

Environmental Impact Study- Long Point Road

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Report Reference # 17-08.2

25 September 2018

Executive Summary

This EIS has been prepared in regard to two contiguous lots located on Long Point Road, Town of the Blue Mountains, Ontario (see Figure 1). The combined lots are approximately 2.2 hectares (ha), and for the purposes of this report, the two lots are treated as a single property and are referred to herein as the “Long Point Property”, or simply the “Property”.

Environmental Constraints

The Grey Sauble Conservation Authority (GSCA) has indicated that there are three issues that trigger the need for the EIS and which should be the basis for developing the EIS scope. These are

1. the presence of "Significant Woodlands throughout almost the entire Property,
2. the presence of a Provincially Significant Wetland (PSW) (Silver Creek Wetland Complex) within 120 m of the Property, and
3. the close proximity of the Property to a watercourse (Watercourse #1) that is reported to provide fish habitat.

The scope and content of this EIS are site-specific and have been developed so that concerns regarding the environment and natural heritage features are addressed to the satisfaction of approval authorities and other concerned agencies. The core environmental issues of potential concern associated with the Long Point Property include:

1. potential impacts that site development might have on watercourses which flow within or near to the Property (i.e., Watercourse 1 near the southeast corner of the property, and the municipal drain that flows just inside the western perimeter of the Property),
2. potential impacts that site development might have on Significant Woodlands within and adjacent to the Property, and their various functions;
3. potential impacts that site development might have on wetlands (and their functions) located to the west of the Property; and
4. potential impacts on species of conservation concern (SOCC), including legislated species at risk (SAR), or otherwise significant wildlife or wildlife habitat, that might be present on or near the Property.

Existing Conditions

The Long Point Property is occupied primarily by a few types of deciduous forest communities that are relatively young and comprised of plant species which are

provincially and regionally common. Overall, the terrestrial ecological functions supported within the Property are neither significant nor sensitive, nor are they vital to overall ecosystem integrity on a local or regional scale. In relative terms, the 0.35 ha of Birch-Poplar forest community at the west end of the Property (see Figure 4) has the highest potential for ecological benefits of the four forest communities within the Property.

There are two watercourses that pass through or near the Property. The municipal drain that runs along the western perimeter of the Property is a man-made stormwater conveyance feature that exhibits intermittent, event-based flow. This watercourse is lacking in natural characteristics and serves minimal ecological function, and does not appear to function as direct fish habitat. Watercourse #1 flows along the west side of Long Point Road and crosses the road by culvert about 40 m south of the Property. This stream exhibits consistent flow that supports populations of fish typical of warm-water or cool-water communities.

The Property also encompasses several very small wetland features, located within the western half of the Property. Examination of these wetlands indicates that their environmental functions are very limited and not likely meaningful in regard to local ecosystem function and integrity.

Analysis of Impacts

The current Draft Plan of subdivision identifies a total of 22 residential lots distributed over the full length of the Property along a central cul-de-sac access road. In considering the scenario without accounting for any planning adjustments or mitigating measures, the maximum theoretical impacts include the following;

- loss or impairment of cultural meadow, up to a maximum of approximately 0.2 ha,
- loss or impairment of Significant Woodlands, to a maximum of approximately ~2 ha,
- loss or impairment of small wetland features within the Property totaling <0.1 ha,
- encroachment within the "adjacent lands" (120 m) of a PSW located just west of the Property, and possible impairment of that PSW,
- disturbance or impairment of two nearby watercourses, and
- direct harm or habitat loss of any SOCC that may be present within or near the Property.

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Through detailed assessment, the likely risks of meaningful impacts to the natural heritage features of concern are as follows:

- Species of Conservation Concern - In absence of any likelihood of meaningful presence of SOCC within the Property, measurable impacts resulting from possible development activity are considered to be very unlikely, and would be very limited in terms of frequency and numbers of SOCC affected. The overall risk of the proposed development in regard to SOCC is deemed to be low.
- Watercourses - There is no expectation of any adverse effects of development on Watercourse #1. There is a limited potential for impacts on water quality in the municipal drain at the west end of the Property, but the implications are inherently limited owing to the fact that the drain does not serve as fish habitat or otherwise exhibit much ecological function. The overall risk of the proposed development in regard to watercourses is deemed to be low.
- Wetlands within the Property - The loss or impairment of the small wetlands within the Property is not expected to equate to meaningful loss of ecological function in the local natural heritage system. The overall risk of the proposed development in regard to the on-site wetlands is deemed to be low.
- Provincially Significant Wetlands - There is an absence of ecological or hydrological connectivity between the Property the Silver Creek PSW. Accordingly, residential development as proposed for the Long Point Property poses no meaningful risk of impacts on the PSW or its functions.
- Significant Woodlands - The woodlands within the Property are neither significant nor sensitive in terms of their various characteristics and functions. This inherently limits the implications of any possible loss or impairment of these communities as a result of proposed development. In strict consideration of the ecological features and functions ascribed to woodlands within the Property, any loss or impairment of these woodlands would not be considered significant.

Recommendations

Regardless of the low level of risk, there should be efforts to further mitigate the risk of any impacts potentially associated with proposed development of the Property. Recommendations are provided herein to avoid, limit or otherwise mitigate the potential impacts that have been identified. The recommendations are summarized as follows:

- To minimize the potential for any effects of development on local watercourses, and also wetlands, plans for grading and stormwater management should seek to maintain existing drainage patterns to the extent feasible.

- During any eventual construction or landscape alteration, an Erosion and Sediment Control (ESC) plan should be developed and implemented in accordance with established best practices.
- For the municipal drain that flows across the western perimeter of the Property, a minimum set-back of 10 m is recommended.
- The small wetlands within the Property should be retained and protected to the extent possible.
- Removal of any of the small wetlands should occur outside the time when amphibians are most likely to be present at these features (April to July).
- The Property should be developed so as to minimize the loss of any woodlands within the Property, with highest priority given to the Birch/Poplar forest at the west end of the Property.
- Clearing of forested areas within the Property should be timed to avoid the active bird nesting period (i.e., from May to August).
- Consideration should be given to the establishment of requirements for Tree Protection Plans (TPP) for all lots within the development, with emphasis on Lots at the west end of the Property.

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Acronyms and Abbreviations

ANSI	Area of Natural and Scientific Interest
BBS	Breeding Bird Survey
CCSS	Craigleith Camperdown Subwatershed Study
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
DBH	Diameter (of a tree) at breast height
EAB	Emerald Ash Borer
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESC	Erosion and Sediment Control
GSCA	Grey Sauble Conservation Authority
ha	hectare(s)
masl	meters above sea level
mbgs	meters below ground surface
MNRF	Ministry of Natural Resources and Forestry
NEP	Niagara Escarpment Plan
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OP	Official Plan
SAR	Species at Risk
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
SWM	Stormwater Management
TOBM	Town of the Blue Mountains
UTM	Universal Transverse Mercator

1.0 INTRODUCTION

1.1 Background

Property Description:

This EIS has been prepared in regard to two contiguous lots located on Long Point Road, Town of the Blue Mountains, Ontario (see Figure 1). The combined lots are approximately 2.2 hectares (ha) in area and are legally known as Plan 529 E, Part Lot 85 RP;16R2186, Parts 4 & 8 and Parts 5 & 9. For the purposes of this report, the two lots are treated as a single property and are referred to herein as the “Long Point Property”, or simply the “Property”.

The Town-of-the-Blue Mountains (TOBM) Official Plan (OP) and Grey County OP land-use designations for the Property are "Residential Recreational Area" and "Recreation Resort Area", respectively. The Property lies within the Niagara Escarpment Plan (NEP) area, and is designated "Escarpment Recreation Area" under that plan.

The Property is bordered by Long Point Road on its eastern perimeter, single-family residential lots to the immediate north and south, and vacant forested land to the west. Lands opposite the Property on the east side of Long Point Road are also occupied by single detached residential homes.

The Property itself is currently vacant and undeveloped. A draft plan of subdivision has been developed for the Property, proposing a total of 22 residential lots distributed along a central cul-de-sac access road. A copy of the Draft Plan is provided as Appendix A of this report.

Environmental Constraints

The current understanding of environmental issues of concern associated with the Property is based in part on a pre-consultation meeting with Grey Sauble Conservation Authority (GSCA) on 31 March 2017. The GSCA has indicated that there are three issues that trigger the need for the EIS and which should be the basis for developing the EIS scope. These are

4. the presence of Significant Woodlands throughout almost the entire Property,
5. the presence of a Provincially Significant Wetland (PSW) (Silver Creek Wetland Complex) within 120 m of the Property, and
6. the close proximity of the Property to a watercourse (Watercourse #1) that is reported to provide fish habitat.

There are no Areas of Natural or Scientific Interest (ANSI) or Significant Wildlife Areas, as identified in current OP or Ministry of Natural Resources and Forestry (MNR) mapping, in meaningful proximity to the Property.

Figure 2 depicts the environmental features that have been identified as possible constraints for the Property. The presence of Significant Woodlands within and adjacent to the Property and the presence of the PSW within 120 m of the Property serve as formal triggers for the EIS. The "adjacent lands" of the PSW (i.e., the 120-m set-back) effectively corresponds to the area that is under the regulatory authority of the GSCA and also the area designated as "Hazard" in the Town of the Blue Mountains (TOBM) Official Plan (OP).

1.2 Scope of Work

The scope and content of this EIS are site-specific and have been developed so that concerns regarding the environment and natural heritage features are addressed to the satisfaction of approval authorities and other concerned agencies.

The scope and content of the Long Point Road EIS were developed to be consistent with the general requirements specified in Section 2.8.7 and 6.19 of the Grey County OP (2013) and Section C9 of the TOBM OP (2016).

For this EIS, the core environmental issues of potential concern associated with the Long Point Property include:

5. potential impacts that site development might have on watercourses which flow within or near to the Property (i.e., Watercourse 1 near the southeast corner of the property, and the municipal drain that flows just inside the western perimeter of the Property),
6. potential impacts that site development might have on Significant Woodlands within and adjacent to the Property, and their various functions;
7. potential impacts that site development might have on wetlands (and their functions) located to the west of the Property; and
8. potential impacts on species of conservation concern (SOCC), including legislated species at risk (SAR), or otherwise significant wildlife or wildlife habitat, that might be present on or near the Property.

The EIS addresses, at a minimum, the potential impacts of any eventual site alteration or development on these features and functions. The coverage and level of detail of on-site surveillance that has been undertaken are intended to allow adequate description of the general natural environment, and also allow focused assessment of potential effects on site features and functions of concern. Accordingly, core efforts for the Long Point Property include the following:

- o General characterization of the physical and ecological features and functions within and immediately adjacent to the Property,
- o Detailed characterization (physical and ecological) of Watercourse #1 and the municipal drain,
- o Determination of the presence and status of wildlife (woody and non-woody vegetation, amphibians, reptiles, mammals, and birds) on and near the Property, and
- o Characterization of the wooded areas within and adjacent to the Property.

The characterization of the Long Point Property and relevant features is based primarily on direct field-level surveillance. To effectively address the identified EIS requirements, this field surveillance has included:

- Direct examination of slope/topography, conveyance features (ditches, swales, streams), and overburden characteristics within and adjacent to the Property, to understand hydrological processes and connectivity between the Property and associated aquatic features.
- Detailed inventories of terrestrial biota with a focus on identification of SOCC that may be present. This includes;
 - o a botanical survey, conducted over three seasons following a wandering transect approach,
 - o a breeding bird survey (BBS), following the standard point-count approach of the Ontario Breeding Bird Atlas (OBBA) and also a wandering transect approach, and
 - o an amphibian survey, conducted in the spring following the protocol of the Marsh Monitoring Program (MMP).
- In addition to the focused wildlife monitoring noted above, general surveillance of animal and plant communities throughout the entire Property.
- Direct assessment of wooded areas within and near the Property, including community composition, forest strata characteristics (e.g. species, age/size class, relative density), soil characteristics, and wildlife presence and utilization.

The information acquired through the site-specific surveillance has been combined with previously compiled information for the local area to complete the required site characterization. Further details of ecological monitoring methods are provided in Section 2.

2.0 METHODOLOGY

The work undertaken to allow the preparation of this EIS Report has included two main components;

1. a desktop review of previously recorded information regarding the characteristics of the Property and adjacent lands, and
2. focused on-site monitoring of the Property.

The assessment herein collectively considers the findings of the desktop review and the on-site monitoring in a weight-of-evidence manner, with primary emphasis on site-specific data.

The following sections describe the methods employed in conducting the various components of environmental monitoring for the purposes of this EIS. In summary, the methodology adopted for the monitoring documented herein was developed to provide results appropriate to the stated objectives, and is based on standard accepted protocol.

A handheld GPS unit (Garmin model “GPSmap 76”) was used to delineate key features, to measure areas of features, and to provide the geographic coordinates of monitoring locations or key natural heritage features of relevance. All coordinates have been obtained and reported the Universal Transverse Mercator (UTM) coordinate system and NAD83 datum.

2.1 Review of Existing Information

A review of existing information of relevance to the Long Point Property was completed prior to completion of direct field assessment. Several sources of information were consulted for this purpose, including:

- o Grey County’s web-based interactive GIS mapping tool,
- o the Natural Heritage Information Centre (NHIC) on-line database,
- o the Ontario Breeding Bird Atlas (OBBA) (Cadman et al, 2007) and associated database (Bird Studies Canada (BSC) *et al.*, 2018),
- o the Soil Survey of Grey County (Richards and Gillespie, 1954),
- o the Craigeith Camperdown Subwatershed Study (CCSS) (Gore and Storrie, 1993)
- o the Ontario Reptile and Amphibian Atlas on-line database (Ontario Nature, 2018), and

- o Environmental Impact Studies for other properties in general proximity to this Property (e.g. Hensel, 2009, Azimuth, 2016, Morris, 2012)

The information obtained in this review has served in part to determine certain ecological characteristics of the Property, and also in part to identify possible features to receive focus during on-site monitoring efforts.

2.2 On-Site Monitoring

On-site monitoring was intended to provide a sufficient understanding of all relevant characteristics of the Property. Elements of the monitoring program were focused on the priority endpoints, including the two streams and the possible presence of species of conservation concern (SOCC). In terms of SOCC, focus was based in part on known presence of legislated species at risk (SAR) in the general vicinity of the Property.

On-site surveillance was conducted on seven separate visits to the Property over the period of late April to September of 2017, and additional visits in May and August of 2018. The timing of site visits allowed for appropriate seasonal coverage for the various specific monitoring efforts.

2.2.1 Avian Monitoring

A focused survey of birds was completed at the Long Point Property during the breeding season. The Breeding Bird Survey (BBS) used a combination of two methods; 1) the point-count method, and 2) incidental surveillance. The point-count method was implemented following protocol consistent with that employed for the Ontario Breeding Bird Atlas (OBBA) (Cadman et al., 2007) and the Marsh Monitoring Program (BSC, 2003).

For breeding bird point-count surveys, each individual bird heard or seen within a 100 meter radius (3.142 ha) of a fixed location was recorded over two successive five-minute periods (10 continuous minutes per survey episode). The distance from the observation point was approximated for each individual bird occurrence. Breeding evidence for each bird species was documented using OBBA Evidence Codes.

A total of two point-count stations were established at the Long Point Property for BBS purposes. Following OBBA protocol, the preferred station separation distance is 250 m for wooded areas. Under this convention, only a single BBS station would be established within the Property. For the purpose of this EIS, two stations were established within the Long Point Property with only about 120 m separation of the centre points. It should also be noted that the 100-m radius of each point-count station extends beyond the Property boundary. The implications of these factors (station overlap, extension beyond the property boundary) are taken into consideration in the interpretation of the results of the BBS (see Section 4.4).

The location of BBS point-count stations is depicted in Figure 2, and GPS coordinates and station descriptions are provided in Table 2. The habitat representation of the two established stations was effectively similar (i.e., primarily wooded).

Incidental surveillance was also conducted, noting all individual bird occurrences and breeding evidence while traversing the Property throughout day and evening hours. Incidental surveillance was used to augment the temporal and spatial coverage of point-count monitoring and to provide a more complete assessment of avian diversity. The habitat and location of each bird observed during transect surveys was noted, along with notes regarding activity (foraging, in flight, singing, etc.).

Point-count monitoring was conducted on two occasions; 1) 19 June, and 2) 10 July 2017. Point-count monitoring was conducted between sunrise and 10:00 a.m.. Incidental surveillance was completed on these same dates, and also on all other days on which the Property was visited. Avian monitoring efforts gave focused attention to any indications of the possible presence of SOCC.

2.2.2 Amphibian Monitoring

The amphibian monitoring protocol established for the Marsh Monitoring Program (MMP) (BSC, 2003) was initially employed for the purpose of this EIS. A single amphibian point-count monitoring station was established at the Long Point Property, effectively overlapping with the BBS point-count station at the west end of the Property (see Figure 2). The associated 100-m radius encompassed small wetland features on the Property where standing water was present on occasion in the spring. All amphibian species that were heard or seen at the monitoring locations were recorded, indicating a Call Level Code and the general abundance of individuals calling, where possible. Monitoring in this manner was conducted at least 30 minutes after sunset on the nights of 18 April, 18 June and 25 July. These nights were selected to reflect the standard conditions defined in the protocol, relating largely to night-time temperatures. Timing also reflected the broader activity trends observed in southern Ontario through the spring and early summer of 2017.

It should be noted that relatively cool and wet conditions were experienced throughout the region in 2017, leading to some delays in the typical progression of onset of breeding calls of various species.

In addition to point-count monitoring, instances of any amphibian seen or heard at any location or time were recorded throughout the full period of study. Feature with standing water were subject to direct surveillance for the presence of adult amphibians, egg masses or larval stage amphibians.

2.2.3 Mammal Surveillance

During all site visits, all observations of mammals on or near the Long Point Property were recorded, along with all other evidence of mammal presence (e.g. foot prints, scat, burrows).

In addition, specific attention was paid to the possible presence of bats in flight around the Property after sunset on the evenings of 18 June and 25 July. The Property was also surveyed for the presence of features that might provide habitat for bats (e.g. dead or dying trees possibly providing hollows or bark crevices for roosting or hibernating).

2.2.4 Reptile Surveillance

The Long Point Property was monitored for any evidence of the presence of reptiles during all site visits. This included turning of larger rocks or logs to detect possible snake presence within the Property. The Property does not encompass aquatic features that might serve as habitat for turtles.

2.2.5 Botanical Inventory

Surveillance of terrestrial vascular plant species was completed following a basic “wandering transect” approach to determine the presence and general distribution of plant species within the Long Point Property. The vascular plant inventory was conducted in reference to the distinct ecological communities delineated within the property (see Section 2.2.6). Three-season botanical surveillance was conducted over the full period of study (i.e., from late April to September).

2.2.6 Ecological Land Classification

The Long Point Property has been assessed following the Ecological Land Classification (ELC) methodology described by Lee *et al.* (1998). This approach generates classification and mapping of ecological communities down to a size of approximately 0.01 hectares, and allows much more detailed classification of communities than broad scale Landsat imagery. ELC of the Property was completed through the following general task sequence:

- Initial site reconnaissance to ascertain major community types, topography, and soil characteristics (completed in April 2017)
- Subsequent delineation of community distribution using satellite imagery and aerial photos for a first approximation of ELC.

- Further detailed site monitoring to refine initial ELC approximation. Each distinct community was examined to determine soil characteristics and to determine the major woody and non-woody plant species present.

To facilitate characterizations of soil conditions (texture, moisture regimes) vertical soil profiles were completed in multiple locations in each distinct ecological unit. Soil profiles were completed to a depth of approximately 0.5 to 1 m below ground surface (bgs) using a hand-auger.

The detailed site monitoring included examination of physiographic attributes such as topography/slope, surface soil profiles, and the possible presence of elevated water table. Within each identified unit, the following information regarding vegetation cover was recorded:

- Relative species composition and percent cover of trees and shrubs, where present
- Caliper and height range of trees in wooded units, and
- General under-storey characteristics and non-woody species composition.

2.2.7 Aquatic Features

The on-site surveillance of the Long Point Property included direct examination of all identified aquatic features on or near the Property. To generate an understanding of hydrological characteristics, this includes all streams, ponds, defined drainage features, and also wetlands.

In regard to streams, surveillance included the municipal drain that traverses the western perimeter of the Property, and also the watercourse referred to as "Watercourse 1" in the CCSS (Gore and Storrie, 1993). Examination included the visual assessment of several standard habitat variables (substrate type, in-stream and riparian cover, channel morphology), and the presence of aquatic biota (macrophytes, invertebrates, fish, amphibians).

Aquatic surveillance was also conducted on several small ephemeral ponds within or immediately adjacent to the Property, as well as diffuse (non channelized) but discernable drainage features within or adjacent to the Property. These features were examined in regard to their source, the persistence and spatial extent of standing water, the degree of collation of flow, and the nature of ground surface within the feature (substrates, vegetation, soil type). The mapped wetlands to the west of the Property were also subject to direct surveillance to develop a general understanding of their hydrological characteristics and functions.

For the purposes of this EIS, the hydrology of the site has been examined with particular attention paid to the hydrological connectivity between potential development areas within the Property and the noted aquatic features.

3.0 PHYSICAL CHARACTERISTICS

3.1 Topography

The Long Point Property is in close proximity the shoreline of Georgian Bay. The Property is relatively flat, with elevation generally in the range of 178 to 181 meters above sea level (masl). The Property generally slopes from south to north, and there is also a shallow depression in the centre of the Property that is a low point on the east-west axis. There are some slight lateral ridges and depressions within the Property, particularly in the western half.

3.2 Soils and Geology

Bedrock Geology of the Long Point property consists of the Lindsay formation which is comprised of grey crystalline limestone. Overburden consists of well-sorted outwash materials developed on the calcareous bedrock.

According to the Grey County soil survey (Gillespie and Richards, 1954), the soil encountered within and around the Long Point Property is Granby Sand. This soil type consists of a sandy rooting zone (up to 20 cm bgs) sourced from lacustrine sandy outwash. This soil unit is reported to be poorly drained, with water table generally close to surface, largely as a result of factors other than soil texture (topography, proximity to the lake). Soil profiling conducted throughout the Property as part of this EIS has confirmed the wide-spread presence of the sand or sandy-loam surface soil.

3.3 Hydrology

Hydrological characteristics of the Long Point Property have been determined on the basis of direct visual surveillance and also in consideration of information obtained from previously completed studies (e.g., Gore and Storrie, 1993).

The general hydraulic gradient in the area around the Property is approximately south to north. There are two small watercourses that flow through or near the Property along this general gradient. This includes a municipal drain that flows along the western perimeter of the Property, eventually traversing Brophy's Lane and feeding to a drainage ditch that flows along the western side of Long Point Road. This ditch eventually discharges to Georgian Bay at the road's end.

To the east of the Property, there is a stream that was previously identified as Watercourse 1 in the Craigeleith Camperdown Subwatershed Study (CCSS - Gore and Storrie, 1993). This same naming scheme is applied in this EIS. Watercourse 1 flows north from Highway 26 along the western edge of Long Point Road, and is conveyed by culvert across the road at a point that is separated by about 40 m from the southeast

corner of the Property. Watercourse 1 continues north and east for approximately 900 m before its discharge point along the shore of Georgian Bay.

The overwhelming majority of flow in both of the noted streams originates from lands up-gradient of the Property. The municipal drain is characterized by intermittent, event-based flow. There is effectively no flow through much of the growing season except short duration flow following significant precipitation events. Watercourse 1 exhibits permanent flow, partly as a result of groundwater inputs, but is still fairly responsive to precipitation events.

In addition to the two noted streams, there is a narrow feature in the approximate centre of the Property where there is seasonal presence of water at or above the ground surface. This feature is identified as a "stream" in the TOBM OP (Appendix 1 - Constraints), but is not identified as such in GSCA mapping, the Grey County OP, nor the MNRF base mapping. This feature does not exhibit any obvious channel or the presence of various typical stream attributes (aquatic substrates, aquatic macrophytes). It is occupied entirely by vegetation comprised of various herbaceous terrestrial plant species. While there appears to be capacity for some occasional movement of surface water or shallow groundwater toward the north, there is no apparent surface hydrological connection that conveys any water north of Brophy's Lane. For the purpose of this EIS, this feature is considered as a wetland feature as opposed to a stream.

In addition to the narrow wetland feature described above, there is a discernable drainage path along the northern boundary of the Property. There is evidence of intermittent movement of runoff along this path, but otherwise there are no characteristics of a true watercourse. Any water that moves along this path is directed westward toward the central drainage swale. This appears to be a source of hydrological input to small wetland pockets on the northern perimeter of the Property (see Section 4.2.3).

During soil profiling, the water table was observed to be near (within 50 cm bgs) or at surface in a number of locations throughout the Property during the spring period and/or after significant precipitation events. With the exception of the areas described as wetlands (see Section 4.2.3) the water table declined to >50 cm bgs throughout the Property as the growing season progressed.

4.0 ECOLOGICAL CHARACTERISTICS

The following sections describe the ecological characteristics of the Long Point Property. A description of the regional ecology is provided for context. Results of on-site monitoring are summarized in Tables 1 to 5, and additional detailed results are provided in Appendix B.

4.1 Regional and Local Ecology

The Long Point Property is situated within the Mixedwood Plains *Ecozone*, and more specifically it is within the Manitoulin – Lake Simcoe *Ecoregion*, equivalent to Site Region 6E under Provincial classification. This *Ecoregion* is characterized by warm summers, mild winters, and relatively abundant precipitation (700 to 1000 mm/a) that is evenly distributed throughout the year. The dominant land cover is cropped land with significant areas of mixed forest. Climax vegetation is characterized by mixed hardwoods, including Sugar Maple, American Beech, Eastern Hemlock, Red Oak, and Basswood. Pioneer species include White Pine, Paper Birch, and Trembling Aspen. Yellow Birch, White and Slippery Elm, Red Maple, Black Ash and White Cedar are typical forest cover species in depressions and moist areas. Wetlands account for only about 3.5% of the total land area within this *Ecoregion*.

On a more local scale, the Long Point area north of Hwy 26, bisected by Long Point Road, sits in a low flat area in proximity to the Georgian Bay shore, and as a result is characterized by a considerable presence of wetlands. Much of the wetlands are part of the 166-ha Silver Creek Wetland Complex (a.k.a. Collingwood Shores Wetland Complex), which is made up of large significant coastal wetlands and a series of inland swamps. This is a Provincially Significant Wetland (PSW) complex that serves important ecological function, such as habitat for numerous wildlife species (including rare species), water quality improvement, groundwater discharge and recharge, and mitigation of sedimentation to the Bay. Those areas that are not wetland *per se* still tend to be characterized by the presence of relatively wet soils, and exhibit natural vegetation communities that tend to be dominated by species tolerant of damp or wet conditions. The area has been subject to clearing in the past and the existing woodlands tend to be relatively young and comprised of early succession species.

4.2 Ecological Communities

The delineation of ecological communities completed for the Long Point Property is intended to identify vegetation communities at a scale that has meaning and relevance to the overall objectives of the EIS.

The ecological communities currently encountered within the Long Point Property reflect the fact that the Property has been subject to past anthropogenic alteration, and that the Property lies within an area that is low and relatively wet.

Following the ELC system of Lee *et al.* (1998), there are seven distinct community types present within the Long Point Property. The specific community types and their ecological functions are depicted in Figure 4 and are briefly described in the following sections.

4.2.1 Meadow Communities

Mineral Cultural Meadow (CUM1)

The Cultural Meadow (CUM) community accounts for only about ~0.2 ha (~9%) of the Property in total. This includes a ~0.1 ha meadow in the core of the eastern half of the Property. This meadow is dominated by a mix of graminoid plants (orchard grass, fescue, smooth brome), abundant field horsetail, and a variety of common forbs (e.g. asters and goldenrod species, vetches, Wild Bean, Common Buttercup, Sweet Pea). The plant community includes many species typical of open disturbed areas, and includes numerous non-native species, some of which are considered invasive (e.g. Wild carrot, Birdfoot Trefoil). A few specimens of non-native tree species (Scots Pine, Norway Spruce) have recently established within the core of this meadow area, and there are common shrubs (e.g. Red-osier Dogwood) present at the interface of the meadow and surrounding woods.

There is also a long narrow strip cultural meadow at the western edge of the Property, occupying the clearing associated with municipal drain. Inclusive of the drain channel, the area has width in the range of 10 to 15 m between the edges of bordering woodlands, and measures about 0.07 ha. The species composition of this meadow area differs from that of the central meadow, and the groundcover is also more sparse in this location. This is likely owing to more narrow dimensions, the presence of sandier and more well drained soil, and a more recent history of disturbance. There is a moderate presence of grasses and sedges, and a variety of forb species typical of disturbed sites (e.g. Birdfoot Trefoil, Wild Carrot, Silverweed, Common Yarrow, Black Medic, Brown Knapweed).

There are also very small pockets of meadow habitat at the front of Property, bordering Long Point Road. The plant community here is a mix of common grasses and forbs, similar to the central meadow but with a greater presence of plants typical of disturbed sites and commonly found along road corridors.

The ecological function of the Cultural Meadow community is likely limited primarily to supporting a relatively low abundance and diversity of common and unspecialized wildlife. The area of meadow is too small to be functional for any grassland-specialist species of bird or mammal. The results of direct wildlife surveillance support this characterization. There are no plant species which are considered to be of conservation concern in the meadow habitat.

4.2.2 Forest Communities

About 90% of the Long Point Property is currently under deciduous forest cover, comprised of several specific community types. Table 1 provides a summary of key characteristics of these forest types

FOD3-2: Dry-Fresh White Birch-Poplar Deciduous Forest

This community type occupies an area of about 0.35 ha along the western end of the Property, bordering the clearing for the municipal drain. White Birch and Trembling Aspen co-dominate the canopy, which is about 90% closed. A few mature specimens of Sugar Maple, Basswood, and Black Cherry are also present in the canopy. This forest community is still relatively young and most trees are less than 30 cm DBH, with a few scattered specimens (mostly Trembling Aspen) in the range of 30-35 cm DBH.

The sub-canopy is reasonably well-developed and consists mainly of Green Ash, a few White Ash, and younger Aspens. A few scattered individual or small clusters of Eastern White Cedar are also present as part of the sub-canopy, mostly in lower spots.

The under-story is relatively dense, consisting of young ash, Round-Leaved and Alternate-leaved Dogwood, and some scattered clusters of Red-osier Dogwood. A few European Buckthorn are also present, mainly close to the forest edge bordering the municipal drain clearing.

The extent of ground cover within this forest community is variable, ranging from about 50 - 70%, generally becoming less dense toward the western perimeter of the Property. The ground layer is composed of species that are generally typical of deciduous forest communities in the Ecoregion. A fairly wide variety of mostly shade-tolerant species is present (e.g. Plantain-leaved Sedge, Bracken Fern, Sarsaparilla, Dog Violet, baneberry (white and red), Colts-foot, Woodland Agrimony, false Solomon's Seal, White Rattlesnake-root, etc.). The distribution of several of these forest floor plants within the Property is confined to this particularly forest community type.

While this forest community is still a relatively young, it exhibits the highest diversity of tree species and the most well-developed forest structure of the different forest types occurring within the Property. In terms of ecological function, this forest appears to support a moderate diversity of birds, including several species with forest habitat preferences, but no *interior* forest species (see Table 4). Regionally common mammals are also present, but there is no indication of significant habitat function for fauna of any type.

FOD7-2 - Fresh-Moist Ash Deciduous Forest

This deciduous forest community type occupies most of the front (east) half of the property, and accounts for about 20% of the Property in total. Tree species composition

varies slightly within this community, but Green Ash is dominant throughout, with White Ash also present. Scattered young specimens of Trembling Aspen, White Elm, White Birch and Balsam Poplar are also found in the canopy, but in low numbers and never as a dominant element of the canopy. The vast majority of trees are <20 cm DBH, and many are < 10 cm DBH. Only a few isolated tree specimens are in the range of 30-35 cm DBH, mostly Trembling Aspen.

The spacing of trees in the Ash forest community is tight, but because the trees are young and small, the canopy is still thin and scattered and there is very limited forest structure. At present, there is simply a vertical a gradation of older to younger ash. At the lowest level, there are also a few other shrub species including Red-osier Dogwood, and non-native honeysuckle.

As a result of the sparse canopy, there is considerable light penetration and ground cover is abundant (>90%). The dense layer of herbaceous cover is composed of a mix of graminoid plants and forbs, including many species typically found in disturbed areas (e.g. Common Dandelion, Forget-me-not, Common Strawberry, Common Yarrow, vetches, asters). There is a notable presence of species often found in association with moist soil conditions (Canada Mayflower, Poison Ivy, various sedges). There are small scattered low spots within this community type where water is present at or near soil surface in the early spring and/or after significant precipitation events.

FOD7 - Fresh-Moist Lowland Deciduous Forest

In the south-west portion of the property, there is a small (~ 0.1 ha) pocket of lowland deciduous forest in an area below a notable lateral ridge. The species composition of the canopy is more variable in this location than in the main area of lowland ash forest. While Green Ash is still a component of the canopy, Sugar Maple, Red Maple, White Birch and Basswood are also present. Most trees are in the range of 20 to 30 cm DBH, with a small number in the 30-35 cm range. Adjacent to a small pond feature, several specimens of Black Willow are present including one specimen measuring ~60 cm DBH and a few smaller specimens in the range of 25 - 30 cm DBH. The larger willow is by far the largest tree on the Property.

The sub-canopy in this area is reasonably well-developed, and includes mostly younger specimens of Green Ash, but also Maples and a few Black Ash. The under-story is fairly dense and includes numerous Alternate-leaved Dogwood, some Pin Cherry, scattered specimens from the genus *Ribes*, and also an abundance of vine species (Wild Grape, Virginia Creeper, Poison Ivy).

Ground cover is dense (>90%) and includes horsetails, clusters of Bracken Fern, and various forbs commonly found in moist woodlands (Colts foot, Canada Mayflower, Sarsaparilla, Woodland Agrimony, Zig-zag Goldenrod).

Fresh-Moist Poplar Deciduous Forest Type (FOD8-1)

About half of the Property is occupied by this deciduous forest type, including an isolated area of about 0.24 ha in the southeast corner of the Property and a large swath that covers much of the core of the Property (see Figure 4).

Trembling Aspen is the dominant canopy species through most of this community, although Balsam Poplar is dominant in certain parts (i.e., immediately north of the central cultural meadow). The canopy is patchy and relatively open in spots, with total canopy cover estimated to be about 70-80% on average. The dominant canopy trees range in size from 20 to 40 cm DBH. Ring counts from recently cut stumps of trees in this size class indicate that they are approximately 30 years old.

It should be noted that the block of Poplar forest occupying the south-east corner of the Property suffered a loss of a significant number of larger Trembling Aspen as a result of a wind storm in late 2016. Similar uprooting occurred in the stand dominated by Balsam Poplar on the northern perimeter of the Property. The uprooting of mature canopy trees has resulted in atypical canopy structure in these locations.

In the main core of this community, there are a few scattered Green Ash and also some White Ash that approach 30 cm DBH and are minor elements of the canopy. A few Basswood and White Birch are also present, but these specimens are mostly <20 cm DBH and are primarily a component of the sub-canopy. In most locations, the sub-canopy is relatively sparse and dominated by Green Ash with younger Aspen and some Balsam Poplar as secondary components. Scattered specimens of Serviceberry are also found in the sub-canopy along with a cluster of young White Spruce near the southern Property line.

The relatively open nature of the canopy allows for high light penetration which in turn leads to high shrub and ground cover and species richness. The under-story includes young ash, Alternate-leaved and Round-leaved Dogwood, scattered small clusters of Red-osier Dogwood, and Choke Cherry. There are numerous vine species (Wild Grape, Virginia Creeper, Poison Ivy) present, particularly in lower portions of this forest community. Ground cover is variable but relatively dense throughout this forest community, ranging between 60 and 90%. The ground cover is composed of mixed patches of graminoids (sedges and grasses), ferns (mainly Bracken Fern) and various common woodland forbs (e.g. Canada Anemone, False Solomon's Seal, Colts Foot, Northern Bedstraw, Wild Bean). Most of the ground layer plants are typical of moist woodlands in the Ecoregion.

In terms of ecological function, the available information suggests that the Poplar forest community supports a modest abundance and diversity of relatively common fauna species with secure populations. There is no evidence of significant wildlife habitat function associated with this forest type in this location.

4.2.3 Wetland Communities

The Long Point area north of Hwy 26, bisected by Long Point Road, is situated in a low flat area bordering Georgian Bay, and as a result the presence of wetlands is key aspect of the local natural heritage system.

Green Ash Mineral Deciduous Swamp Type (SWD2-2)

There are a series of narrow sloughs to the west of the property that are part of the Silver Creek PSW complex (see Figure 2). The nearest of the sloughs west of Property was directly examined for the purpose of this EIS, and determined to be occupied by Green Ash Mineral Deciduous Swamp community type. These wetland units are fully forested, with Green Ash dominating the canopy and Swamp Maple being a secondary component. Most of the trees comprising the swamp forests are <30 cm DBH, indicative of a relatively young community.

In the early spring, the swamp is occupied by 10-15 cm of standing water, becoming dry by early summer. The flooded area is generally devoid of vegetation, except for a few small scattered clumps of sedges. On the perimeter, ground cover includes typical species of wet woodlands, such as Sensitive Fern, Dwarf Raspberry, Coltsfoot, and Meadow Horsetail.

The SWD2-2 community also occurs within the immediate confines of the Property. There are four very small ephemeral ponds found within forested areas within the Property. In all cases, the proximate forest cover is dominated by Green Ash. Larger Green Ash (up to 25 cm DBH) occupy the perimeter of these ponds, while young specimens (<5 cm) are establishing in spots within the flooded zone. The young ash are typically accompanied by Red-osier Dogwood and a few willow shrubs in some instances. The flooded area is generally devoid of herbaceous plants, while various hydrophytic plants occupy the perimeter (e.g. Water-horehound, Sensitive Fern, Bladder Sedge, Fringed Loosestrife, Woundwort).

It should be noted that the small woodland pond features do not exhibit significant accumulation of an organic layer at the soil surface. The presence of such an organic layer is generally regarded as a characteristic feature of the swamp community.

For the purpose of this EIS, the ponds are described here as wetland features on the basis of the core characteristics that are considered in the ELC process (i.e., hydric soils and hydrophytic plants). Because of their small size, these features are considered as inclusions in the forest communities. The analysis and conclusions of this EIS gives consideration to these ponds in regard to both their wetland and aquatic attributes.

In regard to ecological function, the small pockets of swamp do not have significant associations of fauna with specific preferences for wetland habitat. A few common amphibians have been observed at or near these features, but not in significant number and without any evidence of breeding activity (see Section 4.5). Hydrologically, these

features appear to function as small recharge features and are not sources of hydrological input to streams or rivers. The presence of pooled water is seasonal, and the ponds were observed to be without standing water by mid-to-late June. The hydrological balance of these small swamp pockets appears to be maintained by elevated water table in the spring. The two features near the northern boundary of the Property also appear to be maintained in part by surface water runoff that is conveyed along drainage paths along the northern perimeter.

Mineral Meadow Marsh Ecosite (MAM2)

The central drainage swale described in Section 3.3 is fully vegetated and lacks the fundamental characteristics of a stream. For the purpose of this EIS, this feature is identified in the ELC context as a Mineral Meadow Marsh. This community type is typically the interface between a water body and adjacent upland habitat. In this instance, there is no water body present.

The area in question is a narrow band occupying the low centre of the Property, measuring under 0.05 ha. Typical of the Meadow Marsh community, the area is fairly rich in grass and sedge species (e.g. Water Sedge, Awl Fruited Sedge, Fowl Blue Grass, Common Three-square, Soft-stemmed Bulrush, Crested Sedge). There is also an abundance and diversity of hydrophytic forbs (e.g. Swamp Aster, White Turtlehead, Harlequin Blue Flag, Boneset, Spotted Joe-pye Weed, Broadleaf Cattail, Purple Loosestrife, Water Sedge). Woody vegetation consists of a few scattered Red-osier Dogwood and willow shrubs, mostly on the periphery near the interface with adjacent forested areas.

The ecological function of this small area of marsh habitat appears to be minor and non-critical habitat for fauna that are regionally common and abundant. There is no evidence of the presence of fauna with specific preferences for marsh or other wetland habitat. The narrow band of marsh does not appear to be hydrologically connected to any river or stream and likely functions as a local recharge feature.

4.3 Vascular Plants

The detailed plant species list for the Long Point Property is provided in Appendix B (Table B1). This list reflects three-season monitoring through the period of April to September 2017. A total of 143 vascular plant species have been identified within the Property. Of those that are native to Ontario, all are ranked as “Secure” (S5) or “Apparently Secure” (S4) in the Province. None of the species observed have been subject to assessment by COSEWIC or COSSARO as possible Species at Risk (SAR) or are otherwise considered as SOCC.

The terrestrial plants found within the Long Point Property consist of a mix of native and non-native species, many of which are typical of sites that have been subject to anthropogenic disturbance. About one-third of the plant species identified within the

Property are non-native. At least 20 of the vascular plant species identified at the Long Point Property are considered by various sources to be invasive in Ontario.

There are only a few tree species that exhibit meaningful abundance and/or distribution within the Property. This includes primarily ash and aspens/poplars that are early-succession species. Scattered specimens of several non-native tree and shrub species (e.g. Scots Pine, Norway Spruce, Common Lilac, non-native Honeysuckle, and European Buckthorn) are present. Regional climax tree species (Beech, Sugar Maple, Ironwood) are NOT a meaningful component of forest cover within the Property. Overall, there is a very limited number, abundance and distribution of species typically encountered in mature forest conditions.

Just over 20% of the vascular plant species encountered within the Property are species which grow primarily in wet conditions. The presence of these hydrophytes partly reflects the relatively wet nature of the Property. These plants are largely associated with topographical depressions, including the strip of marsh habita that bisects the Property and the few small wetland pockets found within the Property. Hydrophytic plant species are also present in scattered fashion in the channel of the municipal drain at that traverses the western perimeter of the Property.

4.4 Birds and Bird Habitat

A breeding bird survey (BBS) has been completed at the Long Point Property, based on focused point-count census in June and July 2017. More general surveillance of birds within and adjacent to the Property was also conducted throughout the full monitoring period (April to September). These monitoring efforts provide a reasonably reliable indication of the status of the Property in terms of avian presence and the provision of habitat for breeding and non-breeding purposes (e.g. foraging, staging). The basic characteristics of the BBS point-count stations are summarized in Table 2, and station locations within the Property are depicted in Figure 3. Detailed results of the point-count monitoring program are provided Appendix B, and a summary of the results of the point-count inventory is provided in Table 3. A full list of all bird species observed at the Property throughout the full monitoring period is provided in Table 4.

The Long Point Property lies close to the boundary between Ontario Breeding Bird Atlas (OBBA) squares 17NK52 and 17NK53. Data have been obtained for these squares and considered as regional context for the Property (see Appendix B). The local breeding status determined through the OBBA is included as context in Table 4. The OBBA surveillance of squares 17NK52/53 has identified 130 species of bird with some evidence of breeding within the 20-km² area of those squares. Of these species, 22 have been subject to assessment by COSEWIC and/or COSSARO. As of the date of this report, nine of the 22 have been deemed to be *Not at Risk*. The 13 species on record for the area in question that are currently identified as either *Endangered*, *Threatened* or *Special Concern* include the Alder Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Canada Warbler, Chimney Swift, Common Nighthawk, Eastern Meadowlark, Eastern Wood-

pewee, Golden Winged Warbler, Louisiana Waterthrush, Red-headed Woodpecker, and Wood Thrush. The OBBA data indicate most of these species are either “possible” or “probable” breeders in the squares in question, and several have no breeding evidence on record in one or both squares for the last atlas period (2001-2005). The Eastern Wood-pewee was the only one of these 13 species that was observed during the surveillance of the Property and adjacent lands in 2017/18. On a few occasions, adult males were heard calling from the Property immediately to the west. Calling adults were also observed on two occasions within the confines of the Property, in association with the Birch-Poplar forest area at the west end.

OBBA point-count station #5 (square 17NK53) was established along Long Point Road immediately adjacent to the Property. The data for this station are directly reflective of the avian community that resides in and around the Property. A total of 19 species were recorded during OBBA surveillance at point-count station #5 (see Appendix B). These species are all common in Ontario and Grey County, and none are currently considered to be an SOCC. All but two of the 19 species observed at OBBA PC-5 were encountered during monitoring conducted in 2017. The two species in question are the Common Yellowthroat and Yellow Warbler, both of which are regionally and provincially common and not of any conservation concern. It is considered quite possible that either of these species could be present at times within the confines of the Property, particularly in the younger and more open habitats in the front (east) half of the Property.

In total, 31 species of birds have been observed within or in immediate proximity to the Property over the period of study. All of these species are on record for the relevant OBBA squares. Only six species were confirmed as breeding within the Property boundary, and another nine species were indicated as “probable” breeders. The Property was surveyed for the presence of stick nests in early spring prior to the emergence of deciduous foliage, and no stick nests were observed. Two species (Ruby-crowned Kinglet and White-throated Sparrow) were only observed in late April and not during the breeding season. These are considered to be migrants with low likelihood of breeding presence within the Property.

The Provincial ranking of 27 of the species observed is “secure” (S5), and the remaining four species are ranked as “apparently secure” (S4). Only one of the species observed (the Eastern Wood-pewee) is considered to be Species of Conservation Concern (SOCC) (see further discussion in Section 4.8).

In summary, the bird community encountered at the Long Point Property consists of a moderately diverse mix of relatively common species that represent a mixture of habitat preferences. More than half of the species encountered are considered as generalists or early succession species, and about one-third are considered forest species. The forest species occurrences were mainly in association with the Birch/Poplar forest cover at the west end of the Property and also west of the municipal drain. None of the forest species observed are considered to be forest *interior* species.

4.5 Amphibians

During focused amphibian monitoring and broader general surveillance of the Long Point Property and adjacent lands, the presence of five amphibian species was evidenced, as follows:

- Grey Treefrog (*Hyla versicolor*) - heard calling off property in association with wetland areas to the north west. There were no occurrences of this species within the confines of the Property.
- American Toad (*Anaxyrus americanus*) - an adult specimen was observed in association with the municipal drain on the western periphery of the Property.
- Northern Leopard Frog (*Lithobates pipiens*) - an adult specimen was observed in upland habitat (cultural meadow) near front of Property.
- Green Frog (*Lithobates clamitans*) - a single adult specimen was observed near a small wetland pocket in the western end of the Property.
- Western Chorus Frog (*Pseudacris maculata*) - a single observation of an adult in upland habitat (Ash forest) near the front of the Property.

Other than low frequency calls of Grey Treefrogs occurring outside of the Property boundary, no breeding vocalizations of any of the noted amphibian species were heard within or near the Property. Small pockets of standing water within the Property were subject to direct visual surveillance in the spring and early summer and no amphibian egg masses or larvae were observed.

The populations of four of the five noted species in Ontario are considered "secure" (S Rank = S5), and these species are not considered to be species of conservation concern. The Western Chorus Frog has a provincial status of "vulnerable" (S3). This species has been designated by COSEWIC as "Threatened", but is considered by COSSARO to be "Not at Risk". The Chorus Frog is discussed further in Section 4.8.

Overall, there are a few amphibian species present in relatively low abundance within the Property, but there is no evidence of meaningful amphibian reproduction occurring within the Property. Amphibian breeding is likely precluded by the fact that only very small shallow pockets of standing water occur within the Property, and these have been observed to dry out by early or mid summer.

4.6 Other Fauna

4.6.1 Reptiles

During monitoring conducted in 2017, no reptile species were detected either within or adjacent to Property. The nature of the Property is such that locally common snakes (e.g. Eastern Gartersnake) might be present from time to time. In absence of permanent standing water within the Property, the presence of any species of turtles is considered a very low likelihood.

There are previously compiled records of other species of reptile occurring in relatively close proximity to the Property, including Blanding's Turtle and Eastern Milksnake. Neither species has been observed within the Property. These species are designated as SOCC and are discussed further in Section 4.8

4.6.2 Mammals

Ecological monitoring of the Long Point Property revealed direct evidence of the presence of six mammal species, as follows:

- White-tailed Deer (*Odocoileus virginianus*)
- Coyote (*Canis latrans*),
- Eastern Cottontail (*Sylvilagus floridanus*)
- Northern Raccoon (*Procyon lotor*)
- Grey Squirrel (*Sciurus carolinensis*)
- Unidentified bat species

It is considered likely that a number of other species of regionally common mammals could be present at the Property from time to time. Recent inventories in reasonable proximity to the Property (AEC, 2016, Morris, 2012) have indicated at least occasional local presence of eight species of mammal. In addition to the species evidenced at the Long Point property, the local list includes the Meadow Vole (*Microtus pennsylvanicus*), Muskrat (*Ondatra zibethicus*), and the Red Squirrel (*Tamiasciurus hudsonicus*). There is a reasonable likelihood that the Red Squirrel and Meadow Vole could be encountered within the Property at times, but the presence of the Muskrat is unlikely owing to an absence of suitable aquatic habitat.

With the exception of unspecified bat species, none of the mammals evidenced in the general vicinity of the Long Point Property are considered to be SOCC. All of these mammal species are ranked as “secure” (S5) in the province of Ontario and are common in Grey County.

In regard to bats, there was a single occasion when 2 or 3 bat specimens were engaged in aerial foraging over the clearing associated with the municipal drain. The bats appeared to use the full length of the clearing from Hwy 26 to Brophy's Lane, with no specific association with the Long Point Property. The forest communities found within the Property are relatively young, and there is an absence of larger dead or dying trees that might contain hollows, cavities, large bark flakes and crevices that could function as roosting or hibernation sites. Rock outcrops, caves or other sites that could serve as hibernation sites are not found on or near the Property.

Overall, the likelihood of presence within the Property of mammal species that are of conservation concern is considered to be very low.

4.7 Aquatic Ecology

The characteristics and functions of aquatic features associated with the Long Point Property are based partly on direct surveillance completed in 2017/18, and partly on existing information and documents.

4.7.1 Municipal Drain

The municipal drain that flows along the western perimeter of the Property is an engineered feature with various characteristics that generally limit its ecological function. It has a bankful channel width of about 4 m and an active channel width of about 2.5 m. The channel exhibits a completely straight alignment and passes through an area cleared of vegetation other than very low ground cover. As a result there is an absence of riparian vegetative cover.

The vast majority of the channel is lined with artificial rip rap substrate. There is a limited presence of some algal cover and limited pockets of fine sediment deposition in the drain, but overall there is a functional absence of natural substrates. There is a moderate presence of herbaceous vegetation that has established within the channel, but aquatic macrophysics are effectively absent. The plants that are present are terrestrial species, including a variety of common species that are hydrophytic or tolerant of wet conditions (e.g. Curly Dock, Narrow-leaf Cattail, Canada Bluejoint, Meadow Horsetail, Colts Foot, Pennsylvania Bittercress).

The flow regime is intermittent, appearing to consist of short-term flows that follow significant snow-melt or precipitation events. There is no evidence of sustained base-flow in this watercourse.

The available information suggests that the drain is not likely to function as direct fish habitat, and certainly no fish were observed in the drain during the period of study. The drain does eventually discharge to Georgian Bay, so it may have some limited function as indirect fish habitat at the point of discharge. Based on the flow regime and the various aspects of the flow path (straight, low gradient, multiple culverts), it is likely that

hydrological connectivity with the waters of Georgian Bay is not conducive to migration of fish from the Bay to the stretch of the drain adjacent to the Property. No aquatic fauna were observed in association with the municipal drain during the EIS study period.

4.7.2 Watercourse 1

Watercourse 1 exhibits a well-defined, straight, open channel on the west side of Long Point Road from Hwy 26 north to a point just to the south of the Property. The channel banks are lined with abundant herbaceous riparian vegetation cover, but there is no woody riparian cover in this stretch. This portion of the watercourse consists primarily of pool habitat (estimated at about 80% of total habitat) with some run and very little riffle. The substrate consists mainly of fine sediment with some presence of gravel and occasional cobbles.

This watercourse is conveyed via culvert across Long Point Road at a point that is about 40 m from the south-east corner of the Property (see Figure 2). East of Long Point Road, the watercourse exhibits a more natural channel form than on the west side of the road. There is natural meander, coarser substrate, less pool habitat, and full woody riparian cover. From Long Point Road, the watercourse traverses a mix of woodlands and open fields before eventually discharging approximately 850 m downstream into Georgian Bay.

Watercourse 1 exhibits year round flow. In terms of fish community, it has been previously designated by the GSCA as a *cold water* stream. The length of Watercourse 1 north of Hwy 26 has been subject to fish community surveillance in previous studies, most recently in 2008 (Hensel, 2009). The previous fish community surveillance indicates the presence of a relatively diverse community (11 species total). The fish species observed are typical warm/cool water fish species that are widely distributed within Ontario, and most are warm-water forage species. There is moderate connectivity with Georgian Bay downstream which likely enables the migration of fish into and out of this watercourse. This is evidenced by the detection of Rainbow Trout and White Sucker during the previous surveillance of this reach of the watercourse, likely migrating up from the Bay. None of the fish species on record are considered as sensitive to environmental change, and none are considered to be SOCC

4.8 Species of Conservation Concern

There are a number of Species of Conservation Concern (SOCC) on record in the vicinity of the Property, as determined through review of existing information. Historic records from the Natural Heritage Information Centre (NHIC, 2017) includes records of SOCC in proximity to the Long Point Property. Element Occurrence (EO) records from the NHIC were obtained for the 1-km grid segments encompassing or immediately adjacent to the Long Point Property (four squares in total). A summary of the EO listings for these squares is provided in Table 5. A total of six species are listed. Species with observation records in the last 20 years include the Snapping Turtle, Blandings Turtle, and the

Threespine Stickleback. The Blanding's turtle occurrence was an adult male observed in or near Watercourse 1 just north of Hwy 26. The Blandings Turtle is the only species protected as a provincial and/or federal Species at Risk (SAR).

Other studies conducted in proximity to the Property in recent years have identified the presence of a number of SOCC in the area, including those listed by the NHIC and several others. Combined, the various SOCC that have recent records of occurrence within a few km of the Property are as follows:

- Snapping Turtle (*Chelydra serpentina*) - *Special Concern*, both federally and provincially - provincially ranked as "Vulnerable" (S3)
- Monarch Butterfly (*Danaus plexippus*) - *Endangered* federally and *Special Concern* provincially - provincially ranked as "Apparently Secure" (S4).
- Eastern Wood-pewee - *Special Concern*, both federally and provincially - provincially ranked as "Apparently Secure" (S4).
- Bobolink (*Dolichonyx oryzivorus*) - *Threatened*, both federally and provincially, provincially ranked as "Apparently Secure" (S4).
- Eastern Meadowlark (*Sturnella magna*) - *Threatened*, both federally and provincially - provincially ranked as "Apparently Secure" (S4).
- Butternut (*Juglans cinera*) - *Endangered*, both federally and provincially - provincially ranked as "Vulnerable" (S3)
- Barn Swallow (*Hirundo rustica*) - *Threatened*, both federally and provincially - provincially ranked as "Apparently Secure" (S4).
- Western Chorus Frog (*Pseudacris triseriata*) - *Threatened* federally, *Not at Risk* provincially - provincially ranked as "Vulnerable" (S3)
- Eastern Milksnake (*Lampropeltis triangulum*)- *Special Concern* both provincially and federally - provincially ranked as "Vulnerable" (S3)

Direct surveillance of the Property in 2017 and 2018 include a series of specific monitoring efforts that address the possible presence of the above-noted SOCC. Through site surveillance, the presence of only two of these SOCC was indicated within or immediately adjacent to the Property; 1) the Eastern Wood-pewee and 2) the Western Chorus Frog.

The Eastern Wood-pewee was observed on a few occasions singing or foraging in Birch/Poplar forest habitat (ELC designation FOD3-2) near the Property's western periphery. This species is most commonly associated with the mid-canopy layer in forest stands of intermediate age and in mature stands with little under-story vegetation. These conditions only occur near the western end of the Property

There was also a single observation of an adult Western Chorus Frog in upland habitat within the front half of the Property. This species is considered to relatively widespread

and common in southern Ontario, but population declines along the St. Lawrence and in southern Quebec have led to the federal SAR listing. The preferred breeding habitat for this frog species is fishless ponds with at least 10 cm of permanent standing water. This habitat is not present within or immediately adjacent to the Property, and there was no evidence of breeding presence of this species during the 2017/2018 surveillance (see Section 4.5).

Other than the two noted SOCC, all flora and fauna observed on or near the Long Point Property are from relatively secure populations and do not warrant any consideration as conservation concerns. The other SOCC on record within the general area have not been observed within the Property, and the habitat requirements of most of these species are generally not available within the Property.

4.9 Significant Wildlife Habitat

For planning purposes in Ontario, Significant Wildlife Habitat (SWH) is defined as habitat that is *"ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System"*.

The information available for the purpose of this EIS, as presented above, has been reviewed in specific consideration of the potential presence and implications of SWH within the Long Point Property. The analysis of potential SWH presence and impacts is based on guidance provided by the MNRF (MNR 2000, MNRF 2015). There are several categories and specific types of designated SWH, which are addressed below. These various categories have generally recognized associations with a number of the ELC community types that have been identified within the Property. The presence of these communities does not necessarily equate to the presence of SWH. The determination of SWH habitat is ultimately based on direct evidence of presence of the class of wildlife in question.

4.9.1 Seasonal Concentration Areas

The life cycle of various animal species finds them present in certain areas at certain times in notably concentrated numbers. Usually the location is characterized by a relative abundance of food, shelter/cover or conditions required for breeding purposes. There are a variety of established types of seasonal concentration areas, a number of which could be supported by the plant communities found in the area of the Property. The status of the candidate seasonal concentration areas considered is discussed below.

Deer wintering yards:

There are no deer wintering yards that have been identified in the vicinity of the Property, nor is suitable habitat (primarily coniferous cover) available for this type of seasonal concentration area.

Concentration areas for waterfowl and shorebirds:

There is no evidence that any of the wetlands or other habitat types found within or near the Property support concentrated breeding or migratory activity of waterfowl or shorebirds. Direct surveillance indicates that these bird groups are absent from the Property and immediately adjacent lands.

Bat hibernacula and maternity colonies:

As discussed in Section 4.6.2, there was no evidence of maternal roosting of bats within the Property during the surveillance period. The Property also generally lacks the attributes that would be conducive to the presence of hibernacula or maternal colonies (i.e., relatively large snag trees).

Turtle wintering areas:

Monitoring has not produced direct evidence of turtle presence within the Property, nor are there water bodies present which could serve as turtle wintering areas. The small ephemeral ponds found within the Property do not provide water depth or duration or suitable substrates to support over-wintering turtles.

4.9.2 Rare Vegetation Communities

As per the MNR (2015) there are a number of vegetation communities that can be considered as rare in Ecoregion 6E, including alvars, dunes, prairies, barrens, cliffs and old growth forest. These community types are not found within the Long Point Property (see Section 4.2). The communities found within the Property all have a Provincial Rank of S4 (Apparently Secure) or S5 (Secure).

4.9.3 Specialized Habitat for Wildlife

There are numerous species of wildlife that require substantial areas of certain habitat(s) that support critical stages of their life history in order for the local population to be sustainable.

Waterfowl Nesting Area:

The Property does not contain habitat elements that are generally recognized as potential waterfowl nesting area (i.e., wetlands adjacent to open uplands). The breeding bird survey (BBS) conducted throughout the Property in 2017 (see Section 4.4) did not yield any indication of the presence of any nesting waterfowl on or near the Property.

Woodland Raptor Nesting Habitat:

The Property does contain various areas of forested habitat that generally are recognized as potential nesting habitat for woodland raptor species. However, no raptor species were observed during the BBS conducted in all habitats within the Property, and no stick nests were observed during surveillance conducted in the early spring before leaf-out.

Turtle Nesting Habitat:

The Property does not contain any significant areas of exposed mineral soil (sand or gravel), except for the clearing associated with the municipal drain at the western edge of the Property. Very small patches of open sand are present in this area, and could be considered as appropriate substrate for turtle nesting. This area is not close to any open waters that could support adult turtles, and it is considered to be very unlikely that turtle nests would occur in this location.

Amphibian breeding habitat:

The Property contains several very small ponds within the forested area that could potentially function as breeding habitat for amphibians. However, these ponds are very small in size and tend to dry up by late spring or early summer. Surveillance conducted at the Property indicates a general absence of amphibian breeding activity in association with the ponds or any other parts of the Property (see Section 4.5). Overall, there is no evidence to indicate that any part of the Property functions as significant breeding habitat for amphibians.

Area-Sensitive Bird Breeding Habitat:

The forest cover within the Property is relatively immature and part of larger block with dimensions such that it does not meaningfully provide suitable forest interior habitat (i.e., >200 m from forest edges). During breeding bird surveillance (BBS) of the Property in 2017, the presence of only one species listed by the MNRF as an indicator species was evidenced. This consisted of the presence of a single nesting pair of Yellow-bellied Sapsuckers in the Birch Poplar forest area at the back end of the Property, in relatively close proximity to the larger forested area immediately to the west of the Property.

4.9.4 Habitat for Species of Conservation Concern

In this context, SOCC include wildlife species that are listed as *Special Concern* or rare, but excludes those listed as *Endangered* or *Threatened* species.

Marsh Breeding Bird Habitat:

Suitable marsh habitat is not present within the Property, and none of the indicator species specified by the MNRF were observed during the BBS conducted throughout the Property in 2017.

Open Country Bird Breeding Habitat:

The Property does contain areas of cultural meadow habitat, but these are too small to function as breeding habitat for open country birds. None of the specified indicator species were observed during the BBS conducted throughout the Property in 2017.

Shrub/Early Successional Bird Breeding Habitat:

None of the Property is characterized as shrub/early successional habitat, and none of the indicator species specified for this habitat were observed during surveillance conducted throughout the Property in 2017.

4.9.5 Animal Movement Corridors

Amphibian Movement Corridors:

Corridors that facilitate movement of select amphibians between aquatic breeding habitat and terrestrial habitat, usually woodlands, can be specified as SWH. The woodlands and small wetland features within the Property have been surveyed and found not to constitute significant breeding habitat. Regular surveillance of the Property has indicated a relatively low abundance and diversity of amphibians (see Section 4.5), and has not reveal any evidence of substantial migratory movement of amphibians.

Deer Movement Corridors:

Areas of continuous and appropriate vegetation cover may serve as corridors that facilitate movement of deer to and from wintering yards may constitute SWH. There are no known deer wintering areas within or near the Property.

5.0 ANALYSIS OF POTENTIAL IMPACTS

The current Draft Plan of subdivision (see Appendix A) identifies a total of 22 residential lots distributed over the full length of the Property along a central cul-de-sac access road. In combination, the road and residential lots account for about 1.9 ha, or 86% of the Property. In considering the scenario without accounting for any planning adjustments or mitigating measures, the maximum theoretical impacts include the following;

- loss or impairment of cultural meadow, up to a maximum of approximately 0.2 ha,
- loss or impairment of Significant Woodlands, to a maximum of approximately ~2 ha,
- loss or impairment of small wetland features within the Property totaling <0.1 ha,
- encroachment within the "adjacent lands" (120 m) of a PSW located just west of the Property, and possible impairment of that PSW,
- disturbance or impairment of two nearby watercourses, and
- direct harm or habitat loss of any SOCC that may be present within or near the Property.

The following analysis further examines the potential impacts listed above. For each of the specific natural features of concern (i.e., Significant Woodlands, Provincially Significant Wetlands, streams, and SOCC), the likelihood and significance of adverse effects due to potential development of the Property are qualitatively assessed. The assessed potential for adverse effects is based in part on the characteristics and functions of the features themselves. The assessment considers aspects of development as proposed in the current Draft Plan, including the extent of site alteration and various conditions that might be encountered within the Property both during and after construction.

Conclusions and recommendations drawn from this analysis, including mitigation recommendations, are provided in Section 6.

5.1 Species of Conservation Concern

There are a number of SOCC on record in the general area of the Long Point Property. However, direct surveillance produced no evidence of meaningful SOCC presence within or immediately adjacent to the Property. The Property generally does not exhibit the characteristics or specific habitat elements that would support local populations of the SOCC that might occur in the area.

Based on available information, harm or loss of some individuals of two SOCC is possible: 1) Western Chorus Frog, and 2) Eastern Wood-pewee. These SOCC were observed in very low abundance in limited portions of the Property. The local populations of these species are not expected to rely on the Property for habitat functions critical to their life cycles.

In absence of any likelihood of meaningful presence of SOCC within the Property, impacts resulting from development activity would be very limited in terms of frequency and numbers of SOCC affected. Any such impacts would not be meaningful from a population perspective, either regional or local.

5.2 Wetlands

5.2.1 Off-Site

A considerable amount of the wetlands in the Long Point area are part of the 166-ha Silver Creek PSW Complex (a.k.a. Collingwood Shores Wetland Complex). At the most proximate point, the western boundary of the Property is ~20 m from the perimeter of the nearest wetland area belonging to this PSW complex (see Figure 2). About a third of the Long Point Property lies within 120 m (i.e., within the "adjacent lands") of the closest part of the PSW complex.

The nearest wetland areas to the west of the Property have been examined and identified as Ash Mineral Swamp (SWD2-2), and the intervening woodlands are Birch/Poplar Deciduous Forest (FOD3-2). The floral and faunal communities associated with the swamp features and adjacent upland forest consist of relatively common species with no known sensitivities to environmental disturbance. The nearest swamp areas do not appear to function as significant wildlife habitat in any way.

The nearby components of the PSW are not hydrologically down-gradient of the Long Point Property, and there is no meaningful hydrological connectivity between the Property and the PSW. In the event that there were any east-to-west hydrological connectivity, the municipal drain that traverses the western perimeter of the Property would effectively function to intercept and disrupt any such connectivity. Based on available information, there is no evidence of any other meaningful functional connectivity (e.g. wildlife corridors) between the Property and the PSW.

Given the relatively non-sensitive nature of the nearby wetlands in question and the absence of functional connectivity, there is no expectation of any measurable effects on the PSW for any development that is proposed for the portion of the Property within 120 m of the PSW (i.e., Lots 8-13 and Blocks 25-27).

5.2.2 On-Site

Within the confines of the Property, there are several very small features that have been characterized as wetlands under the ELC system (see Section 4.2.3 and Figure 4). These wetlands have a combined total area of <0.1 ha, and are characterized as follows:

- elevated water table is their primary hydrological input,
- standing water is present in the spring, but they dry out by early summer,
- they do not contribute to flow in any nearby surface water features,
- they appear to serve primarily a recharge function,
- they exhibit a limited variety of hydrophytic plant species, none of which are SOCC,
- they do not function as meaningful amphibian breeding habitat, and
- they do not support other faunal communities with any wetland habitat preference.

The small wetland features are situated within areas of proposed lots (Lots 6-9 and 14) or within the route of the proposed access road. Implementation of the current draft plan (Appendix A) would result in loss of most or all of the small area of Mineral Marsh (MAM2) that lies mostly within the area proposed for Lot 8. Development as planned may also result in loss or impairment of the four small swamp pockets (SWD2-2) at the rear of Lots 6,7 and 9. These wetland features could be retained, depending in part on the configuration of the building envelopes within these Lots.

In the event of retention of any wetland features, grading and drainage management within the Property could interfere with the hydrological inputs to the retained wetlands, possibly impairing their function or even eventually leading to their loss.

The loss or impairment of the small wetlands within the Property is not expected to result in a meaningful loss of ecological function in the local natural heritage system. Any loss of wetland would result in a very small reduction (<0.1 ha) of total wetland cover in the Long Point area, where there is a substantial presence of wetlands. In terms of hydrology, loss of any wetlands within the Property would not affect any surface water features. There may be some very small loss of groundwater recharge function, depending on various aspects of development (e.g. overall presence and location of impermeable surfaces, SWM planning, grading).

5.3 Aquatic Features

Aquatic features associated with the Property include the two watercourses that flow along or in close proximity to the periphery of the Property (see Figure 2). The available information suggests that the municipal drain at the west end of the Property does not

function as direct fish habitat, while Watercourse 1 supports a fish community that is warm-water or cool-water. Both watercourses discharge to Georgian Bay and may have minor localized influence on aquatic communities at or in immediate proximity to the point of discharge.

Typically, the development of residential Property entails some modification of the existing ground cover and the installation of buildings and supporting infrastructure (access roads, parking areas, servicing). Alteration of existing grade is also a common aspect of development. Modification of ground surface or grade, particularly the removal of existing vegetation cover, can affect hydrological processes and result in changes in the quantity or quality of drainage flowing through a site. The most likely implications in terms of water quantity would be an increase in volume and rate of runoff owing to a decrease in permeability following installation of built surfaces. In terms of water quality, the typical effects of site alteration are increases in water temperature and increases in certain contaminants (e.g. total suspended solids, road salts, fertilizers, pesticides).

The likelihood and potential significance of any effects of development on water quantity and quality is dependent in part on a few key factors, including:

- the spatial expanse of the development footprint,
- the relative size of the aquatic feature in question and its catchment area, and
- the quality of water under existing conditions.

In general, the risk of negative effects is proportional to the area developed and inversely proportional to the stream flow and/or watershed area. As discussed in Section 3.3, the area of the Long Point Property represents a small percentage of the drainage basins of the watercourses in question, and the role of the Property in the hydrological balance of the watercourses is minor. In the case of Watercourse 1, the Property is down-gradient of the watercourse and there is no apparent direct hydrological connectivity with the Property. Given these circumstances, the risk of adverse effects on Watercourse 1 related to landscape changes within the Property is inherently very limited. For the municipal drain, the south-to-north hydrological gradient would not lead to conveyance of runoff from the developed portion of the Property toward the drain. However, there may still be some minor direct connectivity between the area of development and the watercourse. It is possible that development within the Property could result in some minor increase in surface runoff transport to the drain. It is not anticipated that any such change would be significant, nor would it adversely affect the quality of water which at present consists mainly of stormwater runoff.

Water quality may also be adversely affected by the removal of vegetation in immediate proximity to any water-body. A loss of vegetation adjacent to a watercourse can result in increases in water temperature as result of a loss of shading, and can lead to increased loading of contaminants (e.g. suspended solids) due to a loss of the filtering function of stream-side vegetation. The likelihood and potential significance of such effects is

dependent in part on the nature of the watercourse, and also the spatial expanse and nature of vegetation that is removed. The municipal drain is an intermittent warm-water watercourse in an open channel passing through a clearing that is devoid of riparian cover. Under these circumstances, the removal of vegetation within the Property is not likely to have any adverse effect on water quality in this watercourse. In addition, the Draft Plan (Appendix A) retains the portion of the Property immediately adjacent to the drain (i.e., Block 27) as undeveloped, further reducing the likelihood of effects on water quality in the drain. For Watercourse 1, there is about 40 m of separation between the Property and the stream channel at the nearest point, and the stream is not down-gradient of the Property. For these reasons, removal of vegetation cover within the Property is not expected to have the potential to cause any adverse effects on water quality in this watercourse.

Overall, there is some possibility that development of the Long Point Road Property could affect the quantity and quality of water flowing in the municipal drain, but there is no expectation such effects would be significant. The ecological implications of any such changes are very low for the municipal drain, given the nature of flow (intermittent and warm-water) and the absence of direct fish habitat function. For Watercourse 1, the presence of a warm/cool-water fish community increases the implications of any effects on stream flow, but this fish community is not considered to be highly sensitive to changes in water quality. More importantly, there is no expectation of such effects on Watercourse 1 due to the spatial separation and a lack of direct hydrological connectivity with the Property. For both watercourses, the implications of any changes in water quality or quantity are not expected to be at all meaningful at the point of their discharge to Georgian Bay.

5.4 Significant Woodlands

The Provincial Policy Statement (PPS) defines significant woodland as "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history". Regional assessments are undertaken by various agencies using criteria derived from this general definition to identify woodland areas for initial designation as "significant". The Natural Heritage Reference Manual (MNR, 2010) provides detailed recommendations for criteria and standards to be used in the assessment of woodland significance.

As discussed in Section 4.2, about 90% (~2 ha) of the Property is currently occupied by deciduous forest cover representing three specific community types. The entirety of this forested area has been designated by Grey County as *Significant Woodland*. The County's assessment of woodland significance is based on a desktop review using data provided by the MNRF. The primary criterion for designation of woodland significance is size, and a woodland must be ≥ 40 ha outside of settlement areas, or ≥ 4 ha within

settlement areas, to be deemed significant. Failing the size criterion, a woodland may also be significant if it meets any two of the following three criteria:

1. the woodland is within 30 m of another significant woodland,
2. the woodland overlaps the boundaries of a PSW or ANSI, or
3. the woodland encompasses "Interior" habitat of ≥ 8 ha, with a 100-m interior buffer on all sides.

According to the Grey County OP, the main criteria used in the assessment are size and proximity to special features (PSW, ANSI). It is acknowledge that the assessment in the OP is not based on ground-level surveillance, and any site-specific consideration of woodland significance is best served by more detailed ground-level assessment.

The current assessment of potential impacts on the woodlands found within and immediately adjacent to the Long Point Property is conducted in consideration of several of the core functional categories identified in the MNRF's Natural Heritage Reference Manual. These categories overlap with the stated criteria for designation of "Significance" in the PPS and the County OP. This includes woodland size, forest cover characteristics, the presence of species of conservation concern, ecological functions and linkages, and water protection functions.

5.4.1 Woodland Size

For the purpose of this EIS, it is not possible to make firm determinations of the implications of any development-related woodland loss in regard to size. Only general statements of the magnitude of loss can be made.

The ~2 ha of forest cover within the Property is part of a larger more-or-less continuous block of Significant Woodland bordered by the shoreline of Georgian Bay, Hwy 26 and Long Point Road. The larger block measures about 24 ha in area. If the entirety of forest cover within the Long Point Property were cleared, this would result in a loss of about 8-9% of the larger Significant Woodlands area that envelopes the Property. With that loss, the larger block would still be considered "Significant" based on size-related criteria stated in the OP (i.e., 4 ha or greater in settlement areas). According to the Grey County Natural Heritage Systems Study (NRSI, 2017), Grey County has a high proportion of natural cover (44.6%), although the percent cover and size distribution of areas of natural cover is substantially lower along shoreline sections than in the central portions of the County. In absence of a specified target for total cover in the county or for more localized areas, the implications of the loss of up to 2-ha of forest cover cannot be reliably discerned. As a general guiding principle, this EIS adopts the premise that any reduction of total forest cover should be avoided to the extent possible, regardless of any considerations of size-related criteria.

5.4.2 Forest Characteristics

The wooded area within the Long Point Property is early to mid-successional forest cover, with a relatively low diversity of tree species in assemblages that are typical of the region. Through most of the Property, the forest communities are not mature and forest structure is not well-developed. The area of Birch-Poplar Forest (FOD3-2, see Section 4.2) is the only forested area with a meaningful presence of later succession tree species, where forest structure is somewhat developed, and where the diversity of tree species is highest within the Property. This forest type is nonetheless still relatively young and common in the region. A summary of the forest communities within the Property and their basic characteristics is provided in Table 1.

Overall, the available information does not indicate any uncommon or highly valued characteristics of the forest stands within the Property. Loss or impairment of any of the forest cover would not translate to loss of forests with such characteristics.

5.4.3 Species of Conservation Concern

All of the species of plants and animals that have been observed within and around the forest communities at the Long Point Property are relatively common to the region and the Province, and many are typical of forests influenced by some level of human disturbance. These species are not considered to be particularly sensitive or of conservation concern. The available information does not indicate that the presence of SOCC would be a factor contributing to a designation as *Significant* of the forested areas within and adjacent to the Long Point Property. Loss or impairment of forest cover within the Property would not have meaningful implications in regard to SOCC.

5.4.4 Water Protection

Forest cover generally leads to improved quality of runoff (e.g. reduced erosion and sediment loads, reduced thermal loading), which can have a beneficial effect on down-gradient features. The Long Point Property has direct hydrological connectivity with only one surface water feature, which is the municipal drain that flows along the western perimeter of the Property. The flow within this drain is intermittent event-based flow that is volumetrically dominated by drainage water originating upstream of the Property. Only a minor fraction of the flow in this drain is expected to originate or have any meaningful residence time within the development envelope of the Property. Loss of forest cover within the development envelope is not expected to have any measurable effect on either the quality or quantity of runoff that may enter the municipal drain. Due to the level of dilution that occurs in the downstream receiving waters (i.e., the near-shore waters of Georgian Bay), there is no expectation of measurable effects at the eventual discharge point of the drain.

In terms of groundwater, forest cover can also provide benefits in terms of infiltration rates and the quality of groundwater recharge. The draft revised OP for Grey County identifies a portion of the forested area in the core of the Long Point Property is part of a "significant groundwater recharge area" which is associated with a "highly vulnerable aquifer". The loss of forest cover in this zone could have some minor effect on the quantity and/or quality of water that infiltrates within the Property. The implications of any such effects are not expected to interfere with groundwater recharge to the extent that there would be measurable adverse effects on the aquifer or for any use thereof.

5.4.5 Habitat and Linkage Function

Habitat and linkage functions are evaluated on the basis of the characteristics of the forest communities within the Property, the nature of natural features in the surrounding landscape, and also the types of fauna present within and around the Property.

The dimensions of the wooded area within the Long Point Property are such that it provides effectively no forest cover that meets the technical definition of forest interior (i.e., >100 m from forest edge). The faunal community that has been observed at the Property is not a forest interior community. In considering the principles and specific criteria developed by the MNRF, there is no presence of SWH within the Property (see Section 4.9):

Significant natural heritage features in the area around the Property include the remaining expanse of the larger Significant Woodland block (bounded by Hwy 26 and Long Point Road) and also portions of the Silver Creek PSW (refer to Figure 2). The woodlands within the Long Point Property are located on the eastern periphery of the larger woodland block and provide no apparent linkage between any significant natural features outside of the Property boundary. The wildlife corridor analysis that has been presented in the recently completed Grey County Natural Heritage Systems Study (NRSI, 2017) indicates that the Long Point Property and surrounding area does not have a defined linkage function and provides relatively low landscape connectivity.

The woodlands within the Property do provide some continuity of forest cover. The Birch-Poplar forest cover at the western end of the Property extends the habitat function of similar forests to the immediate west of the municipal drain. Most of the forest cover within the Property also connects small areas of forest cover within the adjacent properties to the north and south, which are expected to provide habitat for the local faunal community. Available information indicates that this community is comprised of species that are regionally abundant and common and not area-sensitive. Any ecological continuity provided by the forest cover within the Property likely relates to non-critical habitat functions for a limited number of common wildlife species.

Overall, the forested areas within the Property likely provides some ecological linkage within the local landscape, but there is no evidence to suggest that they provide linkage or other habitat functions that are important to sustaining local wildlife populations. The

loss or impairment of forest that may disrupt this ecological linkage would have limited implications to the local faunal communities or to local ecological connectivity.

5.4.6 Woodlands Summary

The current Draft Plan includes a total of about 0.25 ha of land in Blocks 25 to 27 where there is no current expectation of removal of forest cover. The access road accounts for about 0.43 ha where existing forest cover would be entirely removed. The 22 lots encompass a total area of about 1.48 ha where some significant portion of existing forest cover would likely be removed. In total, the estimated loss of forest cover associated with the current Draft Plan would be in order of 1.8 ha, and all forest community types would be affected. The total extent of forest removal within the lots would depend in part on building envelope size and configuration. With some level of retention of existing forest cover within the lots (e.g., within the rear yard setback), the loss of forest cover could be reduced by perhaps 0.3 ha or more, and the loss of woodlands could be 1.5 ha or less.

The deciduous forest communities within the Property are expected to serve and/or support various ecological functions, but available information indicates that those functions are neither significant nor sensitive. This inherently limits the implications of any possible loss or impairment of these communities as a result of proposed development. In strict consideration of the ecological features and functions ascribed to woodlands within the Property, any loss or impairment of these woodlands would not be considered significant.

In consideration of size alone, there is no defined basis to determine whether or not the reduction of a ~24 ha woodland block by 1.5 to 2 ha would have meaningful impact on the function of the larger block. With additional consideration of the relative location of the Long Point Property (i.e., on the periphery of the larger woodland block), and the nature and function of the woodlands within the Property, loss of these woodlands is not expected to adversely affect the overall integrity and function of Significant Woodlands surrounding the Property.

5.5 Other Features

Other than woodlands and small wetlands, the only other ecological communities present are small patches of cultural meadow (about 0.2 ha in total). The existing vegetation in these areas consists of common species, largely typical of disturbed sites and including many non-native species and also numerous invasive species. The very small size of the combined cultural meadow area also inherently limits the possible implications of any loss of that habitat. The surveillance of the meadow habitat did not identify any unique or sensitive biological functions or species associations.

Based on the current Site Plan, the cultural meadow area in the eastern half of the Property is located mainly within proposed residential Lots 4, 5 and 6, and would thus be subject to removal. The ecological function of this community type within the Property is extremely limited, and there is no expectation of any unacceptable impacts if any or all of the cultural meadow habitat is lost or impaired.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Existing Conditions

The Long Point Property is occupied primarily by a few types of deciduous forest communities that are relatively young and comprised of plant species which are provincially and regionally common. Numerous plant species found within the Property are non-native and typical of disturbed sites, including at least 20 species that can be considered invasive. No plant species of conservation concern (SOCC) have been observed within or near the Property. The associated faunal communities also consist of common species from relatively secure populations, and the Property does not function in any capacity as significant wildlife habitat (SWH). Overall, the terrestrial ecological functions supported within the Property are neither significant nor sensitive, nor are they vital to overall ecosystem integrity on a local or regional scale. In relative terms, the 0.35 ha of Birch-Poplar forest community at the west end of the Property (see Figure 4) has the highest potential for ecological benefits of the four forest communities within the Property.

There are two watercourses that pass through or near the Property. These watercourses serve basic hydrological and ecological functions to varying degrees. The municipal drain that runs along the western perimeter of the Property is a man-made stormwater conveyance feature that exhibits intermittent, event-based flow. This watercourse is lacking in natural characteristics and serves minimal ecological function, and does not appear to function as direct fish habitat. Watercourse #1 flows along the west side of Long Point Road and crosses the road by culvert about 40 m south of the Property. This stream exhibits consistent flow that supports populations of fish typical of warm-water or cool-water communities.

There Property also encompasses several very small wetland features, located within the western half of the Property. Examination of these wetlands indicates that their environmental functions are very limited and not likely meaningful in regard to local ecosystem function and integrity.

6.2 Summary of Potential Impacts

A summary of the potential impacts associated with the proposed development of the Long Point Property is provided in Table 6, reflecting the analysis presented in Section 5. The likelihood and significance of each category of potential impact are relatively ranked as either low, medium or high. The likelihood and significance of any possible impacts of future development are dependent on the natural heritage characteristics of the Property and also the specific aspects of the proposed development. For each environmental feature of interest, the overall risk is a function of both likelihood and significance.

SOCC

Based on information obtained and reviewed in this EIS, there is a very low likelihood of occurrence of any SOCC within the Property for any meaningful duration or for critical aspects of their life cycle. In absence of any likelihood of meaningful presence of SOCC within the Property, measurable impacts resulting from possible development activity are considered to be very unlikely, and would be very limited in terms of frequency and numbers of SOCC affected. Any such impacts would not be meaningful from a population perspective. The overall risk of the proposed development in regard to SOCC is deemed to be low.

Watercourses

In absence of any meaningful hydrological connectivity with the Long Point Property, there is no expectation of any adverse effects of development on Watercourse #1. There is a limited potential for impacts on water quality in the municipal drain at the west end of the Property. The implications of any changes in water quality are inherently limited owing to the fact that the drain is an intermittent stormwater conveyance feature and does not serve as fish habitat or otherwise exhibit much ecological function. The overall risk of the proposed development in regard to watercourses is deemed to be low.

Wetlands

In combination, the small wetland features found within the Property measure <0.1 ha in area, and none of them have been found to serve any ecological functions that are significant and/or exclusive to wetland features. In regard to hydrology, these features all appear to provide a small-scale recharge function, but they do not function as significant input sources to any streams or rivers. The loss or impairment of the small wetlands within the Property is not expected to equate to meaningful loss of ecological function in the local natural heritage system. The overall risk of the proposed development in regard to the on-site wetlands is deemed to be low.

As noted in Section 5.2, there is an absence of functional connectivity between the Property and the wetland features to the west of the Property that are part of the Silver Creek PSW. In addition, there is no discernable ecological connectivity between the Property and the PSW. Accordingly, residential development as proposed for the Long Point Property poses no meaningful risk of impacts on the PSW or its functions.

Significant Woodlands

The woodlands within the Property are neither significant nor sensitive in terms of their various characteristics and functions. This inherently limits the implications of any possible loss or impairment of these communities as a result of proposed development. In strict consideration of the ecological features and functions ascribed to woodlands within the Property, any loss or impairment of these woodlands would not be considered significant.

6.3 Mitigation Recommendations

Regardless of the low level of risk, there should be efforts to further mitigate the risk of any impacts potentially associated with proposed development of the Property. Recommendations are provided herein to avoid, limit or otherwise mitigate the potential impacts that have been identified.

6.3.1 SOCC

The available information indicates that there is not a meaningful presence of SOCC within or in close proximity to the Property. However, there were isolated occurrences of two SOCC; 1) the Eastern Wood-pewee and 2) the Western Chorus Frog.

To reduce the risk of impacts on the Eastern Wood-pewee and any other breeding birds, which would be subject to prohibitions of the Migratory Bird Convention Act, any clearing of forested areas should be timed to avoid the active bird nesting period (i.e., from May to August).

To reduce the risk of harm to Western Chorus Frogs, wetland features within the property should be retained to the extent possible. If not retained, any removal of these features should occur outside the time when frogs are most likely to be present at these features (April to July), if present at all.

6.3.2 Watercourses

The adaptation of standard mitigation measures is expected to effectively eliminate the already minor risk of impacts on the watercourses in question.

To minimize the potential for any effects of development on local watercourses, and also wetlands, plans for grading and stormwater management should seek to maintain existing drainage patterns to the extent feasible.

In addition to drainage management, effective set-backs should be established to minimize the potential for any effects on water quality and ecological function. As a conservative default, a 30-m set-back can be considered for to ensure protection of ecological functions. For watercourse #1, adoption of a 30-m setback appropriate for coldwater streams would be more than adequate in this case. Limited instances of development within 30 m of the stream (but no closer than 15 m) may be acceptable, particularly if the form of that development excludes impermeable surfaces. For the municipal drain, a minimum set-back of 10 m is likely to be sufficient given the relatively limited ecological function of this watercourse, particularly an absence of a fish community.

The main element of risk to watercourses is associated with possible sediment transport during construction. During any eventual construction or landscape alteration, an Erosion and Sediment Control (ESC) plan should be developed and implemented in accordance with established best practices. At a minimum, this would include:

- installation of silt fencing between areas of disturbed ground and each stream,
- avoidance of work during wet conditions,
- minimizing the passage of vehicles over areas of exposed soil,
- placement of stockpiled soil or fill in as far away from streams as practical, and
- minimizing the time between initial exposure of soil and the final construction or restoration of a given area. Restoration should occur as soon as possible.

6.3.3 Wetlands

Similar to woodlands, the loss or impairment of any wetlands is generally undesirable owing to the relatively low total area of wetlands in Southern Ontario resulting from past cumulative losses. Despite the conclusion that the loss or impairment of the very small wetlands within the Property would not have meaningful implications in regard to hydrology or ecology, wetlands should be retained and protected to the extent possible. Specific measures could include adjustment of set-backs at rear of lots 6, 7 and 9 to allow for retention of wetlands, or changes to the Site Plan so that development avoids what is currently Lot 8. In addition, site drainage and stormwater management plans could be developed to maintain the hydrological inputs to any wetlands that are retained, and also the general groundwater recharge function provided by the wetlands and the adjacent woodlands.

6.3.4 Woodlands

As noted in Section 5.4, the loss or impairment of woodlands within the Long Point Property is not expected to result in meaningful loss of ecological function at the local or regional level. Regardless of functional implications, the loss or impairment of any woodlands should be minimized simply owing to the fact that there is a general absence of woodlands in the region and the Province, and any further reductions exacerbate this situation. Accordingly, the Long Point Property should be developed so as to minimize loss of any woodlands within the Property. In this effort, it is recommended that priority be assigned as follows:

- HIGH priority should be given to the Birch/Poplar woodlands (FOD3-2) at the west end of the Long Point Property (i.e., Lots 10 to 13).

- The lowland forest (FOD7) at the back of the Property (portions of Lots 12 and 13) and most of the Aspen/Poplar forest (FOD8-1) throughout the Property (some or all of Lots 4 to 9, and 14 to 22) should be given MEDIUM priority.
- The young ash forest (FOD7-2) occupying much of the front half of the Property (part or all of Lots 1 to 4, and 15 to 19) should be afforded a relatively LOW priority for retention of existing forest cover.

Specific measures recommended for consideration are as follows:

- optimize the size or configuration of development envelopes to allow maximum tree retention on lot perimeters, particularly in Lots 10 to 13.
- possible adjustments to Blocks 25-27 to optimize inclusion of the Birch/Poplar forest community within those blocks,
- establishment of requirements for Tree Protection Plans (TPP) for all lots within the development, with emphasis on Lots 10 to 13.

Areas of retained or replaced woodlands should be planned and managed so as to maintain natural characteristics to the extent possible. This is most important in those locations where forest structure has developed to some functional extent (i.e., the Birch/Poplar forest).

6.4 Monitoring Recommendations

The levels of risk to environmental features of concern at or near the Long Point Property have been judged to be low. The nature of most of the specific effects that have a low risk of occurrence is such that there are no endpoints for which monitoring would be beneficial in an adaptive management framework. The only identifiable instance where monitoring would contribute to the avoidance of any adverse effects pertains to ESC measures that should be implemented to protect watercourses. Silt fences and other measures should be regularly inspected to ensure that they remain effectively functional. Otherwise, there are no recommendations in regard to environmental monitoring either during or following construction.

6.5 Enhancement Opportunities

The control or removal of invasive plant species would be beneficial, with emphasis on woody species (European Buckthorn, Oriental Bittersweet, non-native Honeysuckle).

A contingency plan should be developed to address the pending implications of Emerald Ash Borer (EAB). Ash species are a significant component of the forest cover that occupies much of the Long Point Property, and it is anticipated that EAB will lead to the

eventual loss of these trees. A proactive plan to minimize the implications of the decline of ash and ensure long-term presence of tree cover is recommended. This should be a major consideration in any Tree Preservation Plans that might be developed for the Property.

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TABLES

Table 1: Summary of Woodland Characteristics

Community Type ¹	Approximate Area (ha)	Typical Canopy Characteristics		Size (DBH) Distribution ⁴			Summary of Functions ⁵
		Average Cover ²	Composition ³	<20 cm	20 to 30 cm	30 to 40 cm	
Poplar - White Birch Forest (FOD3)	0.4	90%	Aspen=Birch>>Ash	10%	75%	15%	supports common fauna, v. limited presence of area sensitive birds, possible SOCC (Eastern Wood-pewee). No SWH
Poplar Deciduous Forest (FOD8-1)	1.1	80%	Aspen>Poplar>>>Green Ash	20%	60%	20%	supports some common fauna, no SOCC, minor hydrological function (recharge)
Ash Lowland Forest (FOD7-2)	0.5	60%	Green Ash>>>Aspen>White Ash	> 90%	<10%	0%	supports some common fauna, no SOCC
Mixed Lowland Deciduous Forest (FOD7)	0.1	80%	Ash>Maple>Basswood	15%	65%	20%	supports some common fauna, no SOCC, minor hydrological function (recharge)

1 - Community type as determined through ELC following Lee et al., 1998. See Figure 4.

2 - estimate of average absolute cover of upper canopy, as per Lee et al. 1998

3 - estimate of relative abundance of tree species present in canopy, as per Lee et al., 1998

4 - estimated percentage of trees within canopy in the noted range of diameter at breast height (DBH)

5 - SOCC = species of conservation concern, SWH = significant wildlife habitat

Table 2: BBS Point-Count Station Characteristics and Summary Results

Station ID	UTM Coordinates (Centroid) ¹		Main Habitat/Cover Type
	Easting	Northing	
PC-1	0556100	4930390	Deciduous Forest
PC-2	0556225	4930400	Deciduous Forest/ Cultural Meadow

1 - coordinates obtained using handheld GPS, NAD83 datum. Reported to the nearest 5 m.

Table 3: Summary of Point-Count Monitoring Results¹

Species		Station Total		Total
Common name	Scientific name	PC-1	PC-2	
American Goldfinch	<i>Carduelis tristis</i>	1 (1)	1 (1)	2 (2)
American Redstart	<i>Setophaga ruticilla</i>	3 (3)	2 (2)	5 (5)
American Robin	<i>Turdus migratorius</i>	4 (2)	1 (1)	5 (3)
Black-capped Chickadee	<i>Poecile atricapillus</i>		1 (1)	1 (1)
Downy Woodpecker	<i>Picoides pubescens</i>		1 (1)	1 (1)
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1 (1)	2 (2)	3 (3)
House Wren	<i>Troglodytes aedon</i>	5 (4)	2 (2)	7 (6)
Northern Flicker	<i>Colaptes auratus</i>		2 (2)	2 (2)
Northern Oriole	<i>Icterus galbula</i>	3 (3)		3 (3)
Red-eyed Vireo	<i>Vireo olivaceus</i>	7 (4)	3 (3)	10 (7)
Song Sparrow	<i>Melospiza melodia</i>	6 (4)	2 (2)	8 (6)
Warbling Vireo	<i>Vireo gilvus</i>	1 (1)		1 (1)
Total Individual Bird Count		31	17	48
Total Species Count		9	10	12

1 - summary counts include only those birds occurring within 100m of the centre of the point count station
 Bracketed values indicate the number of survey intervals (5 minutes each) with the species present

Table 4: Summary of Bird Species Observed at the Longpoint Road Property

Species		Breeding Status		Conservation Status			Breeding Habitat
Common name	Scientific name	Site ¹	OBBA ²	SRANK ³	COSEWIC ⁴	COSSARO ⁵	Preference ⁶
American Crow	<i>Corvus brachyrhynchos</i>	Possible	Confirmed	S5	-	-	general
American Goldfinch	<i>Carduelis tristis</i>	Probable	Probable	S5	-	-	general
American Redstart	<i>Setophaga ruticilla</i>	Possible	Probable	S5	-	-	early succession
American Robin	<i>Turdus migratorius</i>	Confirmed	Confirmed	S5	-	-	general
Black-capped Chickadee	<i>Poecile atricapillus</i>	Confirmed	Confirmed	S5	-	-	general
Blue Jay	<i>Cyanocitta cristata</i>	Possible	Confirmed	S5	-	-	forest
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Probable	Confirmed	S5	-	-	general
Chipping Sparrow	<i>Spizella passerina</i>	Possible	Confirmed	S5	-	-	general
Common Grackle	<i>Quiscalus quiscula</i>	Confirmed	Confirmed	S5	-	-	general
Downy Woodpecker	<i>Picoides pubescens</i>	Probable	Possible	S5	-	-	forest
Eastern Phoebe	<i>Sayornis phoebe</i>	Probable	Confirmed	S5	-	-	general
Eastern Wood-pewee	<i>Contopus virens</i>	Possible	Probable	S4	SC	SC	forest
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Observed	Possible	S5	-	-	forest
Gray Catbird	<i>Dumetella carolinensis</i>	Possible	Probable	S4	-	-	early succession
Great Blue Heron	<i>Ardea herodias</i>	Possible	Confirmed	S4	-	-	wetland
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Confirmed	Confirmed	S5	-	-	forest
Hairy Woodpecker	<i>Picoides villosus</i>	Possible	Possible	S5	-	-	forest
House Wren	<i>Troglodytes aedon</i>	Probable	Confirmed	S5	-	-	general
Mourning Dove	<i>Zenaidura macroura</i>	Probable	Probable	S5	-	-	general
Northern Cardinal	<i>Cardinalis cardinalis</i>	Probable	Probable	S5	-	-	early succession
Northern Flicker	<i>Colaptes auratus</i>	Possible	Probable	S4	-	-	general
Northern Oriole	<i>Icterus galbula</i>	Probable	Probable	S5	-	-	general
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Possible	Possible	S5	-	-	forest
Red-eyed Vireo	<i>Vireo olivaceus</i>	Probable	Probable	S5	-	-	forest
Ring-billed Gull	<i>Larus delawarensis</i>	Observed	Confirmed	S5	-	-	wetland
Song Sparrow	<i>Melospiza melodia</i>	Confirmed	Confirmed	S5	-	-	general
Warbling Vireo	<i>Vireo gilvus</i>	Possible	Probable	S5	-	-	early succession
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Possible	Possible	S5	-	-	forest
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Possible	Possible	S5	-	-	forest
Wild Turkey	<i>Meleagris gallopavo</i>	Possible	Possible	S5	-	-	forest, mixed habitat
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	Confirmed	Probable	S5	-	-	forest

1. includes adjacent lands within 50 m of property perimeter

2. the highest breeding status reported in the OBBA for either Square 17NK52 or 17NK53

3. Provincial Rank: S4 - Apparently Secure, S5 - Secure

4. Federal Status: SC - Special Concern

5. Provincial Status: SC - Special Concern

6. based on the Ontario Breeding Bird Atlas (OBBA)

Table 5: Summary of NHIC Element Occurrences (EO) in Vicinity of the Long Point Property

Common Name	Scientific Name	SRank ¹	COSSARO Status2	COSEWIC Status3	Last Observation Date
Whiskered Camouflage Lichen	<i>Melanelixia subargentifera</i>	S1/S3	-	-	7/27/1976
Stiff Yellow Flax	<i>Linum medium var. medium</i>	S3?	-	-	not specified
Variegated Meadowhawk	<i>Sympetrum corruptum</i>	S3	-	-	9/11/1927
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	S4	-	-	8/1/1999
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	6/29/1994
Blandings Turtle	<i>Emydoidea blandingii</i>	S3	THR	END	4/23/2008

1 - Provincial Rank - S1 = Critically Imperiled, S3 = Vulnerable

2 - Provincial status - SC = Special Concern, THR = Threatened

3 - Federal Status - SC = Special Concern, END = Endangered

EO records obtained for NHIC 1-km squares 17NK5529, 17NK5530, 17NK5629, and 17NK5630

Table 6: Summary of Potential Impacts Associated with Development

Affected Feature	Potential Impact	Likelihood	Potential Significance	Limiting and Mitigating Factors
Significant Woodlands	Direct loss of woodlands	High	Low	Forest communities are young and have limited function and value. Account for <10% of larger block. Partial mitigation through site plan considerations and other preservation measures (e.g. TPP)
	Habitat Loss/Impairment	High	Low	Plant and animal communities are not rare or sensitive. Woodlands do not function as Significant Wildlife Habitat. Partial mitigation through construction timing, and site plan considerations.
	Loss/impairment of socio-economic function	Low	Low	Woodlands currently have very limited socio-economic function.
	Impaired Hydrological Function	Medium	Low	No meaningful hydrological connectivity between woodlands and surface water features. Minor groundwater recharge function. Impacts on recharge can be mitigated in part through SWM plan and site plan considerations
Wetlands - Off-site PSW	Direct loss or impairment of PSW	Low	Medium	Very limited functional connectivity between Property and nearby PSW
Wetlands - On Site	Direct loss of wetland	High	Low	Direct loss of a maximum of <0.01 ha of wetlands is possible. Functions and value of wetlands are very limited. Partial mitigation through SWM plan and site plan considerations.
	Hydrological impairment	High	Low	Primary hydrological inputs could be significantly altered. Contingent upon stormwater management planning. Low significance owing to limited hydrological function of wetlands
	Indirect Habitat Alteration/Impairment	Low	Low	Plant and animal species in wetlands are not rare or sensitive. Possible mitigation through site plan considerations
Aquatic Habitats	Loss or interference of watercourses	Low	Low	No direct incursions. Limited potential for changes in water quality and quantity in watercourses in question. Risk mitigation achievable through sediment and erosion control plan.
	Fish Habitat impairment/destruction	Low	Medium	Watercourse #1 does serve as fish habitat. Risk mitigation achievable through sediment and erosion control plan
Species of Conservation Concern	Direct harm to SOCC	Low	Low	Limited SOCC presence within and adjacent to the Property. Mitigation through construction timing and site plan considerations
	Loss or interference of SOCC Habitat	Low	Low	Loss of some woodland habitat is likely, possibly affecting nesting habitat of Eastern Wood-pewee. Mitigation partly achieved through site plan considerations.
Significant Wildlife Habitat	Direct loss or impairment of SWH	Low	Low	Very limited SWH presence within and adjacent to the Property. Mitigation through site design considerations and post construction management (e.g. TPP)

FIGURES

Figure 1: Property Location

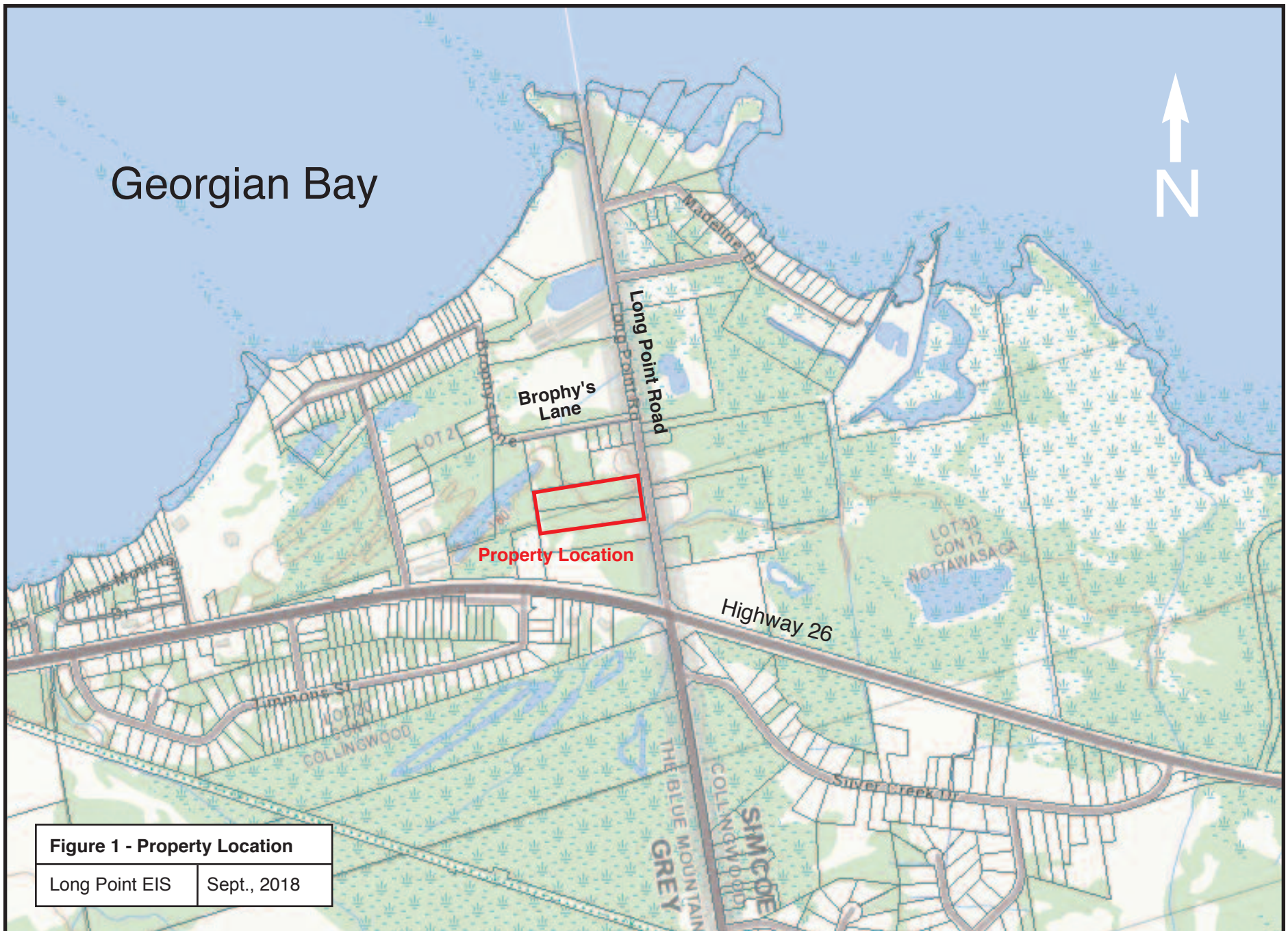
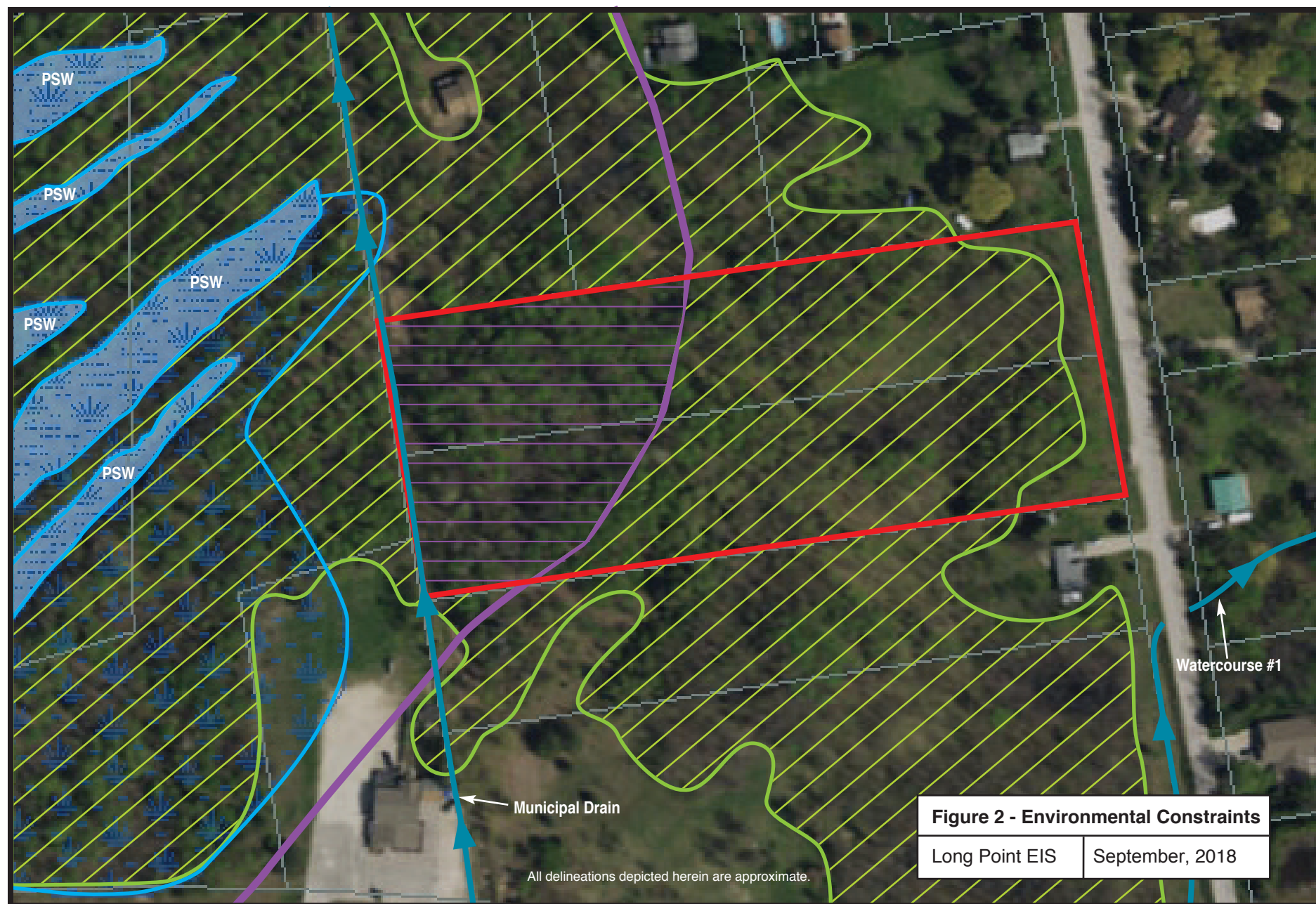


Figure 1 - Property Location

Long Point EIS

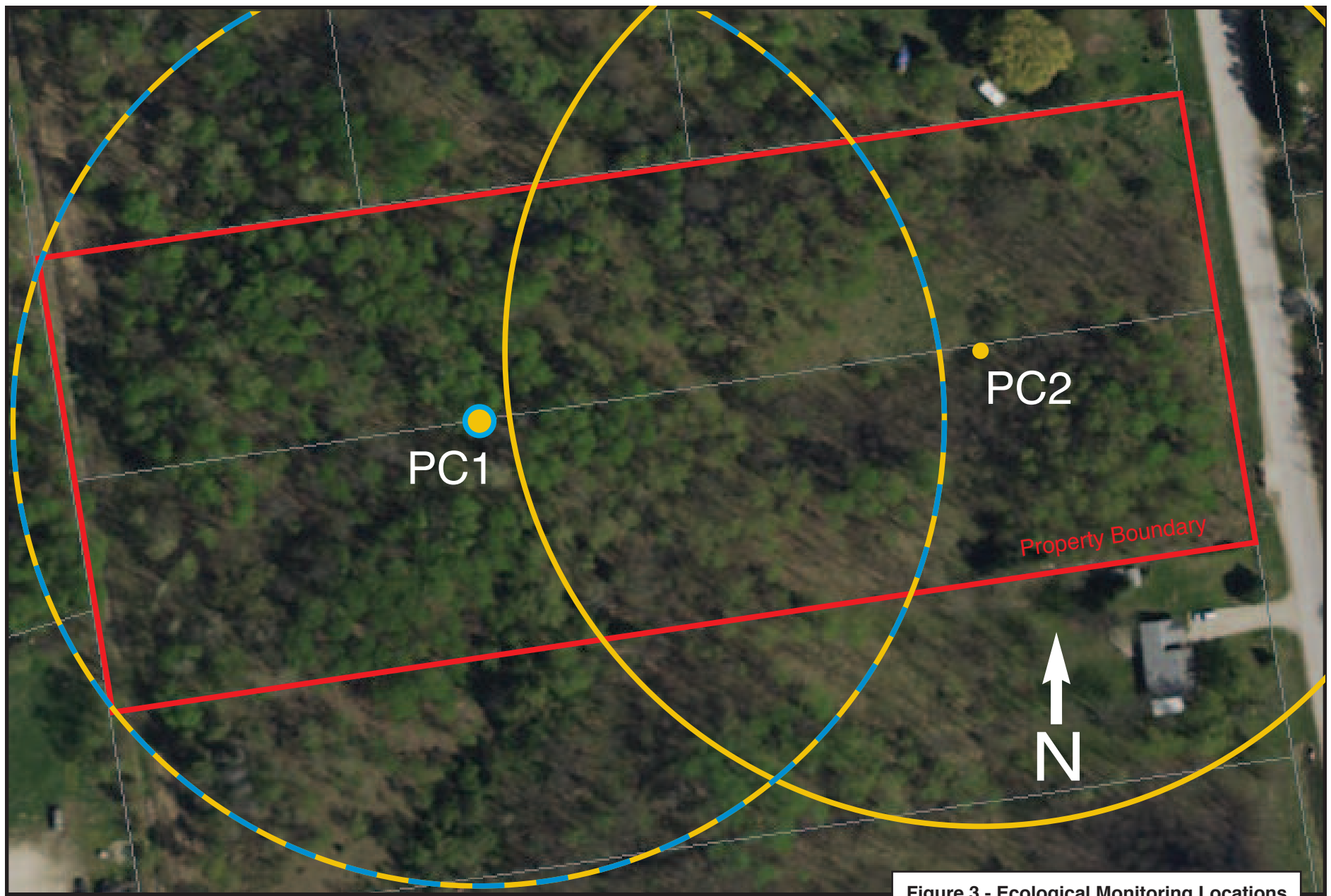
Sept., 2018

Figure 2: Environmental Constraints



 Property Boundary	 MNRW Mapped Wetlands	 GSCA Regulated Area	 Significant Woodland
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Figure 3: Ecological Monitoring Locations



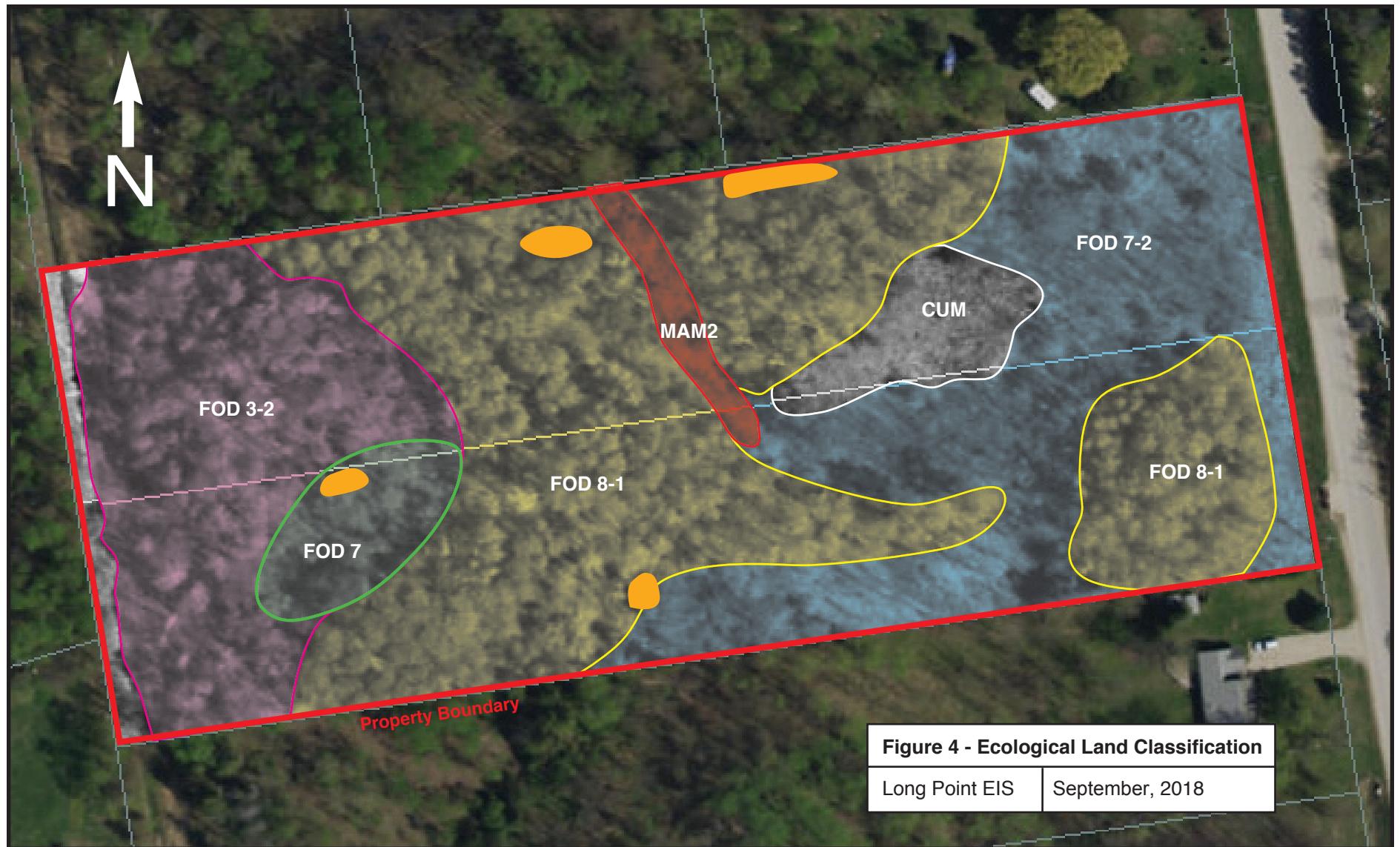
 Amphibian point-count station  Breeding Bird Point-count station

Figure 3 - Ecological Monitoring Locations

Long Point EIS

September, 2018

Figure 4: Ecological Land Classification



APPENDICES

Appendix A – Draft Plan of Subdivision

Appendix B – Detailed Ecological Data

Table B1 - Vascular Plant List for the Long Point Property

Table B1: Plant Species List for the Long Point Property

Common Name	Scientific Name	Provincial Status (S-RANK) ¹	COSEWIC Status ²	COSSARO Status ²	Native vs Non-native	Typical habitat
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	S5	-	-	Native	open woodlands
American Basswood	<i>Tilia americana</i>	S5	-	-	Native	deep fertile soils, with other hardwoods
American Larch	<i>Larix laricina</i>	S5	-	-	Native	moist, light soils with low shade
American Water-horehound	<i>Lycopus americanus</i>	S5	-	-	Native	wet places
Awl-fruited Sedge	<i>Carex stipata</i>	S5	-	-	Native	ditches, marshes, rich swamps
Balsam Poplar	<i>Populus balsamifera</i>	S5	-	-	Native	moist, rich low lying ground
Birdfoot Trefoil*	<i>Lotus corniculatus</i>	NA	-	-	Non-native	roadsides and waste areas
Bird Vetch*	<i>Vicia cracca</i>	NA	-	-	Non-native	disturbed areas
Bladder Sedge	<i>Carex intumescens</i>	S5	-	-	Native	swamps, wet woods
Black Ash	<i>Fraxinus nigra</i>	S4	-	-	Native	swampy forests
Black Cherry	<i>Prunus serotina</i>	S5	-	-	Native	hardwood forests, often as secondary species
Black Medic*	<i>Medicago lupulina</i>	NA	-	-	Non-native	roadsides and waste areas
Black Nightshade	<i>Solanum nigrum</i>	NA	-	-	Non-native	waste places
Black Willow	<i>Salix nigra</i>	S4	-	-	Native	low, wet areas
Bladder Campion	<i>Silene cucubalus</i>	NA	-	-	Non-native	roadsides, fields
Boneset	<i>Eupatorium perfoliatum</i>	S5	-	-	Native	low areas, thickets, swamps
Bracken Fern	<i>Pteridium aquilinum</i>	S5	-	-	Native	Fields and meadows
Broad-leaf Cattail	<i>Typha latifolia</i>	S5	-	-	Native	marshes, ponds and ditches
Brown Knapweed*	<i>Centaurea jacea</i>	NA	-	-	Non-native	roadsides, fields
Buckthorn*	<i>Rhamnus cathartica</i>	NA	-	-	Non-native	disturbed sites
Canada Anemone	<i>Aneomone canadensis</i>	S5	-	-	Native	meadows and thickets
Canada Bluejoint	<i>Calamagrostis canadensis</i>	S5	-	-	Native	various open wet areas
Canada Goldenrod	<i>Solidago canadensis</i>	S5	-	-	Native	roadsides, thickets and clearings
Canada Mayflower	<i>Maianthemum canadense</i>	S5	-	-	Native	woods and clearings
Canada Thistle*	<i>Cirsium arvense</i>	NA	-	-	Non-native	Roadsides, pastures and fields
Chicory	<i>Chicorium intybus</i>	NA	-	-	Non-native	roadsides and waste areas
Choke Cherry	<i>Prunus virginiana</i>	S5	-	-	Native	rich soils in clearings or along forest edge
Coltsfoot*	<i>Tussilago farfara</i>	NA	-	-	Non-native	waste places and roadsides
Common Burdock	<i>Arctium minus</i>	NA	-	-	Non-native	roadsides and waste areas
Common Buttercup	<i>Ranunculus acris</i>	NA	-	-	Non-native	fields and meadows
Common Cinquefoil	<i>Potentilla simplex</i>	S5	-	-	Native	fields and dry woods
Common Dandelion	<i>Taraxacum officinale</i>	NA	-	-	Non-native	lawns, fields, roadsides
Common Elderberry	<i>Sambucus nigra</i>	S5	-	-	Native	deciduous forest edge and understory
Common Lilac	<i>Syringa vulgaris</i>	SE	-	-	Non-native	disturbed sites
Common Milkweed	<i>Asclepias syriaca</i>	S5	-	-	Native	roadsides, fields, dry soil
Common Ragweed	<i>Ambrosia artemisiifolia</i>	S5	-	-	Native	roadsides, fields
Common Three-square	<i>Schoenoplectus pungens</i>	S5	-	-	Native	shores, marshes
Common St. Johnswort*	<i>Hypericum perforatum</i>	S5	-	-	Non-native	roadsides, fields, waste places
Common Strawberry	<i>Fragaria virginiana</i>	S5	-	-	Non-native	pastures and rocky woods
Common Timothy	<i>Phleum pratense</i>	NA	-	-	Non-native	fields
Common Yarrow	<i>Achillea millefolium</i>	NA	-	-	Non-native	roadsides, fields, waste places
Crested Sedge	<i>Carex cristatella</i>	S5	-	-	Native	wet meadows and woods
Curly Dock	<i>Rumex crispus</i>	NA	-	-	Non-native	fields and waste places
Dewberry (Dwarf Raspberry)	<i>Rubus pubescens</i>	S5	-	-	Native	upland woods, swamps, along rivers and lakes
Dog Violet	<i>Viola conspersa</i>	S5	-	-	Native	meadows, low woodlands, stream banks
Domestic Apple	<i>Malus pumila</i>	NA	-	-	Non-native	orchards
Early Goldenrod	<i>Solidago juncea</i>	S5	-	-	Native	roadsides, rocky banks, open woods
Eastern White Cedar	<i>Thuja occidentalis</i>	S5	-	-	Native	often in association with limestone, wet or dry conditions
Enchanter's Nightshade	<i>Circaea lutetiana</i>	S5	-	-	Native	woods
English Plantain	<i>Plantago lanceolata</i>	NA	-	-	Non-native	common to roadsides and waste places

Table B1: Plant Species List for the Long Point Property

Common Name	Scientific Name	Provincial Status (S-RANK) ¹	COSEWIC Status ²	COSSARO Status ²	Native vs Non-native	Typical habitat
False Solomon's-seal	<i>Maianthemum racemosum</i>	S5	-	-	Native	woods
Field Bindweed*	<i>Convolvulus arvensis</i>	NA	-	-	Non-native	fields and waste places
Forget-me-not*	<i>Myosotis scorpioides</i>	NA	-	-	Non-native	wet places
Fowl Bluegrass	<i>Poa palustris</i>	S5	-	-	Native	wet places
Fringed Loosestrife	<i>Lysimachia ciliata</i>	S5	-	-	Native	swamps, wet thickets or meadows
Goldenrod	<i>Solidago sp.</i>	-	-	-	Native	various
Gooseberry	<i>Ribes oxycanthoides</i>	S5	-	-	Native	forested areas, stream banks
Ground Cherry	<i>Physalis sp.</i>	S4	-	-	Native	dry soil
Hairy Lettuce	<i>Lactuca hirsuta</i>	S4?	-	-	Native	open woods and clearings
Harlequin Blue Flag	<i>Iris versicolor</i>	S5	-	-	Native	marshes, wet meadows
Hawthorn	<i>Crataegus spp</i>	-	-	-	Native	early succession species, disturbed areas
Herb-Robert	<i>Geranium robertianum</i>	NA	-	-	Native	rocky woods and shorelines
Jewelweed	<i>Impatiens capensis</i>	S5	-	-	Native	wet, shady places
Lady's Thumb	<i>Polygonum persicaria</i>	NA	-	-	Non-native	cultivated ground, waste places
Lance-leaved Goldenrod	<i>Euthamia graminifolia</i>	S5	-	-	Native	damp places, thickets
Late Goldenrod	<i>Solidago gigantea</i>	S5	-	-	Native	moist open thickets
Lilac	<i>Syringa vulgaris</i>	NA	-	-	Non-native	ornamental
Maiden Pink	<i>Dianthus deltoides</i>	NA	-	-	Non-native	dry fields, roadsides
Manitoba Maple*	<i>Acer negundo</i>	S5	-	-	Native	Often in riparian or shoreline areas
Meadow Fescue	<i>Lolium pratense</i>	NA	-	-	Non-native	fields and meadows
Meadow Horsetail	<i>Equisetum pratense</i>	S5	-	-	Native	swamps, moist forests, wet meadows
Motherwort	<i>Leonurus cardiaca</i>	NA	-	-	Non-native	roadsides and waste areas
Narrow-leaved Cattail*	<i>Typha angustifolia</i>	NA	-	-	Native	marshes, ponds and ditches
New England Aster	<i>Symphyotrichum novae-angliae</i>	S5	-	-	Native	thickets, meadows, cultivated fields
Northern Red Currant	<i>Ribes rubrum</i>	NA	-	-	Native	wetlands, shores and stream banks,
Northern Willowherb	<i>Epilobium ciliatum</i>	S5	-	-	Native	wet places
Norway Maple*	<i>Acer platanoides</i>	NA	-	-	Non-native	Landscaping plant
Norway Spruce	<i>Picea abies</i>	NA	-	-	Non-native	Landscaping sp
Orchard Grass	<i>Dactylis glomerata</i>	NA	-	-	Non-native	open areas
Oriental Bittersweet*	<i>Celastrus orbiculatus</i>	NA	-	-	Non-native	disturbed areas
Panicled Aster	<i>Symphyotrichum lanceolatum</i>	S5	-	-	Native	damp open ground, wet meadows
Peach-leaved Willow	<i>Salix amygdaloides</i>	S5	-	-	Native	wet places
Pennsylvania Bittercress	<i>Cardamine pensylvanica</i>	S5	-	-	Native	springs, wet ground
Perennial Ryegrass*	<i>Lolium perenne</i>	NA	-	-	Non-native	lawns, fields, roadsides
Philadelphia Fleabane	<i>Erigeron philadelphicus</i>	S5	-	-	Native	fields, open woods
Plantain-leaved Sedge	<i>Carex plantaginea</i>	S5	-	-	Native	woods
Poison Ivy	<i>Toxicodendron radicans</i>	S5	-	-	Native	variety of habitats
Purple Loosestrife*	<i>Lythrum salicaria</i>	NA	-	-	Non-native	swamps, wet meadows
Pussy Willow	<i>Salix discolor</i>	S5	-	-	Native	wet areas with little canopy cover
Red Ash	<i>Fraxinus pennsylvanica</i>	S5	-	-	Native	shores and banks, or areas with little competition
Red Baneberry	<i>Actaea rubra</i>	S5	-	-	Native	woods
Red Clover*	<i>Trifolium pratense</i>	NA	-	-	Non-native	fields and wayside areas
Red Fescue	<i>Festuca rubra</i>	S5	-	-	Native	open areas
Red Maple	<i>Acer rubrum</i>	S5	-	-	Native	swamp borders
Red-osier Dogwood	<i>Cornus sericea</i>	S5	-	-	Native	wetlands, wet fields and thickets
Round-leaved Dogwood	<i>Cornus rugosa</i>	S5	-	-	Native	deciduous forest understory
Sarsaparilla	<i>Aralia nudicaulis</i>	S5	-	-	Native	dry, open woods
Scots Pine	<i>Pinus sylvestris</i>	NA	-	-	Non-native	often on poor soils, usually planted
Self-heal	<i>Prunella vulgaris</i>	S5	-	-	Non-native	roadsides and waste areas
Sensitive Fern	<i>Onoclea sensibilis</i>	S5	-	-	Native	moist woods, thickets, wet meadows

Table B1: Plant Species List for the Long Point Property

Common Name	Scientific Name	Provincial Status (S-RANK) ¹	COSEWIC Status ²	COSSARO Status ²	Native vs Non-native	Typical habitat
Serviceberry	<i>Amelanchier arborea</i>	S5	-	-	Native	deciduous forest, usually near openings
Silver Maple	<i>Acer saccharinum</i>	S5	-	-	Native	shores, bottomlands, along streams
Silverweed	<i>Argentina anserina</i>	S5	-	-	Native	beaches, shores
Small White Aster	<i>Symphyotrichum lateriflorum</i>	S5	-	-	Native	fields and meadows
Smooth Brome	<i>Bromus inermis</i>	NA	-	-	Non-native	fields and meadows
Smooth Goldenrod	<i>Solidago gigantea</i>	S5	-	-	Native	moist open thickets
Soft-stemmed Bulrush	<i>Schoenoplectus tabernaemontani</i>	S5	-	-	Native	marshes, shores
Spotted Joe-pye Weed	<i>Eupatorium maculatum</i>	S5	-	-	Native	marshes, ponds and ditches
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	S5	-	-	Native	thickets, roadsides
St. John's-wort	<i>Hypericum canadense</i>	S4	-	-	Native	roadsides, fields, waste places
Sugar Maple	<i>Acer saccharum</i>	S5	-	-	Native	Deep, fertile, well-drained soils
Swamp Aster	<i>Symphyotrichum puniceum</i>	S5	-	-	Native	swamps, wet thickets or meadows
Sweet Pea	<i>Lathyrus latifolius</i>	NA	-	-	Non-native	roadsides and waste areas
Tall Fescue*	<i>Schedonorus arundinaceus</i>	NA	-	-	Non-native	lawns, fields, roadsides
Tall Goldenrod	<i>Solidago altissima</i>	S5	-	-	Native	roadsides, open woods, clearings
Tartarian Honeysuckle*	<i>Lonicera tatarica</i>	NA	-	-	Non-native	Landscaping sp
Teasel*	<i>Dipsacus sylvestris</i>	NA	-	-	Non-native	roadsides and waste areas
Three-leaved Rattlesnakeroot	<i>Nabalus trifoliolatus</i>	S5	-	-	Native	thickets, clearings, open slopes
Trembling Aspen	<i>Populus tremuloides</i>	S5	-	-	Native	well-drained moist sandy or gravelly soils
Turtlehead	<i>Chelone glabra</i>	S5	-	-	Native	wet ground, stream banks
Viper's Bugloss	<i>Echium vulgare</i>	NA	-	-	Non-native	meadows and open woods
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	S4	-	-	Native	deciduous forest floor, woodland edges
Watercress	<i>Rorippa nasturtium-aquaticum</i>	NA	-	-	Non-native	running water, springs
Water Sedge	<i>Carex aquatilis</i>	S5	-	-	Native	streambanks, marshes, wet fields, ditches
White Ash	<i>Fraxinus americana</i>	S5	-	-	Native	moist but well-drained soils, with other hardwoods
White Baneberry	<i>Actaea pachypoda</i>	S5	-	-	Native	well-established woods
White Birch	<i>Betula papyrifera</i>	S5	-	-	Native	well drained soils, intolerant of shade
White Clover*	<i>Trifolium repens</i>	NA	-	-	Non-native	fields and roadsides
White Elm	<i>Ulmus americana</i>	S5	-	-	Native	Moist, well-drained slopes and bottom-lands.
White Rattlesnake-root	<i>Nabalus albus</i>	S5	-	-	Native	rich woods, thickets
White Spruce	<i>Picea glauca</i>	S5	-	-	Native	various - often associated with aspen or birch
White Sweet Clover	<i>Melilotus albus</i>	NA	-	-	Non-native	roadsides, field edges
White Turtlehead	<i>Chelone glabra</i>	S5	-	-	Native	wet ground, stream banks
Wild Bean	<i>Phaseolus polystachios</i>	S4	-	-	Native	dry woods, sandy soil
Wild Carrot*	<i>Daucus carota</i>	NA	-	-	Non-native	roadsides, fields and waste areas
Wild Grape	<i>Vitis riparia</i>	S5	-	-	Native	woodland openings and edges
Wild Madder	<i>Galium mollugo</i>	NA	-	-	Non-native	fields and roadsides
Wild Mint	<i>Mentha arvensis</i>	S5	-	-	Native	damp soils, shores
Wild Raspberry	<i>Rubus occidentalis</i>	S5	-	-	Native	deciduous forest openings or edges
Wood Strawberry	<i>Fragaria vesca</i>	S5	-	-	native	fields and open places
Woodland Agrimony	<i>Agrimonia striata</i>	S4	-	-	Native	woods, thickets
Woundwort	<i>Stachys palustris</i>	NA	-	-	Non-native	ditches, wet ground, low meadows
Zigzag Goldenrod	<i>Solidago flexicaulis</i>	S5	-	-	Native	woodlands and rich thickets

* species marked with an asterisk are widely regarded as invasive in Ontario

1. Provincial Rank: S3 - Vulnerable, S4 - Apparently Secure, S5 - Secure

2. Species at Risk Status: END = Endangered, THR = Threatened, SC = Special Concern, NAR = Not at Risk, "-" = not assessed

BBS Point Count-Data - June 2017

Project:	Long Point EIS
Station:	PC-1
Date:	19-Jun-17
Start Time:	6:45
Wind (Beaufort):	0
Sky:	partly cloudy
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			Total
Common name	Scientific name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	
American Crow	<i>Corvus brachyrhynchos</i>			2				2
American Redstart	<i>Setophaga ruticilla</i>	1			1			2
Great Crested Flycatcher	<i>Myiarchus crinitus</i>		1					1
House Wren	<i>Troglodytes aedon</i>	1	1		1			3
Northern Oriole	<i>Icterus galbula</i>		1			1		2
Red-eyed Vireo	<i>Vireo olivaceus</i>		1	1	1	1	1	5
Song Sparrow	<i>Melospiza melodia</i>	1			1	1		3
Warbling Vireo	<i>Vireo gilvus</i>		1				1	2

Notes:

species count	8
total birds	5

Project:	Long Point EIS
Station:	PC-2
Date:	19-Jun-17
Start Time:	7:05
Wind (Beaufort):	0
Sky:	partly cloudy
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			Total
Common name	Scientific name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	
American Redstart	<i>Setophaga ruticilla</i>	1			1			2
Black-capped Chickadee	<i>Poecile atricapillus</i>				1			1
Downy Woodpecker	<i>Picoides pubescens</i>	1						1
Eastern Wood-pewee	<i>Contopus virens</i>			1			1	2
Great Crested Flycatcher	<i>Myiarchus crinitus</i>		1		1			2
Mourning Dove	<i>Zenaida macroura</i>			1			1	2
Northern Flicker	<i>Colaptes auratus</i>			1		1	1	3
Red-eyed Vireo	<i>Vireo olivaceus</i>		1			1		2

Notes: Slight interference from traffic noise. Eastern Wood-pewee occurrence is off property (west)

species count	8
total birds	15

BBS Point Count-Data - July 2017

Project:	Long Point EIS
Station:	PC-1
Date:	10-Jul-17
Start Time:	6:05
Wind (Beaufort):	0
Sky:	partly cloudy
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			Total
Common name	Scientific name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	
American Goldfinch	<i>Carduelis tristis</i>	1						1
American Redstart	<i>Setophaga ruticilla</i>				1			1
American Robin	<i>Turdus migratorius</i>	3			1		1	5
House Wren	<i>Troglodytes aedon</i>		1			1		2
Mourning Dove	<i>Zenaida macroura</i>						1	1
Northern Cardinal	<i>Cardinalis cardinalis</i>						1	1
Northern Flicker	<i>Colaptes auratus</i>			1			1	2
Northern Oriole	<i>Icterus galbula</i>	1						1
Red-eyed Vireo	<i>Vireo olivaceus</i>	1	1		1	1		4
Song Sparrow	<i>Melospiza melodia</i>	1	1			1		3

Notes: Mourning doveamnd Northern Cardinal occurrences off property

species count	10
total birds	21

Project: Long Point EIS
 Station: PC-2
 Date: 10-Jul-17
 Start Time: 6:22
 Wind (Beaufort): 0
 Sky: partly cloudy
 Observer: Neil Morris

Species		First 5 minutes			Second 5 minutes			Total
Common name	Scientific name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	
American Crow	<i>Corvus brachyrhynchos</i>			1				1
American Goldfinch	<i>Carduelis tristis</i>					1		1
American Robin	<i>Turdus migratorius</i>					1		1
Eastern Wood-pewee	<i>Contopus virens</i>			1			1	2
House Wren	<i>Troglodytes aedon</i>		1			1		2
Northern Cardinal	<i>Cardinalis cardinalis</i>			1				1
Northern Flicker	<i>Colaptes auratus</i>					1	1	2
Red-eyed Vireo	<i>Vireo olivaceus</i>			1		1	1	3
Song Sparrow	<i>Melospiza melodia</i>		1			1		2

Notes: Slight interference from traffic noise
 Eastern Wood-pewee was observed off property

species count 9
 total birds 15

**Ontario Breeding Bird Atlas (OBBA) - Data for Squares 17NK52 and
17NK53**

Table B2: OBBA Data - Squares 17NK52 and 17NK53

Species		17NK52		17NK53		STATUS		
Common Name	Scientific Name	1981-1985	2001-2005	1981-1985	2001-2005	SRANK ¹	COSEWIC ²	COSSARO ²
Alder Flycatcher	<i>Empidonax virescens</i>	Confirmed	Possible		Probable	S2/S3	END	END
American Black Duck	<i>Anas rubripes</i>	Confirmed			Confirmed	S4		
American Crow	<i>Corvus brachyrhynchos</i>	Confirmed	Confirmed	Probable	Confirmed	S5		
American Goldfinch	<i>Carduelis tristis</i>	Confirmed	Probable	Probable	Probable	S5		
American Kestrel	<i>Falco sparverius</i>	Confirmed	Possible		Possible	S5		
American Redstart	<i>Setophaga ruticilla</i>	Confirmed	Possible	Possible	Probable	S5		
American Robin	<i>Turdus migratorius</i>	Confirmed	Confirmed	Confirmed	Confirmed	S5		
American Woodcock	<i>Scolopax minor</i>	Confirmed	Possible	Possible	Possible	S4		
Baltimore Oriole	<i>Icterus galbula</i>	Confirmed	Probable	Confirmed	Confirmed	S4		
Bank Swallow	<i>Riparia riparia</i>	Confirmed	Confirmed	Confirmed		S4	THR	THR
Barn Swallow	<i>Hirundo rustica</i>	Confirmed	Confirmed	Confirmed	Confirmed	S4	THR	THR
Belted Kingfisher	<i>Ceryle alcyon</i>	Confirmed			Possible	S4		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Probable	Possible		Possible	S5		
Blackburnian Warbler	<i>Dendroica fusca</i>		Possible			S5		
Black-capped Chickadee	<i>Poecile atricapillus</i>	Confirmed	Confirmed	Probable	Confirmed	S5		
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	Possible		Confirmed	Confirmed	S3		
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Possible	Probable		Possible	S5		
Black-throated Green Warbler	<i>Dendroica virens</i>	Possible	Possible		Possible	S5		
Black-and-white Warbler	<i>Mniotilta varia</i>	Probable	Possible		Possible	S5		
Blue Jay	<i>Cyanocitta cristata</i>	Confirmed	Confirmed	Confirmed	Probable	S5		
Blue-winged Teal	<i>Anas discors</i>	Confirmed			Possible	S4		
Blue-winged Warbler	<i>Vermivora pinus</i>		Possible			S4		
Bobolink	<i>Dolichonyx oryzivorus</i>	Confirmed	Probable	Confirmed	Possible	S4	THR	THR
Brewster's Warbler	<i>Vermivora pinus</i>		Possible			NA		
Brown Creeper	<i>Certhia americana</i>	Probable	Possible			S5		
Brown Thrasher	<i>Toxostoma rufum</i>	Confirmed	Probable	Possible	Probable	S4		
Brown-head Cowbird	<i>Molothrus ater</i>	Confirmed	Probable	Confirmed	Probable	S4		
Canada Goose	<i>Branta canadensis</i>	Confirmed	Confirmed		Confirmed	S5		
Canada Warbler	<i>Wilsonia canadensis</i>	Possible			Possible	S4	THR	SC
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Confirmed	Confirmed	Confirmed	Possible	S5		
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Confirmed	Possible		Probable	S5		
Chimney Swift	<i>Chaetura pelagica</i>	Probable				S4,S4N	THR	THR
Chipping Sparrow	<i>Spizella passerina</i>	Confirmed	Confirmed	Confirmed	Probable	S5		
Clay-colored Sparrow	<i>Spizella pallida</i>		Possible			S4		
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Confirmed	Possible			S4		

Table B2: OBBA Data - Squares 17NK52 and 17NK53

Species		17NK52		17NK53		STATUS		
Common Name	Scientific Name	1981-1985	2001-2005	1981-1985	2001-2005	SRANK ¹	COSEWIC ²	COSSARO ²
Common Grackle	<i>Quiscalus quiscula</i>	Confirmed	Confirmed	Confirmed	Confirmed	S5		
Common Loon	<i>Gavia immer</i>			Possible	Possible	S5,S5N	NAR	NAR
Common Merganser	<i>Mergus merganser</i>	Probable		Confirmed	Confirmed	S5,S5N		
Common Nighthawk	<i>Chordeiles minor</i>			Probable	Possible	S4	THR	SC
Common Raven	<i>Corvus corax</i>		Probable		Possible	S5		
Common Snipe	<i>Gallinago delicata</i>	Confirmed	Possible			S5		
Common Tern	<i>Sterna hirundo</i>			Confirmed	Confirmed	S4	NAR	NAR
Common Yellowthroat	<i>Geothlypis trichas</i>	Confirmed	Probable	Possible	Probable	S5		
Cooper's Hawk	<i>Accipiter cooperii</i>		Possible		Possible	S4	NAR	NAR
Dark-eyed Junco	<i>Junco hyemalis</i>	Probable				S5		
Double-crested Cormorant	<i>Phalacrocorax auritus</i>				Confirmed	S5	NAR	NAR
Downy Woodpecker	<i>Picoides pubescens</i>	Confirmed	Possible	Confirmed	Possible	S5		
Eastern Bluebird	<i>Sialia sialis</i>		Confirmed			S5	NAR	NAR
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Confirmed	Confirmed	Confirmed	Probable	S4		
Eastern Meadowlark	<i>Sturnella magna</i>	Confirmed	Probable	Confirmed	Probable	S4	THR	THR
Eastern Phoebe	<i>Sayornis phoebe</i>	Probable	Confirmed	Possible	Confirmed	S5		
Eastern Screech-Owl	<i>Megascops asio</i>	Possible	Possible	Possible		S5	NAR	NAR
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Confirmed	Possible	Possible		S4		
Eastern Wood-Pewee	<i>Contopus virens</i>	Confirmed	Probable	Possible	Possible	S4	SC	SC
European Starling	<i>Sturnus vulgaris</i>	Confirmed	Confirmed	Confirmed	Confirmed	SNA		
Field Sparrow	<i>Spizella pusilla</i>	Confirmed	Possible	Possible	Possible	S4		
Gadwall	<i>Anas strepera</i>			Probable		S4		
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Probable	Possible			S5		
Golden-winged Warbler	<i>Vermivora chrysoptera</i>		Probable			S4	SC	SC
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Confirmed	Confirmed	Possible	Probable	S4		
Gray Catbird	<i>Dumetella carolinensis</i>	Confirmed	Probable	Possible	Probable	S4		
Great Black-backed Gull	<i>Larus marinus</i>				Confirmed	S2		
Great Blue Heron	<i>Ardea herodias</i>	Possible		Confirmed	Confirmed	S5		
Great Egret	<i>Ardea alba</i>			Probable	Confirmed	S2		
Great Horned Owl	<i>Bubo virginianus</i>	Confirmed			Probable	S5		
Green Heron	<i>Butorides virescens</i>	Probable	Possible	Possible		S4		
Hairy Woodpecker	<i>Picoides villosus</i>	Confirmed	Possible		Possible	S5		
Herring Gull	<i>Larus argentatus</i>	Confirmed		Confirmed	Confirmed	S5		
Horned Lark	<i>Eremophila alpestris</i>	Confirmed	Possible			S5		
House Finch	<i>Carpodacus mexicanus</i>		Probable		Probable	NA		

Table B2: OBBA Data - Squares 17NK52 and 17NK53

Species		17NK52		17NK53		STATUS		
Common Name	Scientific Name	1981-1985	2001-2005	1981-1985	2001-2005	SRANK ¹	COSEWIC ²	COSSARO ²
House Sparrow	<i>Passer domesticus</i>	Confirmed	Probable	Confirmed		NA		
House Wren	<i>Troglodytes aedon</i>	Confirmed	Confirmed	Confirmed	Probable	S5		
Indigo Bunting	<i>Passerina cyanea</i>	Confirmed	Probable	Possible	Possible	S4		
Killdeer	<i>Charadrius vociferus</i>	Confirmed	Probable	Probable	Probable	S5		
Least Flycatcher	<i>Empidonax minimus</i>	Confirmed	Possible	Possible	Possible	S4		
Louisiana Waterthrush	<i>Seiurus motacilla</i>	Probable	Probable			S3	THR	SC
Magnolia Warbler	<i>Dendroica magnolia</i>		Possible			S5		
Mallard	<i>Anas platyrhynchos</i>	Confirmed	Probable	Confirmed	Confirmed	S5		
Mourning Dove	<i>Zenaida macroura</i>	Confirmed	Probable	Probable	Possible	S5		
Mourning Warbler	<i>Oporornis philadelphia</i>	Confirmed	Possible		Possible	S4		
Nashville Warbler	<i>Vermivora ruficapilla</i>	Confirmed	Possible		Possible	S5		
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Confirmed	Probable			S4		
Northern Waterthrush	<i>Seiurus noveboracensis</i>	Confirmed	Possible		Possible	S5		
Northern Cardinal	<i>Cardinalis cardinalis</i>	Confirmed	Probable	Probable	Probable	S5		
Northern Flicker	<i>Colaptes auratus</i>	Confirmed	Possible	Probable	Probable	S4		
Northern Harrier	<i>Circus cyaneus</i>	Probable				S4	NAR	NAR
Northern Pintail	<i>Anas acuta</i>			Confirmed		S5		
Orchard Oriole	<i>Icterus spurius</i>		Possible			S4		
Ovenbird	<i>Seiurus aurocapilla</i>	Confirmed	Probable		Probable	S4		
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Probable	Possible			S5		
Pine Warbler	<i>Dendroica pinus</i>				Possible	S5		
Purple Finch	<i>Carpodacus purpureus</i>	Confirmed	Possible		Possible	S4		
Purple Martin	<i>Progne subis</i>	Confirmed			Confirmed	S4		
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>				Possible	S4		
Red-breasted Merganser	<i>Mergus serrator</i>	Confirmed		Confirmed	Probable	S4/S5		
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Probable		Confirmed	Possible	S5		
Red-eyed Vireo	<i>Vireo olivaceus</i>	Confirmed	Probable	Possible	Probable	S5		
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Probable				S4	THR	SC
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Confirmed	Possible	Probable	Possible	S5	NAR	NAR
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Confirmed	Confirmed	Confirmed	Confirmed	S5		
Ring-billed Gull	<i>Larus delawarensis</i>			Confirmed	Confirmed	S4/S5		
Rock Dove	<i>Columba livia</i>	Confirmed	Possible	Possible	Possible	NA		
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Confirmed	Possible	Confirmed	Possible	S4		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Probable	Probable	Possible	Possible	S5		
Ruffed Grouse	<i>Bonasa umbellus</i>	Confirmed	Confirmed	Confirmed		S5		

Table B2: OBBA Data - Squares 17NK52 and 17NK53

Species		17NK52		17NK53		STATUS		
Common Name	Scientific Name	1981-1985	2001-2005	1981-1985	2001-2005	SRANK ¹	COSEWIC ²	COSSARO ²
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Confirmed	Possible		Probable	S4	NAR	NAR
Scarlet Tanager	<i>Piranga olivacea</i>	Possible	Probable			S4		
Sedge Wren	<i>Cistothorus platensis</i>		Possible			S4		
Song Sparrow	<i>Melospiza melodia</i>	Confirmed	Confirmed	Confirmed	Confirmed	S5		
Sora	<i>Porzana carolina</i>	Possible				S4		
Spotted Sandpiper	<i>Actitis macularius</i>	Confirmed		Confirmed	Probable	S5		
Swamp Sparrow	<i>Melospiza georgiana</i>	Confirmed	Probable		Probable	S5		
Tree Swallow	<i>Tachycineta bicolor</i>	Confirmed	Confirmed	Confirmed	Probable	S4		
Turkey Vulture	<i>Cathartes aura</i>	Confirmed	Confirmed	Probable		S5		
Upland Sandpiper	<i>Bartramia longicauda</i>	Confirmed	Probable			S4		
Veery	<i>Catharus fuscescens</i>	Confirmed	Probable	Possible	Possible	S4	THR	SC
Vesper Sparrow	<i>Poocetes gramineus</i>	Confirmed	Possible		Possible	S4		
Virginia Rail	<i>Rallus limicola</i>			Possible		S5		
Warbling Vireo	<i>Vireo gilvus</i>	Confirmed	Probable	Possible	Probable	S5		
Western Meadowlark	<i>Sturnella neglecta</i>	Possible				S3		
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Confirmed	Possible	Possible	Possible	S5		
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Confirmed	Possible			S5		
Wild Turkey	<i>Meleagris gallopavo</i>		Possible			S5		
Willow Flycatcher	<i>Empidonax traillii</i>		Probable		Possible	S5		
Winter Wren	<i>Troglodytes troglodytes</i>	Probable	Possible		Possible	S5		
Wood Duck	<i>Aix sponsa</i>	Confirmed	Probable		Possible	S5		
Wood Thrush	<i>Hylocichla mustelina</i>	Confirmed	Possible		Probable	S4		
Yellow Warbler	<i>Dendroica petechia</i>	Confirmed	Probable	Probable	Probable	S5		
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Confirmed	Probable	Possible	Possible	S5		
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Probable	Possible		Possible	S5		

1. Provincial Rank: SE - Exotic, S2 - Imperiled, S3 - Vulnerable, S4 - apparently secure, S5 - Secure

2. COSEWIC/COSSARO Status: End - Endangered, Thr - Threatened, SC - Special Concern, NAR - not at risk

Table B3: OBBA Results - Square 17NK53, Point-Count Station #5

Species		Total Count	Provincial Rank ¹
Common Name	Scientific Name		
American Crow	<i>Corvus brachyrhynchos</i>	1	S5
American Goldfinch	<i>Carduelis tristis</i>	2	S5
American Robin	<i>Turdus migratorius</i>	3	S5
Baltimore Oriole	<i>Icterus galbula</i>	1	S5
Blue Jay	<i>Cyanocitta cristata</i>	15	S5
Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	S5
Common Grackle	<i>Quiscalus quiscula</i>	1	S5
Common Yellowthroat	<i>Geothlypis trichas</i>	1	S5
European Starling	<i>Sturnus vulgaris</i>	1	S5
Great Blue Heron	<i>Ardea herodias</i>	1	S4
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1	S5
House Wren	<i>Troglodytes aedon</i>	2	S5
Northern Flicker	<i>Colaptes auratus</i>	1	S4
Ring-billed Gull	<i>Larus delawarensis</i>	1	S5
Red-eyed Vireo	<i>Vireo olivaceus</i>	1	S5
Song Sparrow	<i>Melospiza melodia</i>	1	S5
Tree Swallow	<i>Tachycineta bicolor</i>	2	S5
Warbling Vireo	<i>Vireo gilvus</i>	1	S5
Yellow Warbler	<i>Dendroica petechia</i>	1	S5

1. S4 - apparently secure, S5 - Secure