the above noted species as per Provincial Recovery Strategies and Species Specific Habitat Regulations under the



Endangered Species Act, 2007 (Ontario Regulation 242/08) and other sources, the following Species at Risk species will be addressed in our EIS: Red-headed Woodpecker; Eastern Wood-pewee; Wood Thrush; Golden-winged Warbler; Canada Warbler; Cerulean Warbler; Eastern Milksnake and Butternut.

There is currently no indication that potential habitat for Whip-poor-will; Common Nighthawk; Chimney Swift; Bank Swallow; Barn Swallow; Bobolink; Eastern Meadowlark; Black Tern; Loggerhead Shrike or Least Bittern. The property and adjacent lands do not provide ponded/long duration surface water accumulation suitable to turtle species. Azimuth is aware that these species have been identified in the area historically, and will continue to be mindful of the species during the site assessment. We propose however, that the species will not be considered in our EIS unless our onsite evaluation, or MNRF response provide information which indicate potential habitat for the species. If the District's files contain additional or contradictory information, we would appreciate your input at this time.

Azimuth generally appends agency correspondence to its EIS reports. If the MNRF has records of a RESTRICTED SPECIES in the area, we request that the MNRF provides two copies of the response - one with the species name replaced with (Restricted Species) for inclusion in the appendices of our EIS, the other retaining the identity of the species for Azimuth's internal use only.

Thank you very much for your assistance in this matter.

If you have any questions regarding this project please do not hesitate to contact us.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jim Broadfoot, H.B.Sc.
Terrestrial Ecologist

Attach: Site Location Map

County of Simcoe

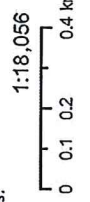


- Highway
- Major Road
- Ramp
- Local Road
- Unassumed and Seasonal Road

Aerial Photos flown in the spring of 2012



This map, either in whole or in part, may not be reproduced without the written authority from © The Corporation of the County of Simcoe.
 This map is intended for personal use, has been produced using data from a variety of sources and may not be current or accurate.
 Produced (in part) under license from:
 © Her Majesty the Queen in Right of Canada, Department of Natural Resources;
 © Queens Printer, Ontario Ministry of Natural Resources;
 © Teranet Enterprises Inc. and its suppliers;
 © Members of the Ontario Geospatial Data Exchange.
 All rights reserved. THIS IS NOT A PLAN OF SURVEY.



1:18,056

Jim Broadfoot

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: July-18-16 10:46 AM
To: Jim Broadfoot
Subject: RE: SAR Information Request - AZimuth re: Marchmont EIA, 2016

Hi Jim,

I have taken a look at the study area and the species at risk found in that immediate area and your list is very complete.

To demonstrate due diligence for species at risk (SAR), an ecological site assessment would not just consider known records of SAR but also, and most importantly, would have to consider the available habitat on the subject lands and what SAR have the potential to be present based on this habitat. As you are aware, given the private landscape in which we work and operate, it would be impossible to know all SAR that occur on private properties.

This list of species below, represents potential species at risk on the subject lands based on MNRF's screening /review of aerial photography of the subject lands and the available habitat on site.

- Little Brown Bat (END)
- Northern Long-eared Bat (END)
- Tri-colored Bat (END)
- To a lesser degree American Ginseng (END)

Any questions feel free to give me a call or email at any time.

Best Regards,

From: Jim Broadfoot [<mailto:Jim@Azimuthenvironmental.Com>]
Sent: June-20-16 1:58 PM
To: Shirley, Brent (MNRF)
Subject: RE: SAR Information Request - AZimuth re: Marchmont EIA, 2016

Hello Brent:

Sorry about that – guess I scanned a double sided printout without noticing.

Corrected version of Info Request attached.

Please do not hesitate to call to discuss.

J b'foot

Jim Broadfoot, Terrestrial Ecologist

Please note we have moved office, e-mail and phone numbers remain the same

Azimuth Environmental
642 Welham Road
Barrie, ON
L4N 9A1
(705) 721-8451 x 206
Mobile (705) 427-3422

Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering

From: Shirley, Brent (MNRF) [<mailto:brent.shirley@ontario.ca>]
Sent: June-20-16 1:43 PM
To: Jim Broadfoot
Subject: RE: SAR Information Request - AZimuth re: Marchmont EIA, 2016

Hi Jim,

It appears as if the attachment information request is missing page 2. Could you re-send it to me so that we can proceed with your request? Thanks.

Best Regards,

Brent Shirley

A/ Management Biologist
Midhurst District Ministry of Natural Resources & Forestry
2284 Nursery Rd
Midhurst, ON
L0L 1X0

Phone- 705-725-7547
Fax- 705-725-7584

From: Jim Broadfoot [<mailto:Jim@Azimuthenvironmental.Com>]
Sent: June-02-16 3:45 PM
To: MIDHURSTSAR (MNRF)
Subject: SAR Information Request - AZimuth re: Marchmont EIA, 2016

SAR Team
MNRF Midhurst

To Whom it May Concern:

Attached please find SAR Information request submitted in regard to a Natural Heritage Evaluation our firm has been retained to complete for a property located at 3879 Town Line Road in Marchmont.

Please do not hesitate to call to discuss.

Thank you,

Jim Broadfoot, Terrestrial Ecologist

Please note we have moved office, e-mail and phone numbers remain the same

Azimuth Environmental

642 Welham Road

Barrie, ON

L4N 9A1

(705) 721-8451 x 206

Mobile (705) 427-3422

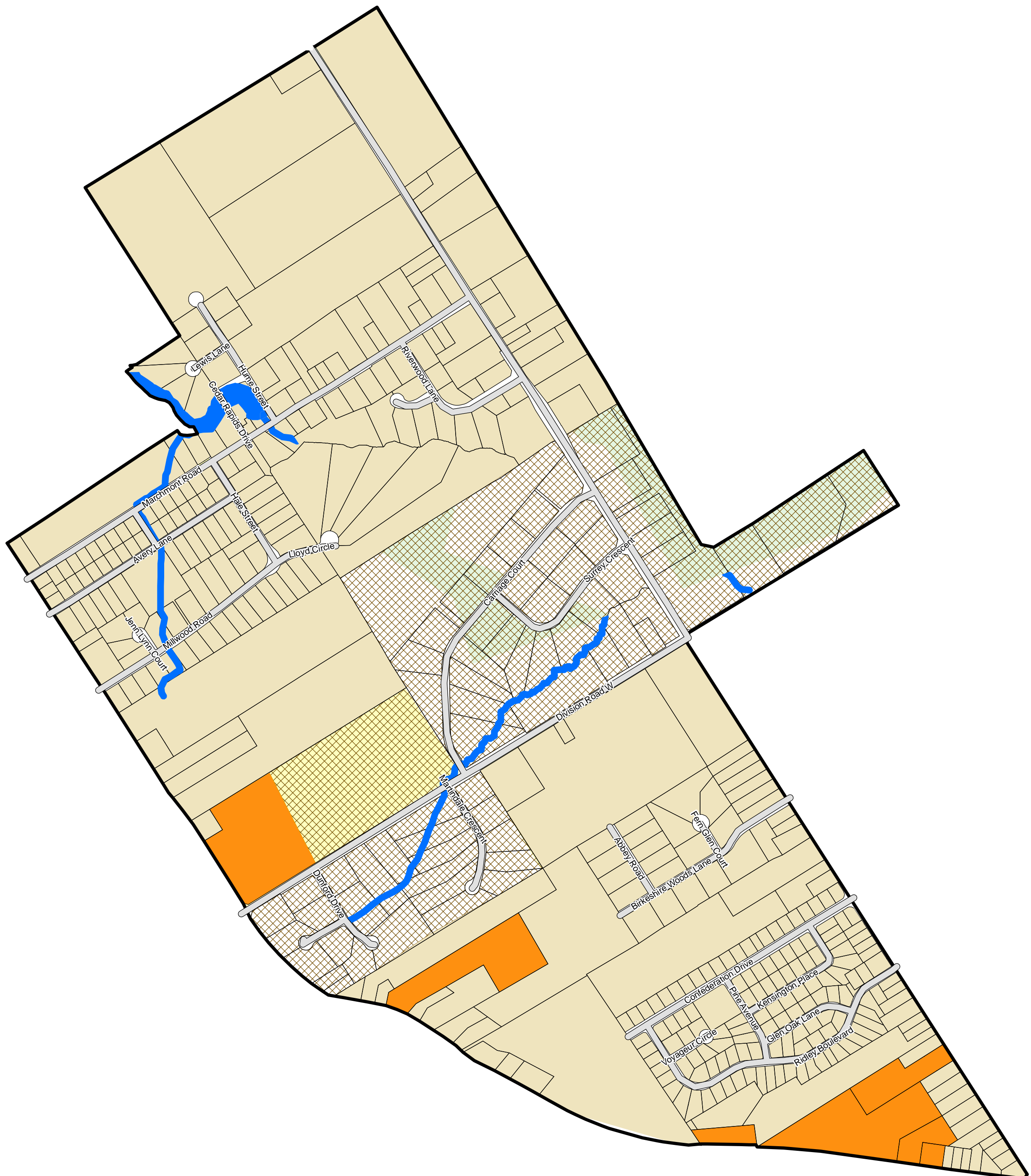
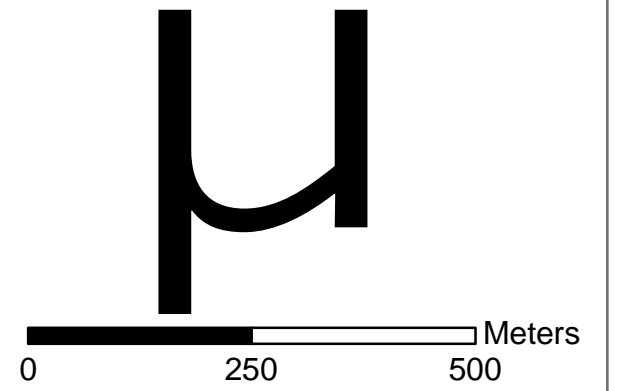
Providing services in hydrogeology, terrestrial and aquatic ecology & environmental engineering



APPENDIX D

Environmental Features Background Mapping

Township of Severn Schedule A6 Bass lake and Marchmont Settlement Areas



Legend

- PROVINCIAL HIGHWAY
- COUNTY ROAD
- LOCAL ROAD
- PRIVATE ROAD
- Settlement Boundary
- Country Residential
- Settlement Employment Area
- Highway Employment
- Settlement Living Area
- Major Recreation Area
- Resort Commercial
- Rural
- Shoreline Residential
- Settlement Employment SP Area
- Settlement Living SP Area
- Environmental Protection Area
- Greenlands
- Agricultural Land

* SP = Special Policy

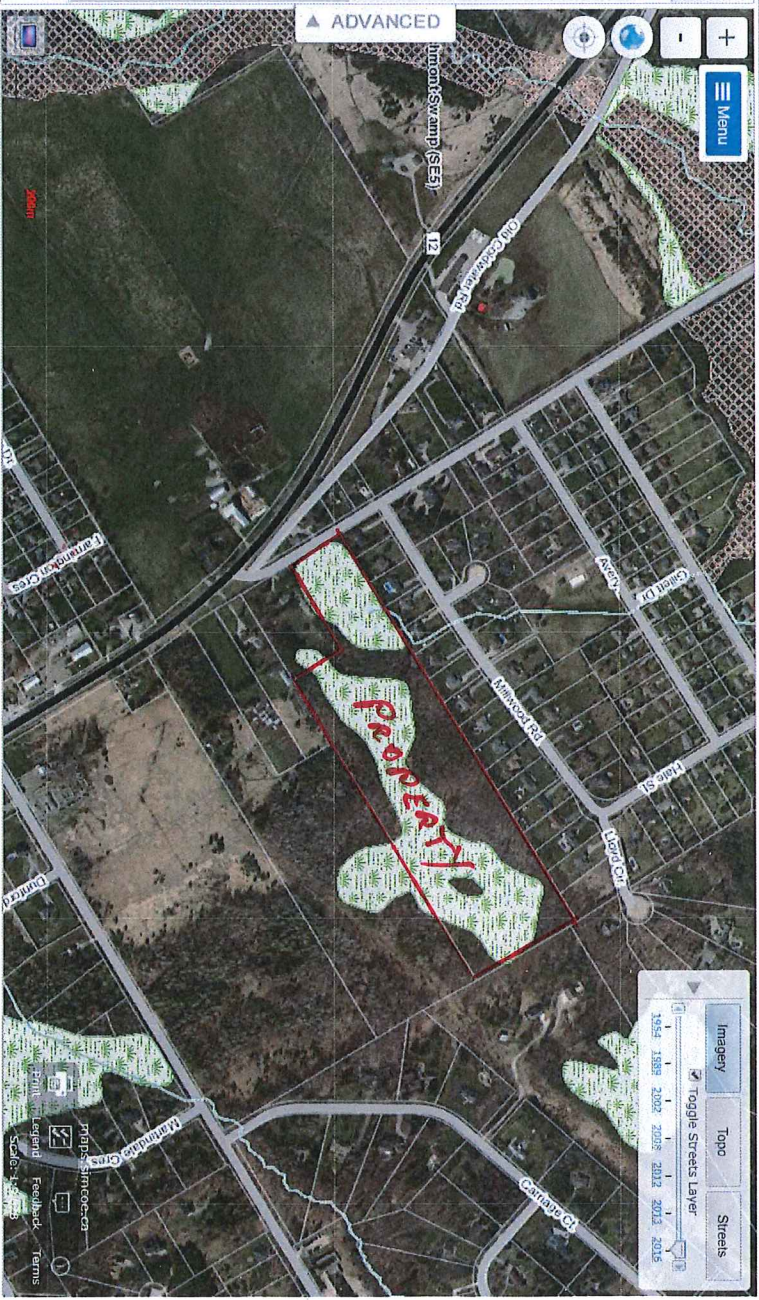


Search...

Basic Advanced Help

- Layers
- Tools
- My Maps
- Themes
- Reports

- Filter Content...
- County Official Plan OMB Approved Employment Areas
 - County Official Plan OMB Approved County Road System
 - County Official Plan OMB Approved Primary Sand & Gravel Deposits
 - County Official Plan OMB Approved Secondary Sand & Gravel Deposits
 - County Official Plan OMB Approved Bedrock Aggregate Resources (Midhurst District)
 - County Official Plan OMB Licensed Pits & Quarries
 - Oak Ridge Moraine Boundary
 - Niagara Escarpment Land Use Boundary
 - Greenbelt Plan Boundary
 - Forested Area/Woodlands
 - Soil Class (Canada Land Inventory)
 - ANSI (Area of Natural and Scientific Interest)
 - Oak Ridges Moraine ANSI
 - Parcels and Jurisdictions (0/1)
 - South Georgian Bay Lake Simcoe Source Water Protection (0/10)
 - Topographic Features (1/4)
 - Contour - 2 Meter
 - Stream
 - Lake, Pond, River or Streams
 - Wetland



MNRF Unevaluated Wetlands & Mapped Watercourses – Simcoe County GIS (accessed December 7, 2017)

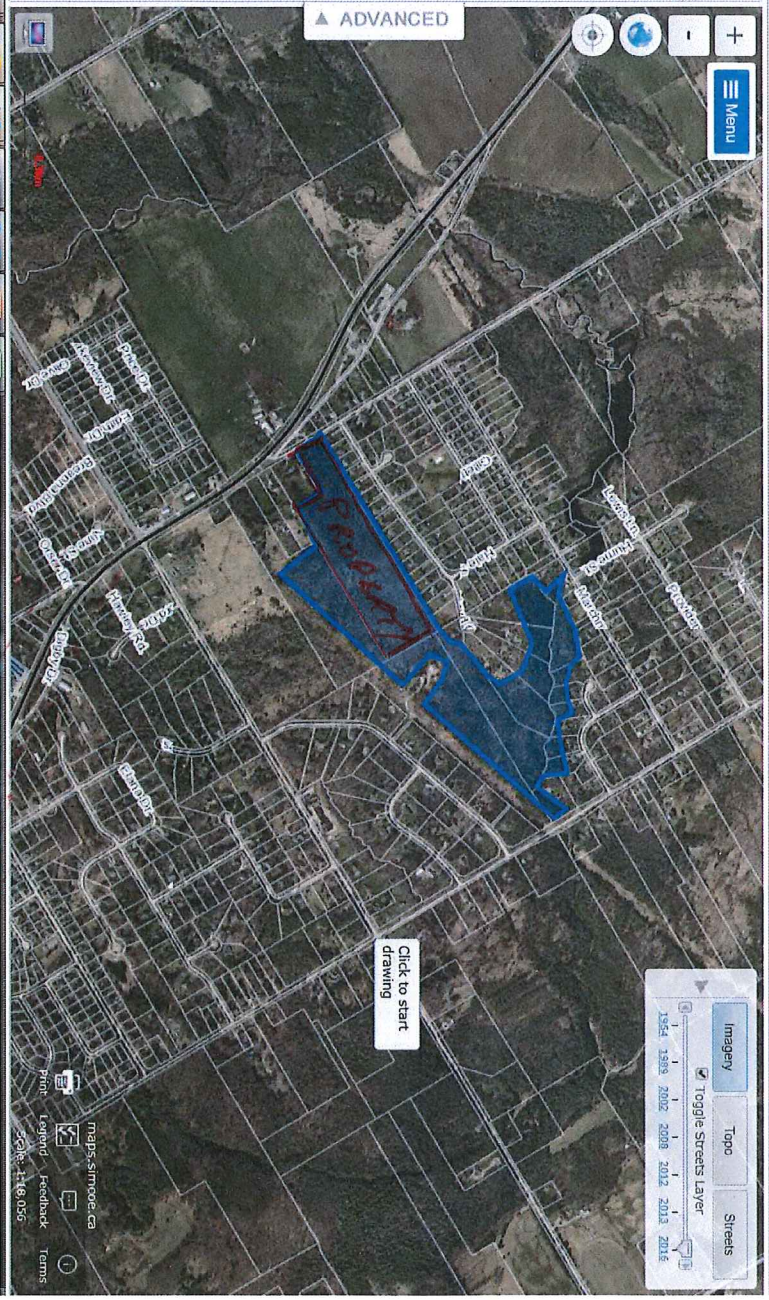
Layers Tools My Maps Themes Reports

Measure
Please select the type of measurements you wish to perform from the toolbar below. Use the line tools for distances and polygon tools for area.

Measure Tool

Measure Results [clear all]

<input checked="" type="radio"/> Acre	78.27	ac
<input type="radio"/> Hectare	31.67	ha
<input type="radio"/> Square km	0.32	sq. km
<input type="radio"/> Square Feet	3,409,229.50	sq. ft



Area of Continuous Woodland Cover – Simcoe County GIS (accessed December 7, 2017)

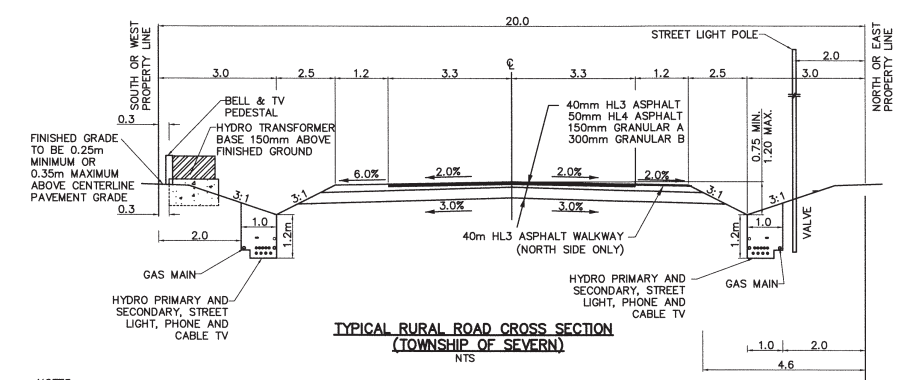
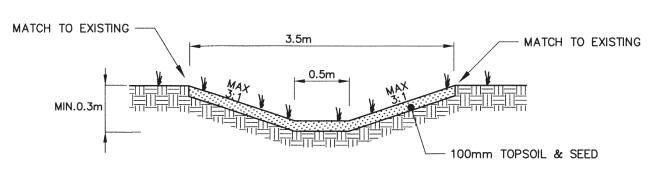
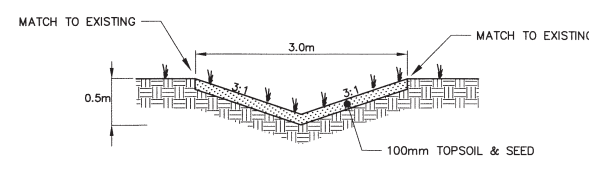
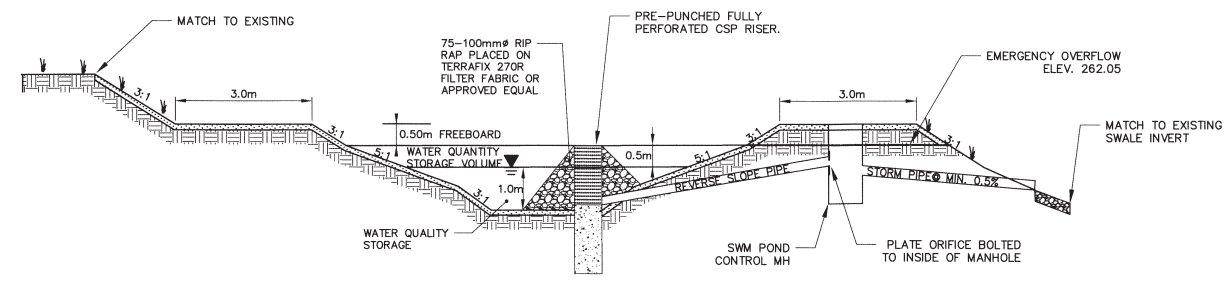


1954 Air Photo – Marchmont (http://maps.library.utoronto.ca/datapub/Ontario/APS_1954/446.793.jpg)

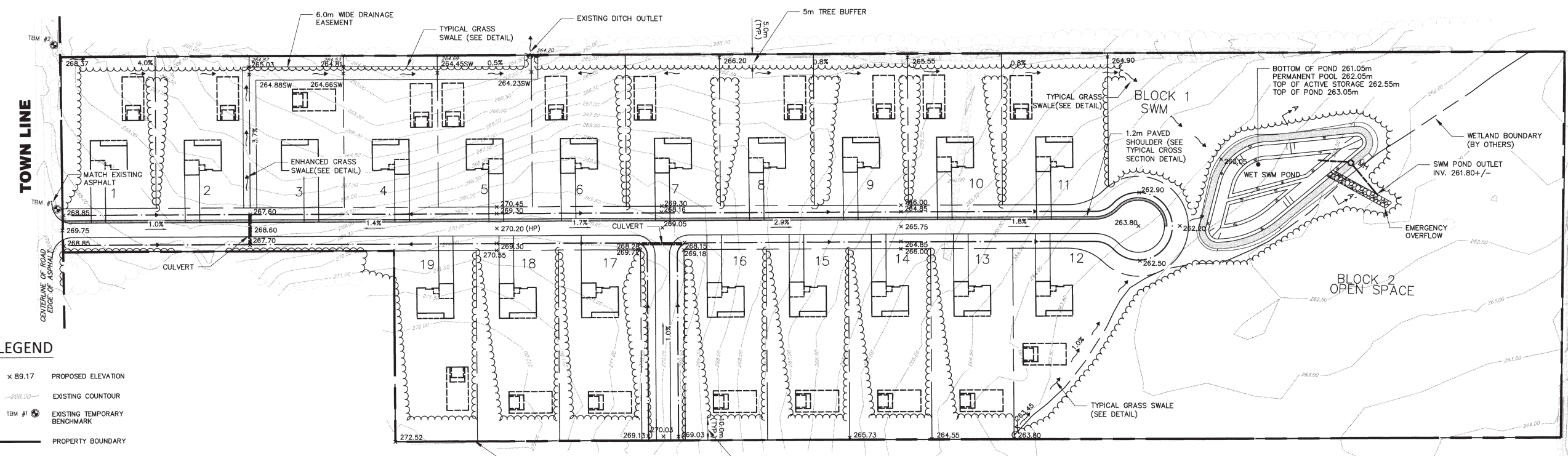
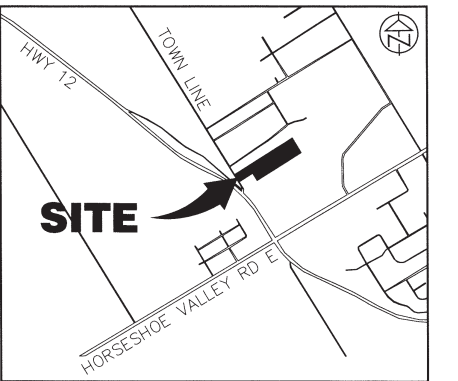


APPENDIX E

Draft Plan of Subdivision



- NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
 2. MINIMUM PAVEMENT AND ROAD STRUCTURE DESIGN AS PER TOWNSHIP OF SEVERN ENGINEERING CRITERIA OR AS PER GEOTECHNICAL INVESTIGATION RECOMMENDATION.
 3. DITCH GRADE TO BE MIN. 0.5%, MAX. 6.0% AND RESTORED WITH 100mm TOPSOIL & SOD.
 4. ALL SERVICE LOCATIONS SHOWN ARE FOR GUIDELINE PURPOSES ONLY AND MAY DEVIATE AS PER THE DIRECTION OF THE TOWNSHIP WHEN STANDARD LOCATION CANNOT BE ACHIEVED.



LEGEND

\times 89.17	PROPOSED ELEVATION
\sim 268.50	EXISTING COUNTOUR
TBM #1	EXISTING TEMPORARY BENCHMARK
---	PROPERTY BOUNDARY
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	PROPOSED DRAINAGE EASEMENT

CONTRACT DRAWINGS
 CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER BEFORE COMMENCING WORK. DRAWINGS ARE NOT TO BE SCALED.
 C.C. TATHAM & ASSOCIATES LTD. CLAIMS COPYRIGHT TO THIS DOCUMENT WHICH MAY NOT BE USED FOR ANY PURPOSE OTHER THAN THAT PROVIDED IN THE CONTRACT BETWEEN THE OWNER/CLIENT AND THE ENGINEER WITHOUT THE EXPRESS CONSENT OF C.C. TATHAM & ASSOCIATES LTD.

TBM INFORMATION
 TBM#1 NAIL AND WASHER IN HYDRO POLE LOCATED ON EAST SIDE OF TOWN LINE. ELEVATION 270.068.
 TBM#2 NAIL AND WASHER IN HYDRO POLE LOCATED ON EAST SIDE OF TOWN LINE. ELEVATION 207.066.

LEGAL INFORMATION FROM PLAN 51R-16559 BY DEARDON, STANTON, STONES AND STRONGMAN LTD. DATED DECEMBER 16, 1987.
 TOPOGRAPHIC SURVEY COMPLETED BY C.C. TATHAM & ASSOCIATES LTD. ON DECEMBER 13-17 2015.

NO.	REVISIONS	DATE	INITIAL

APPROVED

3879 TOWN LINE MARCHMONT SUBDIVISION TOWNSHIP OF SEVERN

PRELIMINARY GRADING AND SERVICING PLAN

C.C. Tatham & Associates Ltd.
 Consulting Engineers
 Collingwood Bracebridge Orillia Barrie Ottawa

SCALE: 1:1000
 DESIGN: JA
 DRAWN: HY

CHECKED:
 DATE: JULY, 2017

JOB NO. 315836
 DWG. **GS-1**