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# Appendix E

## Natural Heritage

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**Preliminary Constraints and Existing Conditions Report**

**Sunnidale Road Sanitary Sewer Relocation  
(Alternative 3C – KD01 Berm Alignment)**

**City of Barrie**

Prepared for:  
City of Barrie

Prepared by:  
Azimuth Environmental  
Consulting, Inc.

January 2019

AEC 18-342

January 22, 2019

AEC 18-342

City of Barrie Engineering Department  
70 Collier Street, 6<sup>th</sup> Floor  
Barrie, Ontario,  
L4M 4T5

Attention: Brett Gratrix, Infrastructure Planning Engineer

**Re: Preliminary Constraints and Existing Conditions Study Report  
Relocation of the Sunnidale Road Sanitary Sewer, City of Barrie (Alternative  
3C – KD01 Berm Alignment).**

Dear Mr. Gratrix:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to submit our Preliminary Constraints and Existing Conditions Report for the above noted project, based on the preliminary design for “Alternative 3C – KD01 Berm Alignment”. It is our understanding that the City of Barrie is undertaking a Schedule B Municipal Class Environmental Assessment (Class EA) to study alternative alignments to relocate the existing sanitary sewer off of the Sunnidale Road Highway 400 bridge. This study forms a portion of the “environmental impact” work towards the Class EA.

This report summarizes field investigations undertaken in November, 2018 to characterize and categorize the natural environmental features in the study area and surrounding lands. The assessment was designed to evaluate the study area for features and species with potential to effect constraints on the proposed project based on applicable policy and/or legislation. This report is has been prepared based on our understanding of the proposed works for “Alternative 3C – KD01 Berm Alignment” at this time.

Should you have any questions or wish to discuss the information provided, please do not hesitate to contact me.



Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Scott Martin, H.B.O.R., B.Sc.  
Terrestrial Ecologist

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## **1.0 INTRODUCTION**

The Ministry of Transportation (MTO) has received Environmental Assessment approval for Highway 400 (the highway) transportation improvements that include the replacement of the Sunnidale Road bridge. The MTO has requested the Corporation of the City of Barrie (the City) to plan for and relocate the existing sanitary sewer that is presently located within the bridge super structure as they desire the replacement bridge to be free of third party utilities. Azimuth Environmental Consulting, Inc. (Azimuth) was retained by the City to complete an Environmental Impact Study (EIS) for the relocation of the Sunnidale Road sanitary sewer (study area; Figure 1).

It is our understanding that work is being completed in accordance with a Schedule 'B' undertaking, and that an EIS will be required by the City to determine and assess the potential impacts of the proposed works on possible Significant Natural Heritage Features (SNHF) and functions in accordance with provincial and municipal planning policy. At this stage of the project, the City has requested an Existing Conditions report that documents current natural heritage considerations and constraints for purposes of project planning, and for future use in the preparation of an EIS pending finalization of the sanitary sewer routing options.

The information presented in this report addresses the Existing Conditions component of the study. This report is based upon background information collected from the Ministry of Natural Resources and Forestry (MNR), Lake Simcoe Region Conservation Authority (LSRCA) and County of Simcoe, including mapping and other supplementary background material to assist in the completion of the assessment. At the time of submission, a single site visit has been completed to confirm the background information and ground truth the existing conditions within the study area.

As requested by the City, this report reflects the existing conditions and assessed constraints relating to Alternative 3C – KD01 Berm Alignment.

## **2.0 STUDY APPROACH**

Azimuth conducted a terrestrial survey of the project area on November 8, 2018, with a focus on gathering information to explore the potential for SNHF – such as Endangered (END), Threatened (THR) or Special Concern (SC) species, rare habitats, significant woodlands or wetlands, *etc.*, to occur in or adjacent to the proposed project area. The



study area focused on features within approximately 50 meters of the proposed alignment (Alternative 3C – KD01 Berm Alignment) of the sanitary sewer, as shown on Figure 2.

The following protocols were used to gather data for the study:

## **2.1 Existing Data Sources**

A review of existing documents provided information on site characteristics, habitat, wildlife, vegetation communities, and general aspects of the study area. Data were gathered from the following sources:

- Aerial images (Google, Air photos);
- Atlas of the Breeding Birds of Ontario (OBBA) [website];
- MNRF's NHIC Make-A-Map: Natural Heritage Areas application [website];
- County of Simcoe Interactive Map [website];
- Ontario Nature – Ontario Reptile and Amphibian Atlas [website];
- MNRF's Species at Risk Ontario list;
- Atlas of the Mammals of Ontario (Dobbyn 1994)

## **2.2 Vegetation Community Surveys and Mapping**

A field survey to catalogue and delineate vegetation community types and plant species compositions was completed in November 2018. During vegetation community classification work, the assessment was focused to ensure that appropriate effort was made to detect any federally or provincially designated species – notably SAR as identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the Committee on the Status of Species at Risk in Ontario (COSSARO) – or their habitats. The site visit was conducted by a qualified ecologist with knowledge related to SAR as well as rare plant species with potential to occur in the area.

Vegetation community types were classified using the Ecological Land Classification for southern Ontario (Lee *et al.*, 1998, 2008 DRAFT Update). Ecological Lands Classification (ELC) vegetation community data is presented in Table 1.

## **2.3 Wildlife Surveys**

### **2.3.1 General**

Incidental observations of wildlife were collected to provide additional information related to the study area. Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e.* tracks, scats, vocalizations) as a matter of course while conducting the site assessment. This information was used with





available background data related to wildlife use of the study area to determine any sensitive areas associated with wildlife expected to be present. Significant wildlife habitat (SWH) was identified, where applicable, as outlined within the Significant Wildlife Habitat Technical Guideline (MNR, 2000) and the Significant Wildlife Habitat Criterion Schedule for 6E (MNRF, 2015).

## **2.4 Vascular Plants**

A field survey for vascular plants was conducted on November 8, 2018 during a thorough site evaluation. The purpose of the vascular plants survey was to assess for presence of rare or SAR plant species and associations that may lead to constraining issues for the completion of the proposed project.

### **2.4.1 Butternut**

Sunnidale Park is known to contain Butternut (*Juglans cineria*) spread throughout. As such, an intensive and dedicated search for Butternut was conducted throughout the study area.

## **2.5 Species at Risk**

The SAR screening undertaken for this project included an initial assessment of the habitat requirements of species with potential to occur in the study area. The initial screening was based on air photo interpretation and general knowledge of the area to identify habitats specific to the study area. Habitat requirements and SAR designations (END, THR or SC) for all species with potential to occur in the area are outlined in Table 2.

Typically, where it is determined that potential habitat of a SAR occurs in an area of proposed activity/development, preliminary mapping is created to determine if the proposed works can be carried out with a reasonable certainty that no impacts to the species or their habitat will be incurred as a result of the works. Where there is uncertainty of the ability to avoid habitat, or where it is unclear exactly what future works will be undertaken, additional surveys are carried out to determine if the potential habitat is being used by the species in question. At this stage, no targeted bird, mammal or vegetation surveys have been completed.

## **2.6 Aquatic Habitat and Fisheries**

Background reference documents were used, combined with historical knowledge of the fish and fish habitat conditions and constraints for the one watercourse crossing in the



study area, in order to provide valuable input towards this relocation alignment alternative at this stage.

### **3.0 PROPOSED DEVELOPMENT**

The “Alternative 3C – KD01 Berm Alignment”, as proposed by the City of Barrie, proposes to relocate the sanitary sewer line through the vacant residential lot at 79 Sunnidale Road, and towards the north-east, parallel to the highway, along the Kidd’s Creek stormwater outlet control structure berm (the berm). The study area (Figure 2) includes a 50 m buffer on either side of the proposed pipe location, and includes the elevated berm, as well as the north-west side of the berm leading down to the wetland and forest along Kidd’s Creek, and also includes the south-eastern side of the berm along the highway right of way (ROW).

### **4.0 EXISTING SITE CONDITIONS**

#### **4.1 General Site Description**

The study area is located in the south-east portion of Sunnidale Park, on the west side of Highway 400 in Barrie, Ontario (Figure 1 and 2). This section of Sunnidale Park functions, essentially, as a large stormwater control pond, intended to absorb excess water volume during high-flow events in Kidd’s Creek, controlling the flow downstream of the highway where the creek passes through a more hardened urban area before entering Lake Simcoe. The stormwater outlet control structure is comprised of a large berm (approximately 6 metres [m] high X 190 m long) situated parallel to the highway, as well as a series of culverts running under the highway.

Kidd’s Creek and adjacent lands are regulated within Lake Simcoe Region Conservation Authority (LSRCA) jurisdiction (Appendix A), and are subject to “Ontario Regulation (O. Reg.) 172/06 – Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses”. Under O. Reg. 172/06, the LSRCA requires that approvals be obtained for any proposed development within areas regulated under a LSRCA’s jurisdiction.

A wetland associated with Kidd’s Creek is classified as an MNRF Unevaluated Wetland. The wooded areas in the valley, between Sunnidale Road and the wetland, are classified as Woodland, but are not part of the Natural Heritage System (Appendix A).



The property at 79 Sunnidale Drive historically contained a residential dwelling, which the City acquired and demolished in 2018 as a land acquisition initiative for future MTO highway improvements. The property does not currently contain any structures.

## 4.2 Vegetation Communities

The vegetated lands within the study area have been significantly impacted and influenced by human activity. All thirteen (13) vegetation types (Figure 2) are the result of anthropogenic disturbance based around the construction of the berm and the highway.

The area is comprised primarily of two large cultural meadows (CUM1-1) and cultural thickets (CUT1-1) along the crest and both slopes of the berm, and along the embankment at the highway. The meadow communities are dominated by Orchard Grass (*Dactylis glomerta*), Vetch (*Vicia cracca*), Smooth Brome (*Bromus inermis*) and Queen-Anne's Lace (*Daucus carota*), while the thickets add an open layer of Staghorn Sumac (*Rhus typhina*), young Black Walnut (*Juglans nigra*) and Siberian Elm (*Ulmus pumila*) above the grasses and forbs.

There is poor drainage in the lowland on either side of the concrete spillway on the east side of the berm, between the berm and the highway embankment, which has led to the development of small meadow marshes completely dominated by invasive hybrid Cattail (*Typha glauca*) [MAMM1-2] and Common Reed (*Phragmites australis*) [MAMM1-12]. Both dry- and wet-soil roadside communities consist of a suite of forbs and grasses characteristic of anthropogenic communities influenced by a high degree of salt, wind, and soil disturbance.

The function of the berm structure is to contain and control storm runoff during elevated flow periods, which has significantly reduced soil drainage historically at this east end of Sunnidale Park. This has resulted in the development of moist forest communities, dominated by non-native Crack Willow (*Salix fragilis*), Trembling Aspen (*Populus tremuloides*) and Black Ash (*Fraxinus nigra*) [FOD7-3, FOD8-1, FODM7-6, respectively], and wetland communities dominated by cattails (*Typha spp.*), Crack Willow and willow shrubs (*Salix spp.*) [MAS2-1, SWD4-1, SWT2-2, respectively] along either side of Kidd's Creek. Only 0.1366 ha of the wetland communities lies within the study area.

The woodland communities in this portion of the Kidd's Creek valley, and surrounds, also are the result of a significant history of human disturbance. The few landscape trees remaining on the 79 Sunnidale Road lot are large, old Black Walnut and Siberian Elm. Neither of these species is native to the region. These trees have produced a lot of



progeny that are beginning to dominate much of the surrounding woodland and thicket habitat and are spreading into the cultural meadows. Towards the rear of this lot is a small Norway Spruce (*Picea abies*) [non-native] cultural plantation (CUP3-9). The valley slope and floor contain two non-native forest communities; a deciduous forest comprised almost completely of Black Walnut and Norway Maple (*Acer platanoides*), and a naturalized Scotch Pine (*Pinus sylvestris*) plantation (naturalized with non-native Black Walnut and Norway Maple).

No vegetation communities identified within the study area are considered to be rare or of local, regional or provincial significance. All five of the wetland communities noted above are the result of anthropogenic disturbance. They only occur at this site due to the creation of the embankment for the highway and/or the berm. The majority of the vegetation communities present on this site are a direct result of significant human disturbance, and are dominated by non-native and invasive plant species.

#### 4.2.1 Wetland Habitat

No wetlands identified as Provincially or Locally Significant were located within or adjacent (*i.e.*, 120 meters) to the study area. As illustrated in Figure 2, the MAMM1-2, MAMM1-12 vegetation communities present within the study area are small pockets of isolated wetlands influenced by surface runoff resulting from infrastructure development. SWD4-1, SWT2-2 and MAS2-1 are more extensive, but occur as a result of the historical changes in surface water drainage associated with the berm for stormwater control.

### 4.3 Vascular Plants

A total of 57 vascular plant species were recorded from within the study area on November 8, 2018. None of the vascular plant species recorded is considered to be rare or of local, regional or provincial significance. No vascular plant SAR were recorded during the survey. For this Preliminary Constraints and Existing Conditions Report, a formal table of vascular plants recorded on the site has not been presented. This will be included as part of the EIS, should the City determine this route to be the preferred solution.

#### 4.3.1 Butternut

While Butternut are known to be plentiful throughout parts of Sunnidale Park, an extensive, dedicated search for this species did not reveal any individual Butternut trees within the study area.



## 4.4 Wildlife

### 4.4.1 General

Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e.* tracks, scats, vocalizations) as a matter of course while conducting the survey. No unusual or unexpected wildlife were observed as incidental encounters. Based on field observations, and given the urban landscape, the following mammal species are presumed to be present within the study area:

- Coyote (*Canis latrans*), Eastern Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), Red Squirrel (*Tamiasciurus hudsonicus*), Beaver (*Castor canadensis*), Red Fox (*Vulpes vulpes*), Striped Skunk (*Mephitis mephitis*) and White-tailed Deer (*Odocoileus virginianus*).

None of the species are considered rare or designated SAR.

## 4.5 Species at Risk

Based on a review of background data, all SAR species that have the potential to occur in the area were considered in our assessment (Table 2).

Of the species identified with potential to exist within the study area, the following were identified, based on habitat requirements, as having the highest possibility:

- Reptiles and Amphibians: Snapping Turtle (*Chelydra serpentina*).
- Birds: Barn Swallow (*Hirundo rustica*), Bank Swallow (*Riparia riparia*), Chimney Swift (*Chaetura pelagic*), Eastern Wood-pewee (*Contopus virens*), Wood Thrush (*Hylocichla mustelina*), Eastern Meadowlark (*Sturnella magna*), Bobolink (*Dolichonyx oryzivorus*).
- Mammals: Little Brown Myotis (*Myotis lucifugus*), Northern Long-eared Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*).
- Insects: Monarch (*Danaus plexippus*).
- Plants: Butternut.

None of the SAR listed above were recorded during the November 8, 2018 field visit.

Potential habitat for species listed as THR or END under the *Endangered Species Act*, 2007 (ESA) was identified in proximity to the study area. Habitat requirements associated with these species, as outlined in Table 2, will require consideration when evaluating site alterations and future work in the area. Based on habitat requirements, potential exists for any of the SAR listed above to be present.



#### **4.6 Aquatic Habitat and Fisheries**

The study area contains Kidd's Creek, which flows through Sunnidale Park in an easterly direction before discharging under the highway via the grade control structure on the west side of the highway. Sunnidale Park forms the upper reaches of Kidd's Creek, which provides a partially natural setting within what is managed as a large online quantity stormwater management pond controlled by the berm previously described at the highway.

Kidd's Creek is a coldwater system that is principally urbanized in the City of Barrie. The creek sustains permanent flow from Sunnidale Park downstream to the outlet at the City of Barrie marina, and contains localized habitat hosting Brook Trout (*Salvelinus fontinalis*). Brook Trout are historically known to occur throughout the system, however fish do not occur upstream of the highway in Sunnidale Park due to both physical and velocity barriers in the culverts under the highway and berm structure. Nonetheless, drainage west of the highway functions as indirect habitat for fish, and is protected under the Federal *Fisheries Act*. As a thermally cold system, coldwater fisheries timing restrictions apply that restrict work from occurring in and around the creek to reduce the risk of harm to fish habitat. Given the proximity of direct habitat containing fall spawning Brook Trout, the timing restriction prohibits work from occurring between October 1 to July 15.

Kidd's Creek does not contain aquatic SAR.

### **5.0 CONCLUSION**

The City of Barrie is proposing to relocate the Sunnidale Road sanitary sewer at the Sunnidale Road Highway 400 bridge, as outlined above. A number of routing options are being evaluated by the City of Barrie, however, this report evaluates route “Alternative 3C – KD01 Berm Alignment”.

Based on the preliminary information presented herein, it is reasonable to expect that this project can be undertaken without disturbance to SAR, Significant Wildlife Habitat or other significant natural heritage features. Additional environmental review will occur in consultation with the City of Barrie during the evaluation of suitable design alternatives for the Class EA. For the purposes of this study, our findings conclude that Alternative 3C is feasible from an environmental perspective, and does not pose environmental impacts that cannot be readily mitigated through proper project planning and rehabilitation initiatives. Further environmental review will occur if Alternative 3C is



identified as the preferred solution, and impacts and mitigating measures will at that time be documented in an EIS report.

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[http://www.registrelep-sararegistry.gc.ca/species/schedules\\_e.cfm?id=1](http://www.registrelep-sararegistry.gc.ca/species/schedules_e.cfm?id=1)  
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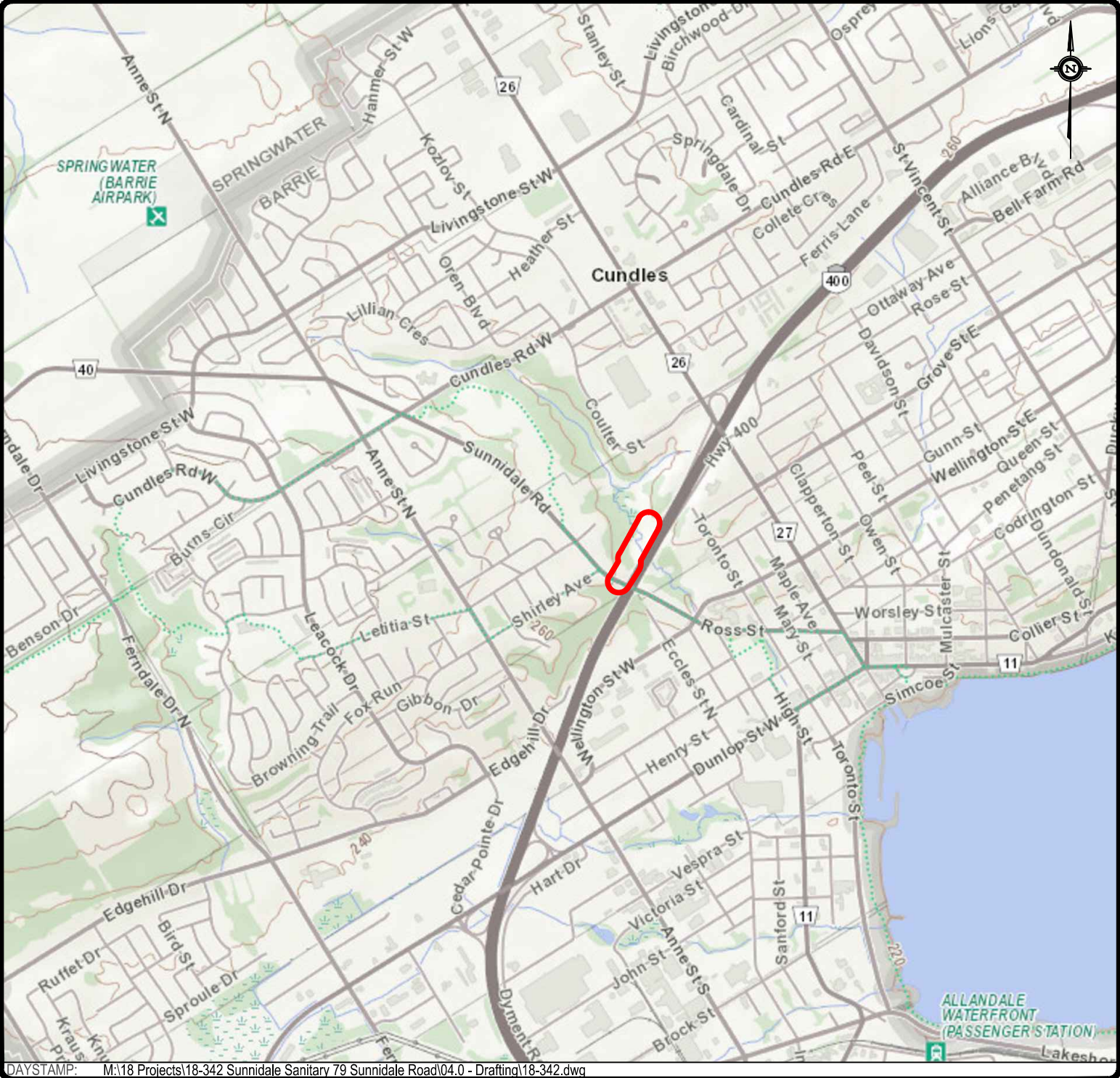


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**LEGEND:**  
— *Approx. Study Area*

**REG MAP**

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

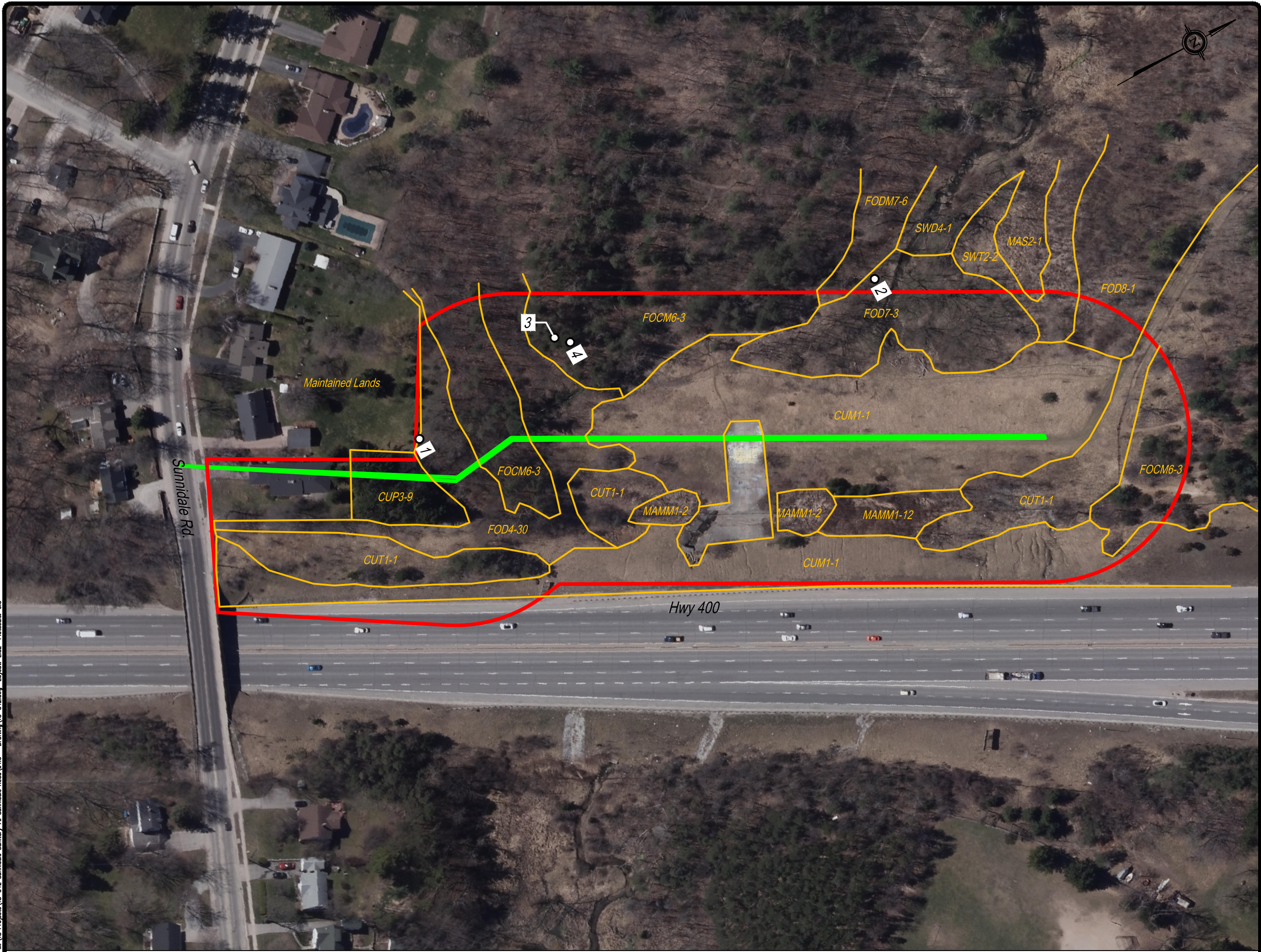
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

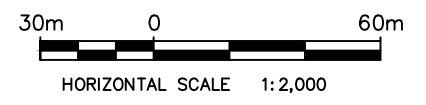
79 Sunnidale Road,  
 Barrie, ON

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| DATE ISSUED: November 2018 | Figure No. |
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| REFERENCE: MNR             |            |

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- LEGEND:**
- Approx. Study Area
  - Proposed Pipeline Location
  - Potential Bat Snag Locations
  - Vegetation Communities
  - CUM1-1 Dry-Moist Old Field Meadow
  - CUP3-9 Norway Spruce Cultural Plantation
  - CUT1-1 Sumac Cultural Thicket Type
  - FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type
  - FOD4-30 Dry-Fresh Black Walnut-Norway Maple Deciduous Forest Type
  - FOD7-3 Fresh-Moist Willow Lowland Deciduous Forest Type
  - FOD8-1 Fresh-Moist Poplar Deciduous Forest Type
  - FODM7-6 Fresh-Moist Black Ash-Hardwood Lowland Deciduous Forest Type
  - MAMM1-2 Cattail Graminoid Mineral Meadow Marsh Type
  - MAMM1-12 Common Reed Graminoid Mineral Meadow Marsh Type
  - MAS2-1 Cattail Mineral Shallow Marsh Type
  - SWD4-1 Willow Mineral Deciduous Swamp Type
  - SWT2-2 Willow Mineral Thicket Swamp Type



Environmental Features

79 Sunnisdale Road,  
Barrie, ON

|              |                    |            |
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| DATE ISSUED: | November 2018      | Figure No. |
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| PROJECT NO.: | 18-342             |            |
| REFERENCE:   | Simcoe County Maps |            |

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**Table 1. Ecological Land Classification Vegetation Community Descriptions**

| Ecological Land Classification |                 |                          |   |   |  | Ground Cover   |
|--------------------------------|-----------------|--------------------------|---|---|--|--|
| System                         | Community Class | Community Series         | Ecosite   | Vegetation Type   | Composition  |  |
| Terrestrial                    | FO, Forest      | FOC, Coniferous Forest   | FOCM6, Naturalized Coniferous Plantation                        | FOCM6-3, Dry - Fresh Scotch Pine Naturalized Coniferous Plantation Type   | This vegetation type is old Scotch Pine plantation that has naturalized. Black Walnut, Norway Maple and a few Trembling Aspen and Red Oak have done well along the slopes here and filled in any canopy and understory gaps. Shrub layer is very sparsely composed of Common Buckthorn and young Norway Maple. | Ground cover is very sparse, being comprised mainly of Norway Maple seedlings and some Garlic Mustard  |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD4, Dry - Fresh Upland Deciduous Forest Ecosite               | FOD4-30, Dry - Fresh Black Walnut - Norway Maple Deciduous Forest Type    | Young to mid-age Mid-age Black Walnut and Norway Maple dominate both the canopy and the understory here, which also has several Red Oak. The shrub layer is composed mainly of Staghorn Sumac and Wild Grape, along with younger Black Walnut and small numbers of Black Raspberry.                            | Ground layer vegetation is composed mainly of Giant Goldenrod and Garlic Mustard, with Kentucky Bluegrass  |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD7, Fresh - Moist Lowland Deciduous Ecosite                   | FOD7-3, Fresh - Moist Willow Lowland Deciduous Forest Type                | Widely-spaced Crack Willow dominates the loose canopy and sub-canopy in this area, with a few smaller Crack and other willows in the shrub layer.  | Garlic Mustard carpets much of the forest floor here, and is, by far, the dominant ground cover species in this vegetation type, with small numbers of Dandelion, escaped turf grasses and sedges.   |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FODM7, Fresh - Moist Lowland Deciduous Forest Ecosite           | FODM7-6, Fresh - Moist Black Ash - Hardwood Lowland Deciduous Forest Type | This small patch of moist soil forest is dominated by young Black Ash trees in the canopy and sub-canopy. Norway Maple, Scotch Pine and small numbers of Trembling Aspen round out these layers. There are a few Red-osier Dogwood in the shrub layer, but this layer is otherwise generally sparse.           | The ground flora is virtually completely dominated by Scouring Rush, with just a few Norway Maple seedlings.   |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD8, Fresh - Moist Poplar - Sassafras Deciduous Forest Ecosite | FOD8-1, Fresh - Moist Poplar Deciduous Forest Type                        | Trembling Aspen dominates the canopy and sub-canopy of this vegetation type, along with only a few White Birch and Ash. The shrub layer is densely populated by Red-osier Dogwood, along with some mixed Willow shrubs.  | The ground flora is dominated by a dense mix of Scouring Rush, Giant Goldenrod and Fringed Sedge.  |
| Terrestrial                    | CV, Constructed | CVR, Residential         | CVR_3, Single Family Residential                                | N/A   | This portion of the study area is comprised of several residential yards, with the canopy and shrub levels dominated mostly by spaced landscape plantings of White Spruce and Norway Maple trees and a few White Cedar shrubs.   | Ground vegetation includes Periwinkle and Garlic Mustard at the property boundary along the forest, but is mostly comprised of domestic turfgrass species.   |
| Terrestrial                    | CU, Cultural    | CUP, Cultural Plantation | CUP3, Coniferous Plantation                                     | CUP3-9, Norway Spruce Cultural Plantation                                 | This site is a small Norway Spruce plantation. The understory contains a few Black Walnut and the shrub layer consists of a loose collection of Common Buckthorn and a few Choke Cherry.   | Ground vegetation is very sparse. The dominant plant is domesticated Lily-of-the-Valley, along with Garlic Mustard and some Norway Maple and Common Buckthorn saplings   |
| Terrestrial                    | CU, Cultural    | CUM, Cultural Meadow     | CUM1, Mineral Cultural Meadow Ecosite                           | CUM1-1, Dry - Moist Old Field Meadow                                      | The "canopy" layer in these meadow areas is naturally sparse, but is comprised mainly of sporadic Staghorn Sumac, Walnut and Siberian Elm.   | These cultural meadows are the result of earthworks to create the highway embankment and the flood control berm. They are dominated by Orchard Grass and Vetch, with some Smooth Brome Grass, Reed Canary Grass, Queen-Anne's Lace, Sweet White Clover, and New England Aster. |
| Terrestrial                    | CU, Cultural    | CUT, Cultural Thicket    | CUT1, Mineral Cultural Thicket Ecosite                          | CUT1-1, Sumac Cultural Thicket Type                                       | The canopy is composed of only a few Black Walnut, Trembling Aspen and Siberian Elm. The majority of the vegetation type is comprised of Staghorn Sumac in medium density.   | Ground cover is dominated by Smooth Brome and Orchard Grass, but also includes some Black Raspberry, Canada Goldenrod and Wild Mint.   |
| Wetland                        | SW, Swamp       | SWD, Deciduous Swamp     | SWD4, Mineral Deciduous Swamp Ecosite                           | SWD4-1, Willow Mineral Deciduous Swamp Type                               | Crack Willow dominates the canopy of this small, narrow swamp type, along with White Birch and Norway Maple. The understory contains many Buckthorn, along with Willow shrubs.   | Ground flora is comprised mostly of Scouring Rush, Norway Maple saplings and Giant Goldenrod, along with Garlic Mustard.   |
| Wetland                        | SW, Swamp       | SWT, Thicket Swamp       | SWT2, Mineral Thicket Swamp Ecosite                             | SWT2-2, Willow Mineral Thicket Swamp Type                                 | A few species of Willow shrubs, ranging from 2m-4m tall, dominate this vegetation type, with much Red-osier Dogwood throughout the shrub layer.  | Ground flora is dominated by Fringed Sedge, along with some Joe-Pye-Weed, Swamp and New England Asters, and some Reed Canary Grass.  |

**Table 1. Ecological Land Classification Vegetation Community Descriptions**

| Ecological Land Classification |                 |                    |                                       |   |  | Ground Cover  |
|--------------------------------|-----------------|--------------------|---------------------------------------|---|--|---|
| System                         | Community Class | Community Series   | Ecosite                               | Vegetation Type   | Composition  |   |
| Wetland                        | MA, Marsh       | MAM, Meadow Marsh  | MAMM1, Graminoid Mineral Meadow Marsh | MAMM1-2, Cattail Graminoid Mineral Meadow Marsh Type      | These two very small vegetation plots lie in the moist hollow between the steep highway embankment to the south and the flood protection berm to the north, just on either side of the concrete spillway. They are dominated by a monoculture of Cattails, and are ringed by Goldenrods. | N/A   |
| Wetland                        | MA, Marsh       | MAM, Meadow Marsh  | MAMM1, Graminoid Mineral Meadow Marsh | MAMM1-12, Common Reed Graminoid Mineral Meadow Marsh Type | This meadow marsh community, at the base of the highway and flood control embankments, is completely dominated by a dense mat of Common Reed Grass.  | N/A   |
| Wetland                        | MA, Marsh       | MAS, Shallow Marsh | MAS2, Mineral Shallow Marsh Ecosite   | MAS2-1, Cattail Mineral Shallow Marsh Type                | There are a few old, coniferous snags located sporadically throughout this marsh, which is dominated by Cattails. Some Willow shrubs poke their branches above the cattails and many Red-osier Dogwoods are hidden within the shrub layer, below the cattail tops.                       | There is no discernable ground layer vegetation due to the density of the Cattails. |

**Table 2. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name            | Scientific Name                 | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|------------------------|---------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Amphibian         | Jefferson Salamander   | <i>Ambystoma jeffersonianum</i> | END         | Deciduous forests with vernal pools/pond within or adjacent. Generally associated with Niagara Escarpment                 | No  | No                             | No  | No                                    |
| Bird              | Henslow's Sparrow      | <i>Ammodramus henslowii</i>     | END         | Large grasslands  | No  | No                             | No  | No                                    |
| Bird              | Loggerhead Shrike      | <i>Lanius ludovicianus</i>      | END         | Alvars, large pasturelands with shrub cover   | No  | No                             | No  | No                                    |
| Bird              | King Rail              | <i>Rallus elegans</i>           | END         | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Piping Plover          | <i>Charadrius melodus</i>       | END         | Dry sandy or gravelly beaches along wetlands, rivers, or lakes  | No  | No                             | No  | No                                    |
| Bird              | Cerulean Warbler       | <i>Dendroica cerulea</i>        | THR         | Large blocks of continuous forest/swamp cover   | No  | No                             | No  | Potentially                           |
| Bird              | Eastern Meadowlark     | <i>Sturnella magna</i>          | THR         | Grasslands  | Yes   | Yes                            | No  | No                                    |
| Bird              | Barn Swallow           | <i>Hirundo rustica</i>          | THR         | Grasslands, pastures, graminoid and other open wetlands   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Bank Swallow           | <i>Riparia riparia</i>          | THR         | Riparian habitat with sand banks for nesting  | No  | No                             | No  | Potentially                           |
| Bird              | Bobolink               | <i>Dolichonyx oryzivorus</i>    | THR         | Grasslands  | Yes   | Yes                            | No  | No                                    |
| Bird              | Eastern Whip-poor-will | <i>Caprimulgus vociferus</i>    | THR         | Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover. | Yes   | No                             | No  | No                                    |
| Bird              | Least Bittern          | <i>Ixobrychus exilis</i>        | THR         | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Louisiana Waterthrush  | <i>Seiurus motacilla</i>        | THR         | Mature forest associated with rivers  | No  | No                             | No  | No                                    |
| Bird              | Chimney Swift          | <i>Chaetura pelagica</i>        | THR         | Typically built features (chimneys, buildings), also caves, or tree cavities in old growth forests                        | No  | Yes                            | No  | Potentially                           |
| Bird              | Eastern Wood-pewee     | <i>Contopus virens</i>          | SC          | Forests, treed swamps   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Wood Thrush            | <i>Hylocichla mustelina</i>     | SC          | Forests, treed swamps   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Golden-winged Warbler  | <i>Vermivora chrysoptera</i>    | SC          | Shrublands/thickets, forest edges   | Yes   | Yes                            | No  | No                                    |
| Bird              | Grasshopper Sparrow    | <i>Ammodramus savannarum</i>    | SC          | Large grasslands  | No  | Yes                            | No  | No                                    |
| Bird              | Common Nighthawk       | <i>Chordeiles minor</i>         | SC          | Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover. | Yes   | No                             | No  | No                                    |
| Bird              | Black Tern             | <i>Chlidonias niger</i>         | SC          | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Bald Eagle             | <i>Haliaeetus leucocephalus</i> | SC          | A variety of habitats adjacent a major lake or river.   | No  | No                             | No  | No                                    |

**Table 2. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                | Scientific Name                     | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|----------------------------|-------------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Bird              | Canada Warbler             | <i>Cardellina canadensis</i>        | SC          | Breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer - generally associated with the southern shield/boreal shield.   | Yes   | No                             | No  | No                                    |
| Bird              | Olive-sided Flycatcher     | <i>Contopus cooperi</i>             | SC          | Breeding occurs within coniferous or mixed forests adjacent rivers or wetlands. More often present along forest edges and clearings, including recently logged/burned areas.  | Yes   | No                             | No  | No                                    |
| Bird              | Red-headed Woodpecker      | <i>Melanerpes erythrocephalus</i>   | SC          | Open woodlands, woodland edges, parks, golf courses and cemeteries  | Yes   | No                             | No  | No                                    |
| Bird              | Short-eared Owl            | <i>Asio flammeus</i>                | SC          | Open areas such as grasslands and marshes. Preference for prairies and savannahs.   | No  | No                             | No  | No                                    |
| Bird              | Yellow Rail                | <i>Coturnicops noveboracensis</i>   | SC          | Shallow wetlands containing reeds, sedges and marshy areas with overlying dry mats of dead vegetation.  | No  | No                             | No  | No                                    |
| Fish              | American Eel               | <i>Anguilla rostrata</i>            | END         | In Ontario, connecting waterbodies from the Great Lakes as far inland as Algonquin Park.  | No  | No                             | No  | No                                    |
| Fish              | Lake Sturgeon              | <i>Acipenser fulvescens</i>         | THR         | Georgian Bay and connected rivers   | No  | No                             | No  | No                                    |
| Fish              | Grass Pickerel             | <i>Esox americanus vermiculatus</i> | SC          | Coastal wetlands in the Great Lakes and tributaries or Lake St. Clair, Lake Erie, Lake Huron, the Niagara River, Lake Ontario and the St. Lawrence River, and inland in the Severn River system.  | No  | No                             | No  | No                                    |
| Fish              | Northern Brook Lamprey     | <i>Ichthyomyzon fossor</i>          | SC          | Rivers draining into Lake Superior, Huron and Erie, and the Ottawa River.   | No  | No                             | No  | No                                    |
| Insect            | Hine's Emerald (Dragonfly) | <i>Somatochlora hineana</i>         | END         | Hine's Emeralds rely on slow-moving, calcareous water with emergent vegetation for egg-laying and larval development. These conditions are associated with fens, marshes or areas where groundwater rises to the surface. Only known to occur in Minesing Wetland | No  | No                             | No  | No                                    |

**Table 2. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                    | Scientific Name                | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|--------------------------------|--------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Insect            | Lake Huron Grasshopper         | <i>Trimerotropis huroniana</i> | THR         | Lives exclusively in open dune habitat along the shores of Lake Huron, Lake Michigan and Lake Superior.   | No  | No                             | No  | No                                    |
| Insect            | Monarch                        | <i>Danaus plexippus</i>        | SC          | Caterpillars are confined to meadows and open areas containing milkweed. Adults are widespread, favouring areas with wildflowers.                               | Yes   | Yes                            | No  | Yes                                   |
| Insect            | West Virginia White            | <i>Pieris virginiensis</i>     | SC          | Moist deciduous woodlots containing the plant, Toothwort.   | No  | No                             | No  | No                                    |
| Mammal            | Little Brown Myotis            | <i>Myotis lucifugus</i>        | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity colony - typically buildings (attics, etc.) but occasionally in tree cavities.               | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Northern Myotis                | <i>Myotis septentrionalis</i>  | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - tree cavities.   | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Tri-colored Bat                | <i>Perimyotis subflavus</i>    | END         | Winter hibernation - caves, abandoned mines, etc.. Summer - day roosts and maternity colonies in older forest and occasionally in barns or other structures.    | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Eastern Small-footed Bat       | <i>Myotis leibii</i>           | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - talis slopes, rock outcrops.   | No  | No                             | No  | No                                    |
| Mammal            | American Badger                | <i>Taxidea taxus</i>           | END         | Variety of habitats providing small prey ( <i>i.e.</i> groundhogs, rabbits, small rodents) with a preference for tall grass prairie, sand barrens and farmland. | No  | No                             | No  | No                                    |
| Plant             | Butternut                      | <i>Juglans cinerea</i>         | END         | Forests, fencerows  | Yes   | Yes                            | No  | No                                    |
| Plant             | Forked Three-awned grass       | <i>Aristida basiramea</i>      | END         | Grasslands, open lands, trails (localized distribution)   | Yes   | No                             | No  | No                                    |
| Plant             | Eastern Prairie Fringed-orchid | <i>Platanthera leucophaea</i>  | END         | Grasslands, wet meadows, alvars, fens   | No  | No                             | No  | No                                    |
| Plant             | American Ginseng               | <i>Panax quinquefolius</i>     | END         | Mature forest cover   | No  | No                             | No  | No                                    |
| Plant             | Spotted Wintergreen            | <i>Chimaphila maculata</i>     | END         | Dry oak-pine woodlands with sandy soils.  | No  | No                             | No  | No                                    |
| Plant             | Englemann's Quillwort          | <i>Isoetes engelmannii</i>     | END         | Grows in shallow water in lakes and rivers (Severn River).  | No  | No                             | No  | No                                    |



**Table 2. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                                      | Scientific Name                                       | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|--|---|-------------|---|---|--------------------------------|---|---------------------------------------|
| Plant             | Hill's Thistle                                   | <i>Cirsium hillii</i>                                 | THR         | Open areas such as prairie, sand dunes and alvar grasslands surrounded by coniferous forests.   | No  | No                             | No  | No                                    |
| Plant             | Broad Beech Fern                                 | <i>Phegopteris hexagonoptera</i>                      | SC          | Prefers rich, undisturbed deciduous forest, particularly mature beech-maple forests, typically occurs in moister situations such as lower valley slopes, bottomlands and even swamps. | No  | No                             | No  | No                                    |
| Plant             | American Hart's-tongue Fern                      | <i>Asplenium scolopendrium</i> var. <i>americanum</i> | SC          | Moist deciduous forests, generally associated with Niagara Escarpment.  | No  | No                             | No  | No                                    |
| Reptile           | Spotted Turtle                                   | <i>Clemmys guttata</i>                                | END         | Wetlands with open water  | No  | No                             | No  | No                                    |
| Reptile           | Wood Turtle                                      | <i>Glyptemys insculpta</i>                            | END         | Clear rivers, streams or creeks with a sandy or gravelly bottom. Preference for wooded areas but have also been found in wet meadows, swamps and fields.                              | No  | No                             | No  | No                                    |
| Reptile           | Massasauga (Great Lakes-St. Lawrence Population) | <i>Sistrurus catenatus</i>                            | END         | Wide variety of habitats: tall grass prairie, bogs, marshes, shorelines, forests and forest clearings, alvars, rock barrens, and grasslands   | Yes   | No                             | No  | No                                    |
| Reptile           | Blanding's Turtle                                | <i>Emydoidea blandingii</i>                           | THR         | Wetlands with open water  | No  | Yes                            | No  | No                                    |
| Reptile           | Eastern Hog-nosed Snake                          | <i>Heterodon platirhinos</i>                          | THR         | Forests, sand barrens and wetlands providing breeding habitat for primary prey (i.e., American Toad and other amphibians)   | Yes   | No                             | No  | No                                    |
| Reptile           | Eastern Foxsnake (Georgian Bay Population)       | <i>Pantherophis gloydi</i>                            | END         | Rocky habitats with trees and shrubs within, usually within 150 m of a shoreline  | No  | No                             | No  | No                                    |
| Reptile           | Snapping Turtle                                  | <i>Chelydra serpentina</i>                            | SC          | Lakes, ponds, marshes and slow moving rivers, various wetlands with open water  | Yes   | Yes                            | No  | No                                    |
| Reptile           | Eastern Ribbonsnake                              | <i>Thamnophis sauritus</i>                            | SC          | Wetlands with open water  | No  | No                             | No  | No                                    |
| Reptile           | Northern Map Turtle                              | <i>Graptemys geographica</i>                          | SC          | Lakes   | No  | No                             | No  | No                                    |
| Reptile           | Eastern Musk Turtle                              | <i>Sternotherus odoratus</i>                          | SC          | Ponds, lakes, marshes and rivers with an abundance of emergent vegetation and muddy bottoms   | No  | No                             | No  | No                                    |
| Reptile           | Five-lined Skink (Georgian Bay Population)       | <i>Plestiodon fasciatus</i>                           | SC          | Shorelines, rock barrens.   | No  | Yes                            | No  | No                                    |

**Table 2. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name | Scientific Name | SARO Status | Habitat Requirements <sup>2</sup> | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|-------------|-----------------|-------------|-----------------------------------|---|--------------------------------|---|---------------------------------------|
|-------------------|-------------|-----------------|-------------|-----------------------------------|---|--------------------------------|---|---------------------------------------|

<sup>1</sup>Comprehensive list compiled based on Species at Risk in Simcoe County - MNRF, Midhurst District (October 19, 2017)

<sup>2</sup>Based on the SARO List descriptions (<https://www.ontario.ca/page/species-risk-ontario>)

<sup>3</sup>Based on following sources: Species at Risk Ontario (<https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>); Land Information Ontario (<https://www.ontario.ca/page/land-information-ontario>); Make a Natural Heritage Map - Natural Heritage Information Centre ([http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR\\_NHLUPS\\_NaturalHeritage&viewer=NaturalHeritage&locale=en-US](http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US)); Ontario Breeding Bird Atlas (<http://www.birdsontario.org/atlas/maps.jsp?lang=en>); Ontario Reptile and Amphibian Atlas (<https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/>), eBird (<https://ebird.org/explore>); Fisheries and Oceans Canada (<http://www.dfo-mpo.gc.ca/species-especies/index-eng.htm>); Fish Online (<https://www.gisapplication.lrc.gov.on.ca/FishONLine/Index.html?site=FishONLine&viewer=FishONLine&locale=en-US>); Ontario Butterfly Atlas ([http://www.ontarioinsects.org/atlas\\_online.htm](http://www.ontarioinsects.org/atlas_online.htm)); and Atlas of the Mammals of Ontario (Dobbyn, J. 1994. Federation of Ontario Naturalists).

<sup>4</sup>Based on field survey on November 8, 2018.



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## **APPENDICES**

- Appendix A: LSRCA Regulated Lands, MNRF and Simcoe County Mapping**  
**Appendix B: NHIC SAR Data Query**  
**Appendix C: Photographs of Study Site**
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**APPENDIX A**








**LSRCA Regulated Lands, MNRF and Simcoe County Mapping**

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Features

-  Regulation Map Index
-  LSRCA Watershed Boundary
-  Lake Simcoe
-  Watercourse
-  Regulated Area Boundary
-  Regulated Area
-  Assessment Parcel



Printed On:  
1/14/2019

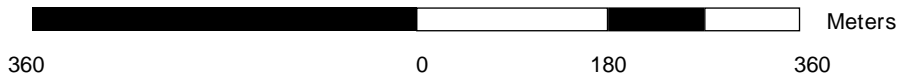


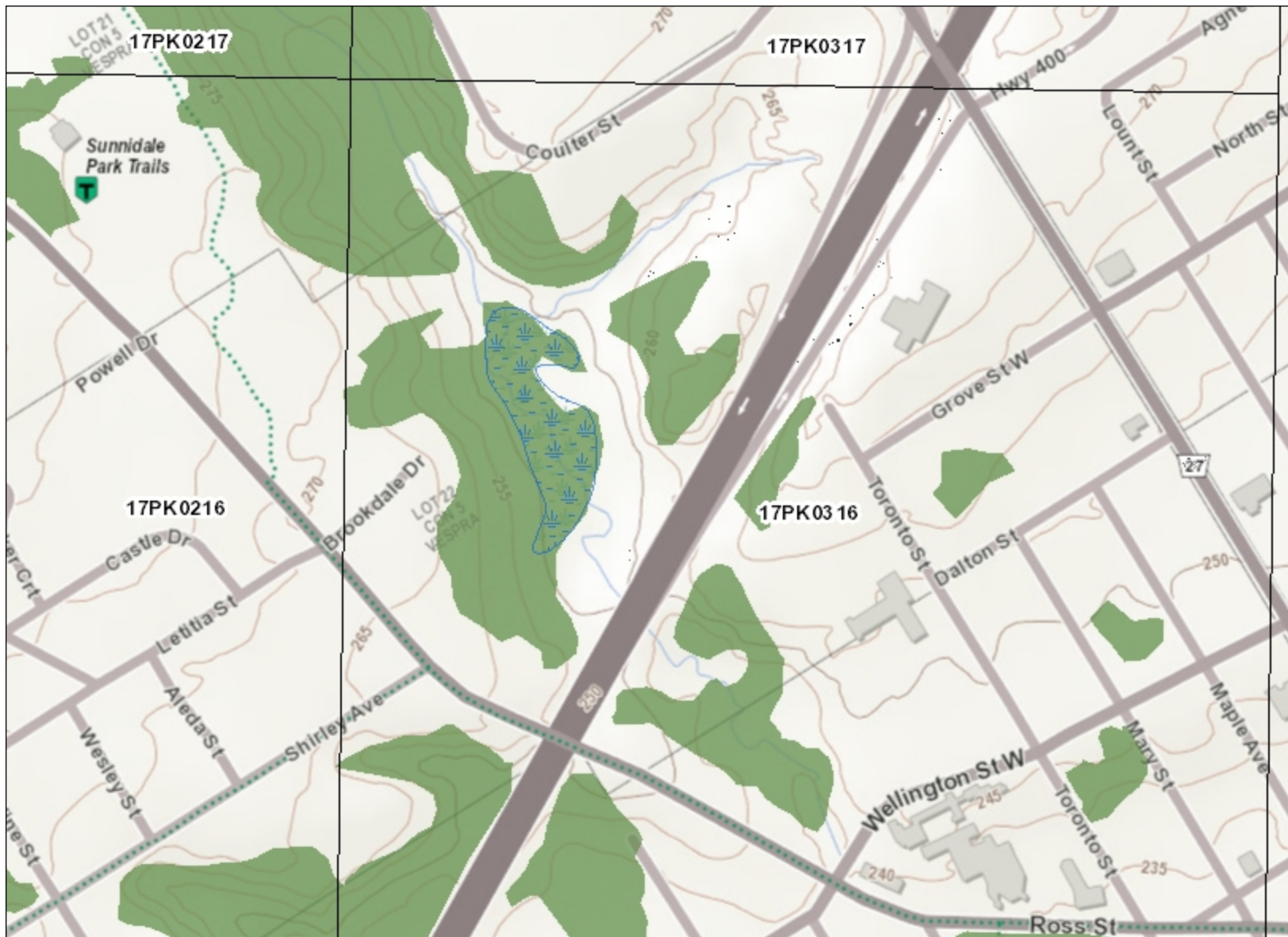
WGS\_1984\_Web\_Mercator\_ Auxiliary\_Sphere

Mapped By: S.A.M.

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Scale 1: 7,077





## Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion
- Wetland**
  - Provincially Significant Wetland Evaluated
  - Non - Provincially Significant Wetland Evaluated
  - Unevaluated Wetland
- Area of Natural Heritage & Scientific Interest (ANSI)**
  - Provincially Significant Life Science ANSI
  - Provincially Significant Earth Science ANSI
- Greenbelt Plan**
  - Boundary
  - River Valley Connections
- Land Use Designations**
  - Protected Countryside
  - Towns and Villages
  - Hamlets
  - Urban River Valley
  - Specialty Crop Area
- Niagara Escarpment Plan (NEP)**
  - Boundary
  - Parks and Open Space System
- Land Use Designations**
  - Escarpment Natural Area
  - Escarpment Protection Area
  - Escarpment Rural Area
  - Mineral Resource Extraction Area
  - Escarpment Recreation Area
  - Urban Area
  - Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)**
  - Boundary
  - Natural Core Area
  - Natural Linkage Area
  - Countryside Area
  - Rural Settlement
  - Paigrave Estates Residential Community
  - Settlement Area

0.3 0 0.16 0.3 Kilometers



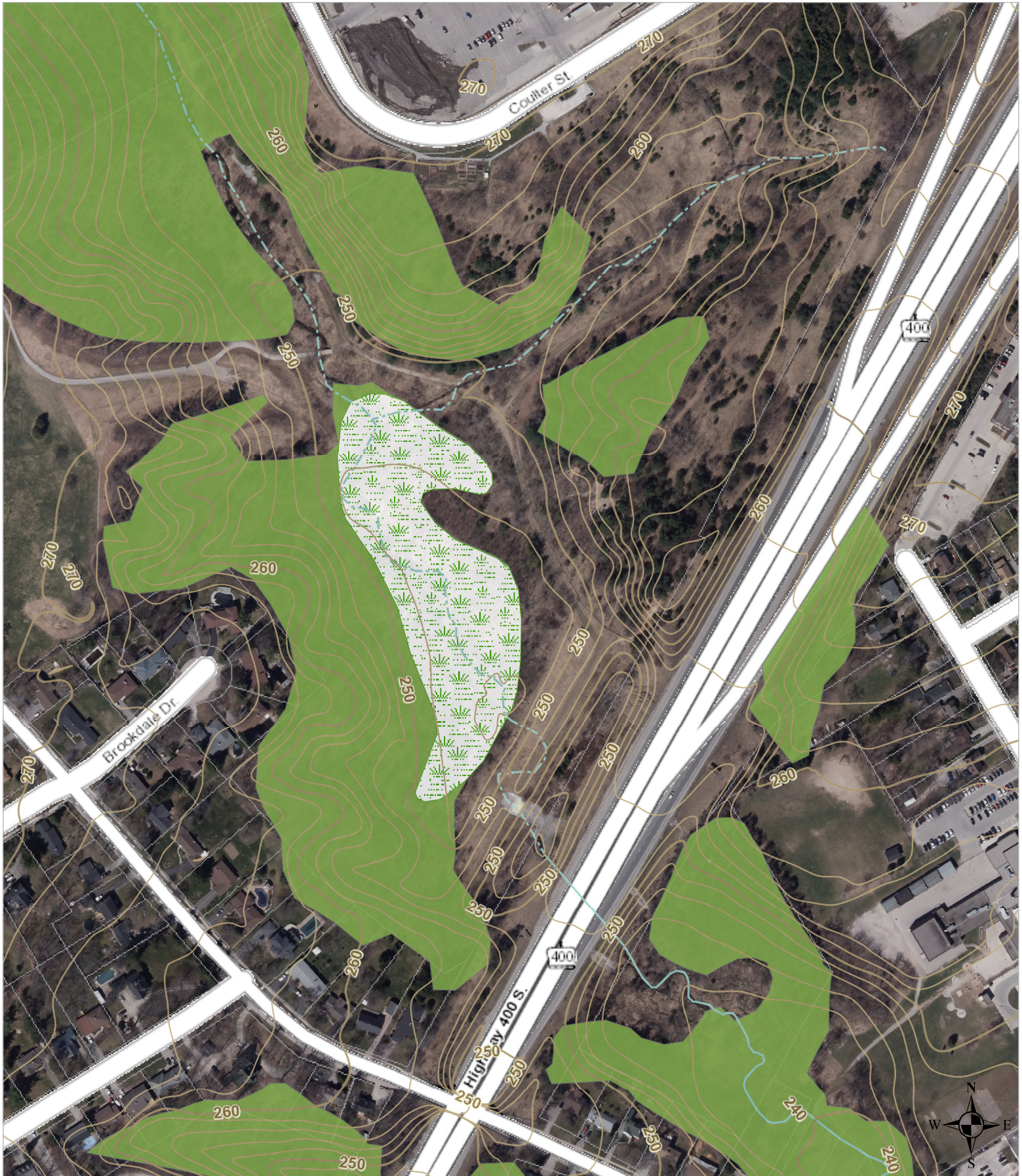
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# Sunnidale Road Sanitary Sewer Relocation: Simcoe Cnty.



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1:4,514



January 14, 2019



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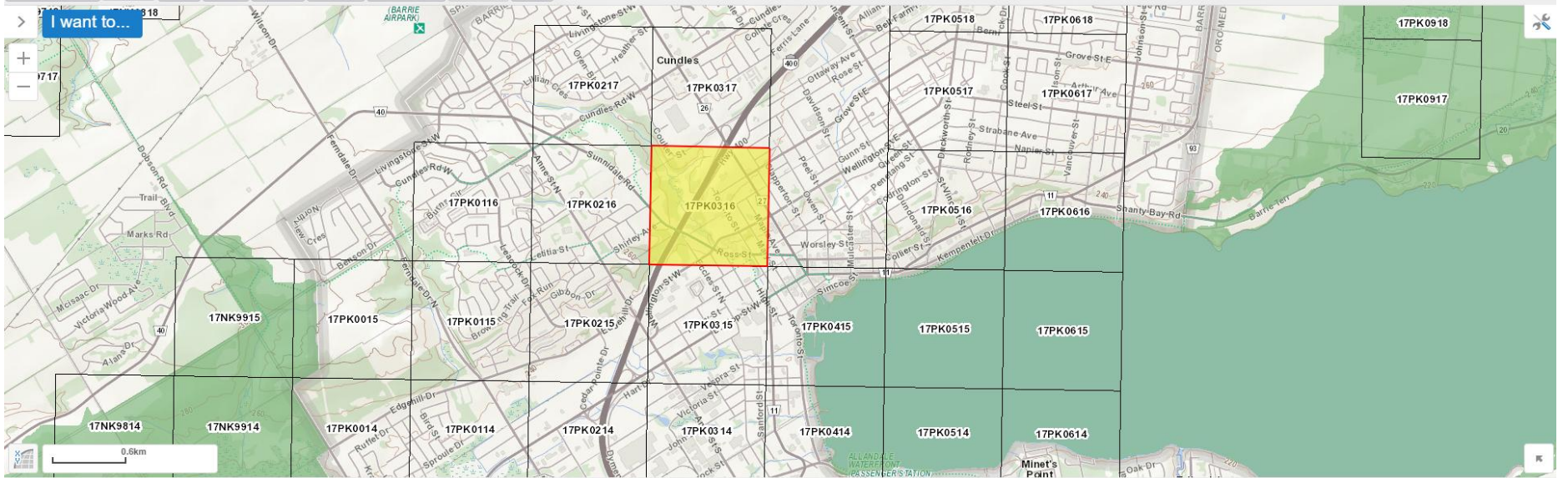
**APPENDIX B**

**NHIC Data Query**

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NHIC Data -- Grid ID = 1008270

| Element Type | Common Name          | Scientific Name    | SRank | SARO Status | COSEWIC Status | Last Obs Date | EO ID  | Details URL   |
|--------------|----------------------|--------------------|-------|-------------|----------------|---------------|--------|---|
| SPECIES      | Houghton's Flatsedge | Cyperus houghtonii | S3    |             |                | 1972-08-08    | 59354  | <a href="http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=59354">http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=59354</a>       |
| SPECIES      | Eastern Wood-pewee   | Contopus virens    | S4B   | SC          | SC             |               | 180294 | <a href="http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=180294.1">http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=180294.1</a> |



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**APPENDIX C**

**Photographs of Study Area**

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FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type



CUT1-1 Sumac Cultural Thicket Type



MAMM1-2 and MAMM1-12 (Cattail Meadow Marsh and Common Reed Grass Meadow Marsh) along highway



CUM1-1 Cultural Meadow along crest and sides of berm



FOD8-1 Fresh-Moist Poplar Deciduous Forest Type



MAS2-1(Cattail Shallow Marsh) and SWT2-2 (Willow Thicket Swamp Types



FOD7-3 Fresh-Moist Willow Lowland Deciduous Forest Type



FODM7-6 Fresh-Moist Black Ash – Hardwood Lowland Deciduous Forest Type



FOD4-30 Dry-Fresh Black Walnut – Norway Maple Deciduous Forest Type



Potential Bat Snag #1



**Preliminary Environmental Impact Study**  
**Sunnidale Road Sanitary Sewer Relocation**  
**(Alternative 3E – Swale Alignment II)**

**City of Barrie**

Prepared for:  
City of Barrie

Prepared by:  
Azimuth Environmental  
Consulting, Inc.

April 2019

AEC 18-342





Environmental Assessments & Approvals

May 7, 2019

AEC 18-342

City of Barrie Engineering Department  
70 Collier Street, 6<sup>th</sup> Floor  
Barrie, Ontario,  
L4M 4T5

Attention: Brett Gratrix, Infrastructure Planning Engineer

**Re: Preliminary Design Environmental Impact Study  
Relocation of the Sunnidale Road Sanitary Sewer, City of Barrie (Alternative  
3E – Swale Alignment II).**

Dear Mr. Gratrix:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to submit our Environmental Impact Study (EIS) for the above noted project, based on the preliminary design for “Alternative 3E – Swale Alignment II”. It is our understanding that the City of Barrie is undertaking a Schedule B Municipal Class Environmental Assessment (Class EA) to study alternative alignments to relocate the existing sanitary sewer off of the Sunnidale Road Highway 400 bridge. This study forms a portion of the “environmental impact” work towards the Class EA.

The following report describes environmental conditions related to lands within and adjacent to the proposed “Alternative 3E – Swale Alignment II” Sunnidale Road Sanitary Sewer Relocation works and provides an assessment of the potential for indirect, direct and cumulative impacts associated with the proposed development on significant natural heritage features and functions including Species at Risk. This report has been prepared based on our understanding of the design of proposed works at this time.

If you have questions or require additional information please do not hesitate to contact the undersigned.



Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

A handwritten signature in black ink that reads "Scott Martin". The signature is written in a cursive style and is positioned above a horizontal line that extends to the right.

Scott Martin, H.B.O.R., B.Sc.  
Terrestrial Ecologist



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## **1.0 INTRODUCTION**

The Ministry of Transportation (MTO) has received Environmental Assessment approval for Highway 400 (the highway) transportation improvements that include the replacement of the Sunnidale Road bridge. The MTO has requested the Corporation of the City of Barrie (the City) to plan for and relocate the existing sanitary sewer that is presently located within the bridge super structure as they desire the replacement bridge to be free of third party utilities. Azimuth Environmental Consulting, Inc. (Azimuth) was retained by the City to complete an Environmental Impact Study (EIS) for the relocation of the Sunnidale Road sanitary sewer (study area; Figure 1).

It is our understanding that work is being completed in accordance with a Schedule 'B' undertaking, and that an EIS will be required by the City to determine and assess the potential impacts of the proposed works on possible Significant Natural Heritage Features (SNHF) and functions in accordance with provincial and municipal planning policy.

This preliminary EIS documents current natural heritage considerations and constraints for the “Alternative 3E – Swale Alignment II” option, and provides an assessment of the potential for indirect, direct and cumulative impacts associated with the proposed development on significant natural heritage features and functions including Species at Risk. This report has been prepared based on our understanding of the preliminary design of proposed works at this time. A more detailed EIS may be required once the detailed design phase of project planning has identified the full scope of the development, including all areas of disturbance. Once the full area of impact and disturbance is identified, mitigation strategies for natural heritage features and their ecological functions can be discussed.

This report includes Figures illustrating site conditions and proposed pipeline alignment (Alternative 3E – Swale Alignment II). The EIS is based upon background information collected from the Ministry of Natural Resources and Forestry (MNR), Lake Simcoe Region Conservation Authority (LSRCA), County of Simcoe, and City of Barrie, including mapping and other supplementary background material to assist in the completion of the assessment. At the time of submission, a single site visit has been completed to confirm the background information and ground truth the existing conditions within the study area.



## **2.0 PLANNING CONTEXT**

In the following sections we identify the natural heritage-related planning policies and regulations that have been utilized in the EIS to identify significant features and functions, upon which to assess impacts.

### **2.1 Provincial Policy Statement**

The *Planning Act* requires that planning decisions shall be consistent with the Provincial Policy Statement (PPS; MMAH, 2014).

Section 2.1 of the PPS specifies policy related to protection of natural heritage features and functions.

2.1.4 Development and site alteration shall not be permitted in:

- a) Significant wetlands in Ecoregions 5E, 6E; and 7E; and
- b) Significant coastal wetlands.

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

- a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1;
- b) significant woodlands in Ecoregions 6E and 7E ;
- c) significant valleylands in Ecoregions 6E and 7E;
- d) significant wildlife habitat;
- e) significant areas of natural and scientific interest; and
- f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

It is ultimately the responsibility of the Province and/or the Municipality to designate areas identified within Section 2.1.4 of the PPS as significant. The Natural Heritage Reference Manual (MNRF, 2010) and Ecoregion 6E Significant Wildlife Habitat (SWH) Criterion Schedule (MNRF, 2015); and SWH Technical Guide (OMNR 2000) were used to identify candidate features considered applicable to the property and adjacent lands. Features and functions within and adjacent (120m) to the area directly impacted by the proposed development were assessed.



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

The term development (as defined in the PPS) is defined as the creation of a new lot, a change in land use or the construction of buildings and structures, requiring approval under the Planning Act.

## **2.2 Endangered Species Act**

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

The various schedules of the ESA identify Species at Risk (SAR) in Ontario. Species identified include those listed as Extirpated, Endangered (END), Threatened (THR) and species of Special Concern (SC). Only species listed as Endangered and Threatened receive protection from harm and destruction to habitat on which they depend. Species designated as Special Concern may receive protection under the SWH provisions of the PPS.

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

## **2.3 Ontario Regulation 179/06**

A portion of the lands proposed for this municipal infrastructure development are mapped as "regulated" under O. Reg. 179/06 – administered by the Lake Simcoe Region Conservation Authority (LSRCA). In this location, the regulation limit appears to relate to Kidd's Creek and associated MNRF unevaluated wetlands as identified in the regulation mapping (Appendix A).





### **3.0 STUDY APPROACH**

Azimuth conducted a terrestrial survey of the study area on November 8, 2018, with a focus on gathering information to explore the potential for Significant Natural Heritage Features (SNHF) – such as END, THR or SC species, rare habitats, significant woodlands or wetlands, *etc.*, to occur in or adjacent to the proposed project area.

#### **3.1 Study Area**

The study was undertaken in a parcel of land occupying a portion of Sunnidale Park, Barrie. It lies on the west side of Highway 400, from the point where Sunnidale Road crosses the highway, north-eastward, adjacent to the highway for approximately 350 metres (m), and ‘inland’ for approximately 130 m. This study area coincides with the proposed “Alternative 3C – KD01 Alignment” for the relocation of the Sunnidale Sanitary Sewer, along with a 50m buffer on either side (Figure 2). It is centred along the top of the elevated Kidd’s Creek stormwater outlet control structure berm (the berm), and includes the north-west side of the berm leading down to the wetland and forest along Kidd’s Creek, and the south-eastern side of the berm along the highway right of way (ROW).

This EIS discusses the currently preferred Alternative 3E – Swale Alignment II route (Figure 2), which is fully within the previously studied area. This currently-preferred alignment begins at #79 Sunnidale Road and heads in a north-easterly direction to the south-eastern corner of Sunnidale Park, across the base of the berm on the north-east side, parallel to the highway, to the north-east side of the concrete spillway. From this point, the sewer line would be directed to the east side of the highway.

The following protocols were used to gather data for the study:

#### **3.2 Existing Conditions and Constraints Assessment:**

- Obtained background environmental information and mapping from the data sources listed below;
- Completed a habitat-based assessment for a comprehensive list of SAR of Simcoe County as compiled by the MNRF, Midhurst District (October 2017);
- Conducted a site visit in order to identify potential SNHF and other potential constraints;
- Classified vegetation communities according to the methods of the Ecological Land Classification (ELC) for southern Ontario (Lee *at al.*, 1998, ELC DRAFT Update 2008);
- Searched specifically for Butternut (Endangered [END]) during site visit;



- Completed a vascular plant survey; and,
- Complete a ‘leaf-off’ Bat Snag Survey based on the MNRF’s bat guidance document (MNRF, 2015b).

### **3.3 Impact Assessment:**

- Evaluated the potential for direct, indirect and cumulative impacts related to the proposed development on significant natural heritage features and functions identified in background data and through site investigations/assessment using provincial guidance documents regarding the identification of significant natural heritage features and functions (*i.e.*, Natural Heritage Reference Manual [MNR 2010], Significant Wildlife Habitat Criterion Schedules for Ecoregion 6E [MNR 2015a], Technical Note: Species at Risk Bats [MNR 2015b])
- Provided recommendations for avoidance and mitigation of potential negative impacts to significant natural heritage features or functions; and,
- Provided direction with respect to authorizations that might be required related to impacts to protected natural heritage features and functions.

### **3.4 Existing Data Sources**

A review of existing documents provided information on site characteristics, habitat, wildlife, vegetation communities, and general aspects of the study area. Data were gathered from the following sources:

- Aerial images (Google Earth, Air photos);
- Atlas of the Breeding Birds of Ontario (OBBA) [website - <https://www.birdsontario.org/atlas/datasummaries.jsp?lang=en>];
- MNRF’s NHIC Make-A-Map: Natural Heritage Areas application [website - <https://www.ontario.ca/page/make-natural-heritage-area-map>];
- County of Simcoe Interactive Map [website - <https://maps.simcoe.ca/public/>];
- City of Barrie Interactive Map [website - <https://www.barrie.ca/Online%20Services/Pages/GIS.aspx>]
- Ontario Nature – Ontario Reptile and Amphibian Atlas [website - [https://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/index.php](https://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php)];
- MNRF’s Species at Risk Ontario list [website - <http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html>]
- Atlas of the Mammals of Ontario (Dobbyn, 1994)



### **3.5 Vegetation Community Surveys and Mapping**

A field survey to catalogue and delineate vegetation community types and plant species compositions was completed in November 2018. During vegetation community classification work, the assessment was focused to ensure that appropriate effort was made to detect any federally or provincially designated species – notably SAR as identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the Committee on the Status of Species at Risk in Ontario (COSSARO) – or their habitats. The site visit was conducted by a qualified ecologist with knowledge related to SAR as well as rare plant species with potential to occur in the area.

Vegetation community types were classified using the Ecological Land Classification for southern Ontario (Lee *et al.*, 1998, 2008 DRAFT Update). Ecological Lands Classification (ELC) vegetation community data is presented in Table 1.

### **3.6 Wildlife Surveys**

#### **3.6.1 General**

Incidental observations of wildlife were collected to provide additional information related to the study area. Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e.* tracks, scats, vocalizations) as a matter of course while conducting the site assessment. This information was used with available background data related to wildlife use of the study area to determine any sensitive areas associated with wildlife expected to be present. Significant wildlife habitat (SWH) was identified, where applicable, as outlined within the Significant Wildlife Habitat Technical Guideline (MNR, 2000) and the Significant Wildlife Habitat Criterion Schedule for 6E (MNRF, 2015).

#### **3.6.2 Bats**

A survey for potential bat snag trees was conducted during leaf-off conditions on November 8, 2018 to assess the potential of the lands within and adjacent to the proposed development site to function as maternity roost habitat. For this assessment, a snag was defined according to the MNRF's guidance document/technical note for SAR bats (MNRF, 2015b); a standing tree with a diameter at breast height (DBH) of 25cm or greater (live or dead), having a crack, hole, crevice, cavity or peeling bark. High quality snags are super-canopy trees, have good access to snag features and are in only early stages of decay (1-3).

### **3.7 Vascular Plants**

A field survey for vascular plants was conducted during a thorough site evaluation. The purpose of the vascular plants survey was to assess for presence of rare or SAR plant



species and associations that may lead to constraining issues for the completion of the proposed project.

### 3.7.1 Butternut

Sunnidale Park is known to contain Butternut (*Juglans cineria*) spread throughout. As such, an intensive and dedicated search for Butternut was conducted throughout the study area.

## 3.8 Species at Risk

The SAR screening undertaken for this project included an initial assessment of the habitat requirements of species with potential to occur in the study area. The initial screening was based on air photo interpretation and general knowledge of the area to identify habitats specific to the study area. Habitat requirements and SAR designations (END, THR or SC) for all species with potential to occur in the area are outlined in Table 2.

Typically, where it is determined that potential habitat of a SAR occurs in an area of proposed activity/development, preliminary mapping is created to determine if the proposed works can be carried out with a reasonable certainty that no impacts to the species or their habitat will be incurred as a result of the works. Where there is uncertainty of the ability to avoid habitat, or where it is unclear exactly what future works will be undertaken, additional surveys are carried out to determine if the potential habitat is being used by the species in question. At this stage, no targeted bird surveys have been completed. As discussed above, surveys were conducted for Butternut and potential bat snag trees.

## 3.9 Aquatic Habitat and Fisheries

Background reference documents were used, combined with historical knowledge of the fish and fish habitat conditions and constraints for the one watercourse crossing in the study area, in order to provide valuable input towards this relocation alignment alternative at this stage.

## 4.0 EXISTING SITE CONDITIONS

### 4.1 General Site Description

The study area is located in the south-east portion of Sunnidale Park, on the west side of Highway 400 in Barrie, Ontario (Figures 1 and 2). This section of Sunnidale Park functions, essentially, as a large stormwater control pond, intended to absorb excess water volume during high-flow events in Kidd's Creek, controlling the flow downstream of the



highway where the creek passes through a more hardened urban area before entering Lake Simcoe. The stormwater outlet control structure is comprised of a large berm (approximately 6m high X 190m long) situated parallel to the highway, as well as a series of culverts running under the highway. Photographs of the study area are included in Appendix G.

Kidd's Creek and adjacent lands are regulated within LSRCA jurisdiction (Appendix A), and are subject to "Ontario Regulation (O. Reg.) 179/06 – Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses". Under O. Reg. 179/06, the LSRCA requires that approvals be obtained for any proposed development within areas regulated under a LSRCA's jurisdiction.

A wetland associated with Kidd's Creek is classified as an MNRF Unevaluated Wetland. The wooded areas in the valley, between Sunnidale Road and the wetland, are classified as Woodland, but are not part of the Natural Heritage System (Appendix B).

The property at 79 Sunnidale Drive historically contained a residential dwelling, which the City acquired and demolished in 2018 as a land acquisition initiative for a City watermain project. The property does not currently contain any structures.

## **4.2 Land Use**

### **4.2.1 Adjacent Land Use**

Provincial Highway 400 runs adjacent to the study site, to the south-east. The remainder of the study site is surrounded by City of Barrie Open Space zoned lands which make up Sunnidale Park (Appendix C). Beyond that, to the north, is City of Barrie Environmental Protection zoned land. Abutting #79 Sunnidale Road to the north-west, are residential lots along Sunnidale Road, which border on the Kidd's Creek valley and woodlands of Sunnidale Park.

## **4.3 Geology, Soils and Topography**

The subject lands are located towards the southern edge of the Simcoe Uplands, where they drain to the Simcoe Lowlands and Kempenfelt Bay. This area was an island in the ancient Lake Algonquin, which has led to differentiated soils from the surrounding Simcoe Lowlands. A post-glacial till-plain has created topography that is rolling, with flat-floored valleys. The surface soil of the area of Sunnidale Park is well-drained Schomberg Silty Clay Loam.



From the highway at approximately 251 metres above sea level (MASL), the site drops to towards the west to approximately 245 MASL in the highway-side “ditch”, then rises to ~251 MASL at the crest of the berm before falling again to 247 MASL at the wetland along Kidd’s Creek to the north-west. The residential lot at #79 Sunnidale Road sits at approximately 257 MASL, then slopes down to the berm off the rear of the lot.

#### **4.4 Vegetation Communities**

The vegetated lands within the study area have been significantly impacted and influenced by human activity. All thirteen (13) vegetation types (Figure 2) are the result of anthropogenic disturbance based around the construction of the berm and the highway.

The area is comprised primarily of two large cultural meadows (CUM1-1) and cultural thickets (CUT1-1) along the crest and both slopes of the berm, and along the embankment at the highway. The meadow communities are dominated by Orchard Grass (*Dactylis glomerta*), Vetch (*Vicia cracca*), Smooth Brome (*Bromus inermis*) and Queen-Anne’s Lace (*Daucus carota*), while the thickets add an open layer of Staghorn Sumac (*Rhus typhina*), young Black Walnut (*Juglans nigra*) and Siberian Elm (*Ulmus pumila*) above the grasses and forbs.

There is poor drainage in the lowland on either side of the concrete spillway on the east side of the berm, between the berm and the highway embankment, which has led to the development of small meadow marshes completely dominated by invasive hybrid Cattail (*Typha glauca*) [MAMM1-2] and Common Reed (*Phragmites australis*) [MAMM1-12]. Both dry- and wet-soil roadside communities consist of a suite of forbs and grasses characteristic of anthropogenic communities influenced by a high degree of salt, wind, and soil disturbance.

The function of the berm structure is to contain and control storm runoff during elevated flow periods. Since berm construction, it has significantly reduced natural soil drainage at this east end of Sunnidale Park. This has resulted in the development of moist forest communities, dominated by non-native Hybrid Willow (*Salix x fragilis*), Trembling Aspen (*Populus tremuloides*) and Black Ash (*Fraxinus nigra*) [FOD7-3, FOD8-1, FODM7-6, respectively], and wetland communities dominated by cattails (*Typha spp.*), Hybrid Willow and willow shrubs (*Salix spp.*) [MAS2-1, SWD4-1, SWT2-2, respectively] along either side of Kidd’s Creek. Only 0.1366 ha of the wetland communities lies within the study area. No wetland lies within a 30 m buffer of the proposed Alternative 3E – Swale Alignment II.



The woodland communities in this portion of the Kidd's Creek valley, and surrounds, also are the result of a significant history of human disturbance. The few landscape trees remaining on the 79 Sunnidale Road lot are large, old Black Walnut and Siberian Elm. Siberian Elm is not native to North America. While Black Walnut is native to North America, and is relatively common in the region, it is not native to this region. These trees have produced considerable progeny, which are beginning to dominate much of the surrounding woodland and thicket habitat and are spreading into the cultural meadows. Towards the rear of this lot is a small, mature but declining non-native Norway Spruce (*Picea abies*) cultural plantation (CUP3-9) with non-native and invasive Common Buckthorn (*Rhamnus cathartica*) prevalent in the shrub layer. The valley slope and floor contain two non-native forest communities; a deciduous forest comprised almost completely of Norway Maple (*Acer platanoides*) and Black Walnut, and a naturalized Scotch Pine (*Pinus sylvestris*) plantation (naturalized predominantly with non-native Black Walnut and Norway Maple).

No vegetation communities identified within the study area are considered to be rare or of local, regional or provincial significance. All five of the wetland communities noted above are the result of anthropogenic disturbance. They only occur at this site due to the creation of the embankment for the highway and/or the berm. All of the vegetation communities present on this site are a direct result of significant human disturbance, and are dominated by non-native and invasive plant species.

The zone of disturbance for this infrastructure project is expected to be restricted to approximately 10 m on either side of the proposed alignment. As such, the only vegetation communities that would be affected include Norway Spruce Cultural Plantation, Black Walnut – Norway Maple Deciduous Forest, Scotch Pine Naturalized Coniferous Plantation, Cultural Thicket, Cultural Meadow, and Cattail Meadow Marsh. None of these vegetation communities are considered significant and all are dominated by non-native and invasive species.

#### 4.4.1 Wetland Habitat

No wetlands identified as Provincially or Locally Significant were located within or adjacent (*i.e.*, 120 meters) to the study area. As illustrated in Figure 2, the MAMM1-2, MAMM1-12 vegetation communities present within the study area are small pockets of isolated wetlands influenced by surface runoff resulting from infrastructure development and fall well below the size criterion for official ELC vegetation type and/or consideration as a wetland. SWD4-1, SWT2-2 and MAS2-1 are more extensive, but occur as a result of the historical changes in surface water drainage associated with the berm for stormwater control.



## 4.5 Vascular Plants

A total of 67 vascular plant species were recorded from within the study area. None of the vascular plant species recorded is considered to be rare or of local, regional or provincial significance. No vascular plant SAR were recorded during the survey. Vascular plant species recorded within each ELC vegetation type on the site are included in Table 2.

### 4.5.1 Butternut

While Butternut are known to be plentiful throughout parts of Sunnidale Park, an extensive, dedicated search for this species did not reveal any individual Butternut trees within the study area.

## 4.6 Wildlife

### 4.6.1 General

A field survey was conducted on November 8, 2018. No species-specific monitoring for wildlife was conducted. Wildlife species utilizing the study area were identified from direct observation and through interpretation of sign (*i.e.* tracks, scats, vocalizations) as a matter of course while conducting the survey. No unusual or unexpected wildlife were observed as incidental encounters. Based on field observations, and given the urban landscape, the following mammal species have the potential to be present within the study area:

- Coyote (*Canis latrans*), Eastern Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), Red Squirrel (*Tamiasciurus hudsonicus*), Beaver (*Castor canadensis*), Red Fox (*Vulpes vulpes*), Striped Skunk (*Mephitis mephitis*) and White-tailed Deer (*Odocoileus virginianus*).

None of the species are considered rare or designated SAR.

No species of birds, reptiles or amphibians were recorded during this survey.

## 4.7 Species at Risk

Based on a review of background data, all SAR species that have the potential to occur in the area were considered in our assessment (Table 3).

Of the species identified with potential to exist within the study area, the following were identified, based on habitat requirements, as having the highest possibility:

- Reptiles and Amphibians: Snapping Turtle (*Chelydra serpentina*).
- Birds: Barn Swallow (*Hirundo rustica*), Bank Swallow (*Riparia riparia*), Chimney Swift (*Chaetura pelagic*), Eastern Wood-pewee (*Contopus virens*), Wood Thrush





(*Hylocichla mustelina*), Eastern Meadowlark (*Sturnella magna*), Bobolink (*Dolichonyx oryzivorus*).

- Mammals: Little Brown Myotis (*Myotis lucifugus*), Northern Long-eared Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*).
- Insects: Monarch (*Danaus plexippus*).
- Plants: Butternut.

None of the SAR listed above were recorded during the field visit.

Potential habitat for species listed as THR or END under the *Endangered Species Act*, 2007 (ESA) was identified in proximity to the study area. Habitat requirements associated with these species, as outlined in Table 2, will require consideration when evaluating site alterations and future work in the area. Based on habitat requirements, potential exists for any of the SAR listed above to be present.

Kidd's Creek traverses the study area, and is known to not contain aquatic SAR.

#### **4.8 Aquatic Habitat and Fisheries**

The study area contains Kidd's Creek, which flows through Sunnidale Park in an easterly direction before discharging under the highway via the grade control structure on the west side of the highway. Sunnidale Park forms the upper reaches of Kidd's Creek, which provides a partially natural setting within what is managed as a large online quantity stormwater management pond controlled by the berm previously described at the highway.

Kidd's Creek is a coldwater system that is principally urbanized in the City of Barrie. The creek sustains permanent flow from Sunnidale Park downstream to the outlet at the City of Barrie marina, and contains localized habitat hosting Brook Trout (*Salvelinus fontinalis*). Brook Trout are historically known to occur throughout the system, however fish do not occur upstream of the highway in Sunnidale Park due to both physical and velocity barriers in the culverts under the highway and berm structure. Nonetheless, drainage west of the highway functions as indirect habitat for fish, and is protected under the Federal *Fisheries Act*. As a thermally cold system, coldwater fisheries timing restrictions apply that restrict work from occurring in and around the creek to reduce the risk of harm to fish habitat.

Given the proximity of direct habitat containing fall spawning Brook Trout, the timing restriction prohibits work from occurring between October 1 to July 15.



## **5.0 BIOPHYSICAL ASSESSMENT**

### **5.1 Identified Natural Heritage Features & Functions**

Background mapping (Appendix D) indicates that portions of the adjacent lands have been identified as MNRF Unevaluated Wetland. There are no Areas of Natural or Scientific Interest (ANSIs) identified on or adjacent to the subject lands.

### **5.2 Natural Heritage Assessment**

#### **5.2.1 Provincially Significant Natural Heritage Features & Functions**

##### Wetlands

Per Section 4.4.1, the two wetland vegetation types included within the proposed work area do not meet the size requirements for official wetland status. These, along with wetlands identified adjacent to the study area are not evaluated as Provincially Significant and they are not located on the shoreline or within 2km upstream of connecting watercourses of Georgian Bay and hence are not coastal wetlands.

*Assessment* – The subject and adjacent lands do not contain Provincially Significant Wetland or Coastal Wetland.

##### Woodlands

Tree cover on #79 Sunnidale Road residential lot is restricted to a small number of specimen trees and a small, mature non-native Norway Spruce plantation in declining health. This treed area and adjacent woodlands, along the Kidd's Creek valley slope and floor to the west, north-west and north of the proposed development, form part of a large area of continuous woodland in Sunnidale Park covering in excess of 35ha (Azimuth estimate from Google Earth imagery). The area of woodland disturbance is expected to only affect approximately 0.2ha.

The City of Barrie occupies an area of approximately 9900 ha and contains 28% woodland cover (Appendix E), which would amount to 2772ha. A loss of 0.2 ha of woodland would amount to only 0.007% of Barrie's woodland cover. Simcoe County mapping indicates that the Simcoe County Uplands contains 51% woodland cover (Source: County of Simcoe 2011). Based on the NHRM, in landscapes having between 30% and 60% woodland cover, woodlands over 50ha may be considered significant.

*Assessment* – The loss of only 0.007% of Barrie's woodland cover for this infrastructure project will not have a negative effect on the woodland cover and habitat of Barrie. Based on the criteria of the NHRM, the area of continuous woodland in the area of the proposed



Sunnidale Sanitary Sewer realignment (Alternative 3E – Swale Alignment II) should not be considered significant.

#### Significant Valleylands

The NHRM identifies the following typical characteristics of valleylands: areas with well-defined valley morphology (*e.g.*, floodplains, meander belts, valley slopes), distinctive geomorphic landforms (eroding slopes along river banks or valley walls), *etc.*

*Assessment* – While adjacent lands may be considered significant valleyland as defined in the context of the PPS, the area proposed for this development have already been substantially altered by human infrastructure development, do not display well-defined valley morphology, and should not be considered as significant valleylands.

#### Significant Wildlife Habitat

The Criterion Schedule for Ecoregion 6E (MNR 2015a) identifies 35<sup>+</sup> wildlife habitat functions to scrutinize for significance. Based on a consideration of all the listed functions, site-specific and background data indicate that there are no SWH functions attributable to the subject lands. Adjacent lands may be considered for the following SWH functions:

*Assessment* – Adjacent lands may function as:

- Bat Maternity Colony Habitat;
- Area-sensitive Bird Breeding Habitat (forest breeding birds);
- Habitat for Species of Conservation Concern – Special Concern and Rare Wildlife Species (SC Insect – Monarch; SC forest breeding birds – Eastern Wood-pewee, Wood Thrush, Canada Warbler),

#### 5.2.2 Other Wetlands

Per Section 4.3.1, wetlands identified within the study area are identified as MNR Unevaluated wetlands. These wetlands lie well outside of the disturbance zone and beyond a 30m buffer zone for the proposed development.

#### 5.2.3 Fish Habitat

The section of Kidd’s Creek west of the highway does not host fish directly, but does contribute water quality and quantity to direct habitat east of Highway 400, to a fish community containing Brook Trout (*Salvelinus fontinalis*). . Kidd’s Creek is protected under the federal *Fisheries Act*.



#### 5.2.4 Habitat of Endangered and Threatened Species

Potential habitat for species listed as either Threatened or Endangered was identified on the property. Our initial assessment identified habitat potential as follows:

- Potential Summer Roosting Habitat – Endangered Bat Species (Little Brown Myotis, Northern Myotis and Tri-colored Bat).
- Potential nesting habitat for Bobolink, Eastern Meadowlark
- Potential foraging habitat for Barn Swallow, Bank Swallow, Chimney Swift
- Woodland habitat of Butternut

#### 5.2.5 Endangered Bat Species

The results of field studies indicate that woodlands within the study area have a very low density of snag trees (only 4 snag trees recorded), such that they would not be sufficient for the woodlands to function as Bat Maternity Colony Habitat (see Figure 2 for potential bat snag tree locations). The woodlands adjacent to the proposed development should not be considered to function as habitat for END bats (not assessed).

#### 5.2.6 Endangered Tree Species

Butternut is known to occur widely within Sunnidale Park, in woodlands adjacent to the study site. An extensive survey for Butternut was conducted in leaf-off conditions but none were recorded. The habitat conditions and vegetation communities within and adjacent to the study site are not expected to contain Butternut.

#### 5.2.7 Threatened Bird Species

The Cultural Meadow may provide breeding habitat for Easter Meadowlark. No Meadowlark were recorded, and this species is not expected to occur here due to the location within the urban area of Barrie, and the composition of the meadow vegetation.

The area was considered to hold low potential for Bobolink breeding habitat, but the plant height and species composition recorded during the site visit are not conducive to Bobolink breeding, nor is the urban location of the site. Bobolinks are not expected to use this site for breeding or foraging.

Barn Swallows require vertical structures on which to build their mud nests. Bank Swallows require vertical sandy/silty embankments into which to construct their nesting burrows. Chimney Swifts nest in anthropogenic tube-like structures, such as large chimneys. None of these settings is available within or adjacent to the study area. As such, it is not considered to provide nesting habitat for these species. All three of these species aerial forage for flying insects over fields/meadows and open wetlands, such as are



found within the study site and in the adjacent marsh. The study area is considered to provide foraging habitat for these THR bird species.

## **6.0 PROPOSED DEVELOPMENT**

Figure 2 provides an overlay of the proposed “Alternative 3E – Swale Alignment II” on an air photo base annotated to show vegetation communities and the study area. This alternative proposes to relocate the Sunnidale Road sanitary sewer line, buried via narrow, open trench, through the vacant residential lot at 79 Sunnidale Road, and towards the north-east, parallel to the highway, along the berm to the north side of the concrete spillway, where it will then cross to the east side of the highway.

## **7.0 IMPACT ASSESSMENT**

The results of our biophysical assessment of site-specific and background data indicate that the subject and adjacent lands contain/provide the following natural heritage features and functions:

- Unevaluated wetland;
- Potential habitat of END bats (Bat Maternity Colony Habitat);
- Potential habitat for END or THR Grassland bird species (Barn Swallow, Bank Swallow, Chimney Swift, Bobolink, Eastern Meadowlark)
- Area-sensitive Bird Breeding Habitat (forest breeding birds);
- Habitat for Species of Conservation Concern – Special Concern and Rare Wildlife Species (SC insect – Monarch; SC forest breeding birds –Eastern Wood-pewee, Wood Thrush, Canada Warbler).

Impact to these natural heritage features and functions is provided in the following sections. Recommendations for impact mitigation are summarized in Section 9.

### **7.1 Unevaluated Wetland**

Two wetland vegetation communities (MAMM1-2 and MAMM1-12) have been identified within the proposed development area. While these areas are classified based on wetland plant species and soils, they are anthropogenic in origin, are entirely dominated by non-native and invasive plant species, and the size of each community is too small to be officially considered as a separate vegetation community within ELC and Ontario Wetland Evaluation System (OWES) standards. Development within or adjacent to these areas would likely not alter their composition or function in a negative manner. As such, they should not be considered for protection or offsetting.



The SWD4-1 (Willow Mineral Deciduous Swamp Type) is situated within 120m of the proposed work site, but outside of the 50m buffer survey area and well beyond any 30m protection buffer. The SWT2-2 (Willow Mineral Thicket Swamp Type) and MAS2-1 (Cattail Mineral Shallow Marsh Type) lie within 120m of proposed development and just within the 50m buffer survey area, but well outside of a 30m protection buffer from the proposed development area. It is expected that this proposed development will not have any effect on the form or function of these wetland communities.

## **7.2 Bat Habitat**

The results of the survey for potential bat habitat snag trees show that the woodland within and adjacent to the proposed development area do not present significant potential for a bat maternity roosting colony, as only 4 snag trees were documented, and they were all of low quality (little bark remaining, advanced state of decay, within closed canopy, *etc.*). One snag tree (#1 – Figure 2) is located at the edge of the Norway Spruce Cultural Plantation, but it is outside of the expected disturbance area and should not be affected by this development.

Out of over 35ha of total woodland within and adjacent, the proposed development may directly impact approximately 0.2ha of woodland that provides only one tree of potential use by bats for a maternal roost colony. Clearly the scale of impact is well below any threshold that would invoke concerns with respect to impacts to bat maternity colony habitat function (a SWH concern) or habitat of END bats (an ESA permitting concern).

Due to the size of the overall woodland feature, it is possible that it provides habitat for single-roosting individuals of one or more END bat species. None of the woodland within the expected area of disturbance provides high quality potential for individual roosting bats. The more mature forest on the valley floor presents greater potential for such habitat, but it is well outside of the disturbance zone and beyond 40m from the development area. In order to avoid potential impact to END bats we recommend clearing trees outside of the “bat active season” generally considered to run from April 1 through to October 1.

The proposed Alternative 3E – Swale Alignment II for the Sunnidale Road Sanitary Sewer Relocation is unlikely to result in indirect impacts to END bats of the area, if present, as the END bats of Ontario are tolerant of human activity – often occurring in urban areas and utilizing buildings (occupied and vacant) as maternity roost habitat. Therefore, operations related to this development will not impact use of adjacent woodlands by END bats should they occur locally (undetermined).



The proposed development does not represent an impact to potential END species habitat and through application of timing restriction for tree removal, potential for kill/harm/harass is mitigated. Therefore, no permitting issued under Ontario's ESA appears necessary moving forward.

### **7.3 Grassland Bird Species Habitat**

Bobolink and Meadowlark utilize large tracts of grassland and meadow habitat for breeding grounds. The Cultural Meadow and Cultural Thickets vegetation communities on the study site occupy only approximately one hectare of land. The disturbance area within these communities from this infrastructure development is estimated to be only around 0.1ha; only approximately 1/10 of such habitat available on the site. Once the construction work is complete, the Cultural Meadow vegetation should re-grow to re-occupy the disturbed land. While it is unlikely that either Bobolinks or Eastern Meadowlarks are utilizing this area for breeding purposes, there will be negligible reduction in habitat availability during construction and most likely full re-growth after development. As such, there should be no effect to Bobolink or Eastern Meadowlark habitat as a result of this development.

### **7.4 Area-sensitive Bird Breeding Habitat (forest breeding birds)**

No area-sensitive forest breeding birds were noted during the site survey. The area of disturbance does not contain any habitat for area-sensitive bird species. Woodlands within and adjacent to the study area may contain suitable habitat for SC species such as Eastern Wood-pewee, Wood Thrush and Canada Warbler, as continuous woodlands located adjacent to the subject lands cover in excess of 35ha and provide a diversity of forest and swamp vegetation communities satisfying the habitat requirements of a range of forest breeding birds.

The proposed development impacts only a minor amount (0.2ha) of non-native plantation and non-native forest habitat leaving the overall woodland intact (no fragmentation) and hence poses no impact to the size or shape of area woodlands that may be providing habitat function for areas-sensitive and SC forest breeding birds. Therefore, there is no direct impact to woodland that would impact habitat function for forest breeding birds.

The Alternative 3E – Swale Alignment II Sunnidale Road Sanitary Sewer Relocation introduces little in the way of human activity to lands adjacent to the woodland, and this increased activity will only be during the short development phase. Therefore, the proposed development and operations will result in no indirect impacts to the function of the adjacent woodland as habitat for area-sensitive and SC forest breeding birds. Setbacks/



buffers from the woodland are not required to maintain these habitat functions. We recommend that trees are removed outside of the migratory bird active nesting season generally considered to extend from mid-April to August 31 (see Recommendations for timing widow).

## **7.5 Habitat of Species of Conservation Concern**

### **7.5.1 Special Concern Forest Breeding Birds**

Assessed with respect to area-sensitive forest breeding bird habitat (Section 7.3). No negative impact.

### **7.5.2 Special Concern Insect (Monarch)**

The entire life cycle of the Monarch depends on Milkweed species (*Asclepias spp.*). While a very small number of Milkweed plants may be disturbed or removed during the construction of this sanitary sewer line, that number would be negligible when compared to the total available within the CUM and CUT communities on this site. Milkweeds are very effective at establishing in disturbed soils, so it is likely that there will be at least as many milkweeds on the site after development as before. There should be no negative effect to Monarchs as result of this project.

## **8.0 POLICY & REGULATION CONFORMITY**

### **8.1 Provincial Policy Statement**

The proposed development can be achieved with no direct or indirect impacts to significant natural heritage features or functions attributable to the subject or adjacent lands.

### **8.2 Ontario's Endangered Species Act**

The proposed development can be achieved with no direct or indirect impacts to individuals or habitat of END bats *assumed* to be present locally consistent with the requirements of Ontario's ESA. Therefore, no permitting issued under the ESA appears necessary to allow the development to proceed.

### **8.3 O. Reg. 179/06**

The proposed development can be achieved with no direct or indirect impacts to wetland or floodplain, however works are occurring in regulated lands and will require permitting under O. Reg. 179/06 prior to construction.





## 9.0 RECOMMENDATIONS

- To avoid impacts to active nests of migratory birds and END bats *potentially* utilizing trees during spring/summer as roosting habitat, tree clearing should be conducted between October 1 through to March 30;
- Prepare an Edge Management Plan to address tree clearing and grading required to establish the new forest edge – the objectives being identification of any quality trees (including wildlife cavity trees/bat snag trees) potentially retained through application of tree protection measures or trees presenting a falling hazard that should be removed;
- In detail design, the proposal to install the sanitary sewer under Kidd's Creek will require further assessment to address the need to identify potential risk to fish and fish habitat;
- The design plan should be reviewed by a qualified fisheries ecologist to determine potential impacts at the watercourse, and mitigation requirements to reduce or eliminate risk, and ultimately ensure that the infrastructure works do not result in 'serious harm to fish' under the Federal *Fisheries Act*;
- Review should also conclude whether project activities can be address under DFO's Self Assessment process (in accordance with DFO's Projects Near Water review process), or whether submission is required to DFO to secure a Letter of Advice or Authorization. Pipe installation by means of tunneling and even open cut methods can often be addressed in accordance with a Self Assessment, if mitigation can avoid impacts to fish habitat;
- A rehabilitation plan should be prepared in detail design to ensure that all areas disturbed in the riparian corridor of Kidd's Creek is restored to pre-construction conditions, or better;
- Establish a sediment and erosion control plan for the proposed development based on requirements of the municipality (engineering);
- After development, re-seed the disturbed area of Cultural Meadow with a native meadow mix of grass and forb species.

## 10.0 CONCLUSION

The City of Barrie is proposing to relocate the Sunnidale Road sanitary sewer at the Sunnidale Road Highway 400 bridge, as outlined above. A number of routing options have been evaluated by the City of Barrie, however, “Alternative 3E – Swale Alignment II” is the preferred option.



Based on the preliminary information presented herein, it is reasonable to expect that this project can be undertaken without disturbance to SAR, Significant Wildlife Habitat or other significant natural heritage features. For the purposes of this study, our findings conclude that Alternative 3E is feasible from an environmental perspective, and does not pose environmental impacts that cannot be readily mitigated through proper project planning and rehabilitation initiatives. Further environmental review should occur during the Detailed Design phase, to identify potential impacts, determine mitigation or offsetting requirements, and further refine the EIS for submission to regulatory agencies for approval.



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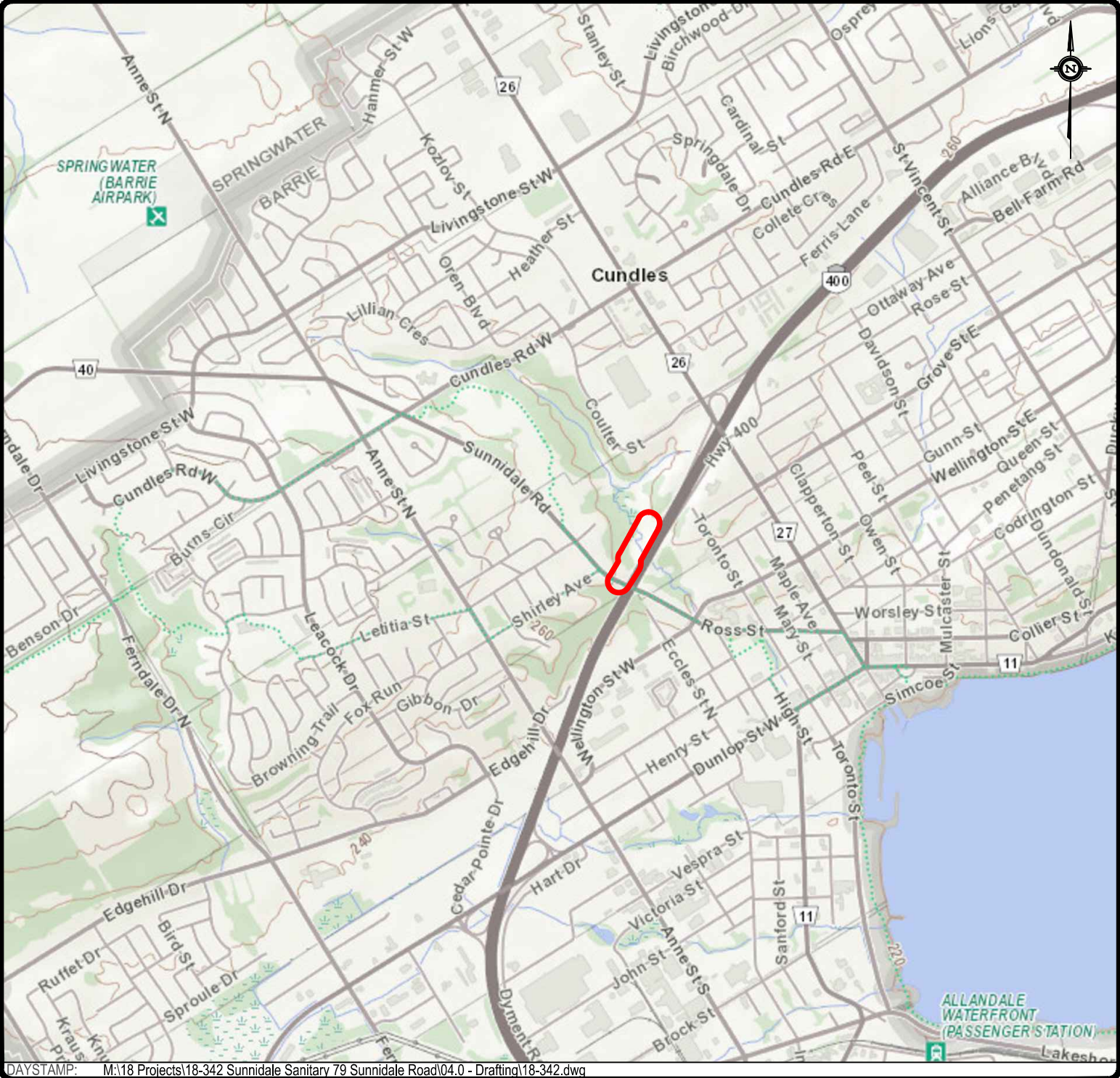


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**LEGEND:**  
— *Approx. Study Area*

**REG MAP**

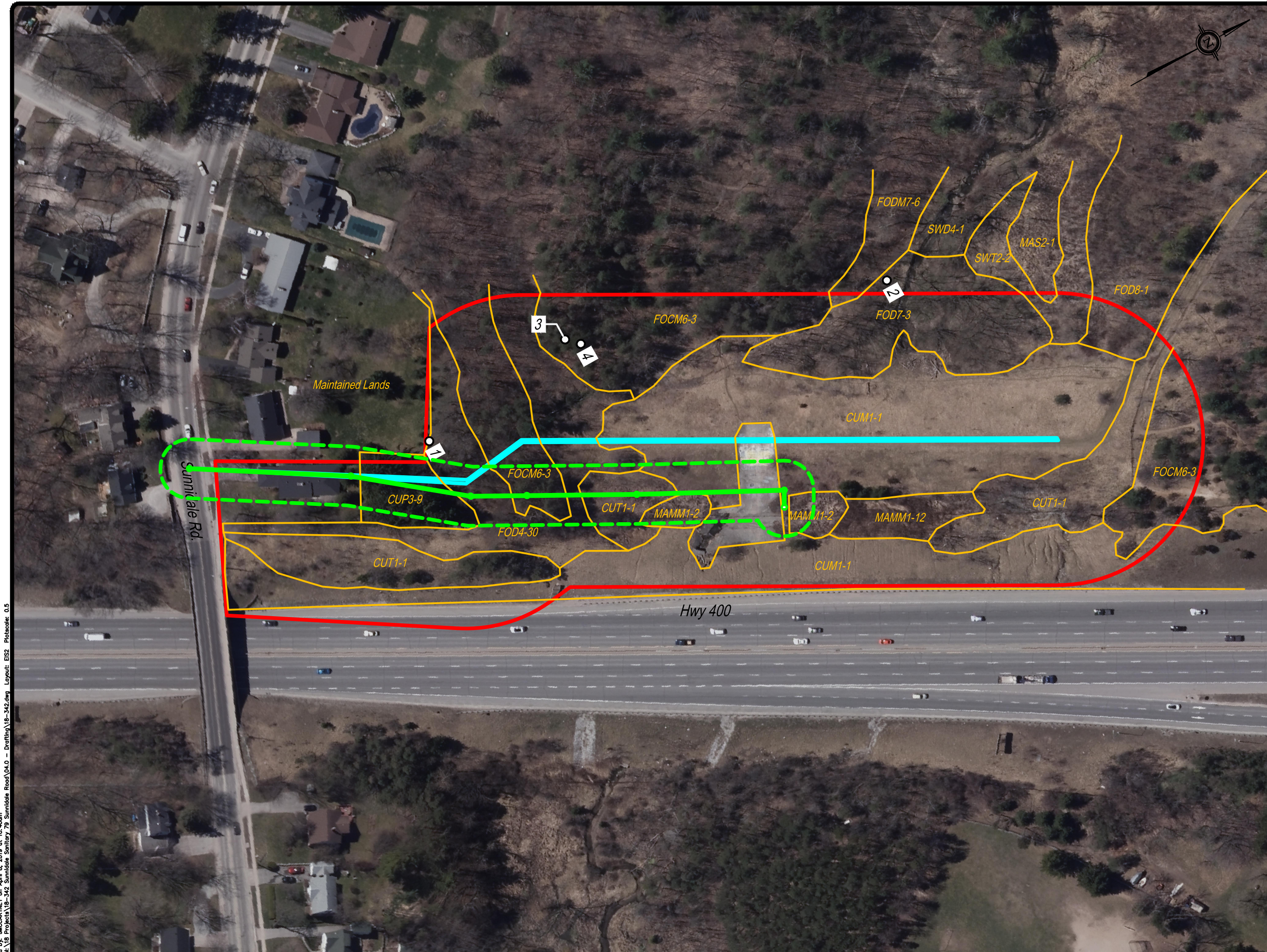
250m    0    750m  
 HORIZONTAL SCALE    1: 25,000

Study Area Location

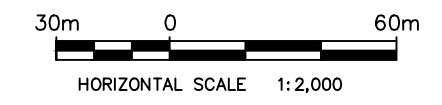
79 Sunnidale Road,  
 Barrie, ON

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|----------------------------|------------|
| DATE ISSUED: November 2018 | Figure No. |
| CREATED BY: JLM            |            |
| PROJECT NO.: 18-342        | 1          |
| REFERENCE: MNR             |            |

Plotted by: MCCARTNEY on November 20, 2018 at 4:18pm  
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 DAYSTAMP: M:\18 Projects\18-342 Sunnidale Sanitary 79 Sunnidale Road\04.0 - Drafting\18-342.dwg



- LEGEND:**
- Approx. Study Area
  - Pipeline Alternative 3C-KD01 Alignment
  - Pipeline Alternative 3E-Swale Alignment
  - - - 10m Disturbance Area
  - Potential Bat Snag Locations
  - Vegetation Communities
- CUM1-1* Dry-Moist Old Field Meadow  
*CUP3-9* Norway Spruce Cultural Plantation  
*CUT1-1* Sumac Cultural Thicket Type  
*FOCM6-3* Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type  
*FOD4-30* Dry-Fresh Black Walnut-Norway Maple Deciduous Forest Type  
*FOD7-3* Fresh-Moist Willow Lowland Deciduous Forest Type  
*FOD8-1* Fresh-Moist Poplar Deciduous Forest Type  
*FODM7-6* Fresh-Moist Black Ash-Hardwood Lowland Deciduous Forest Type  
*MAMM1-2* Cattail Graminoid Mineral Meadow Marsh Type  
*MAMM1-12* Common Reed Graminoid Mineral Meadow Marsh Type  
*MAS2-1* Cattail Mineral Shallow Marsh Type  
*SWD4-1* Willow Mineral Deciduous Swamp Type  
*SWT2-2* Willow Mineral Thicket Swamp Type



Environmental Features

79 Sunnidale Road,  
Barrie, ON

|              |                    |            |
|--------------|--------------------|------------|
| DATE ISSUED: | November 2018      | Figure No. |
| CREATED BY:  | JLM                | 2          |
| PROJECT NO.: | 18-342             |            |
| REFERENCE:   | Simcoe County Maps |            |

Plotted by: MCCARTNEY on April 8, 2019 at 10:40am  
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**Table 1. Ecological Land Classification Vegetation Community Descriptions**

| Ecological Land Classification |                 |                          |   |   |  | Ground Cover   |
|--------------------------------|-----------------|--------------------------|---|---|--|--|
| System                         | Community Class | Community Series         | Ecosite   | Vegetation Type   | Composition  |  |
| Terrestrial                    | FO, Forest      | FOC, Coniferous Forest   | FOCM6, Naturalized Coniferous Plantation                        | FOCM6-3, Dry - Fresh Scotch Pine Naturalized Coniferous Plantation Type   | This vegetation type is old Scotch Pine plantation that has naturalized. Black Walnut, Norway Maple and a few Trembling Aspen and Red Oak have done well along the slopes here and filled in any canopy and understory gaps. Shrub layer is very sparsely composed of Common Buckthorn and young Norway Maple. | Ground cover is very sparse, being comprised mainly of Norway Maple seedlings and some Garlic Mustard  |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD4, Dry - Fresh Upland Deciduous Forest Ecosite               | FOD4-30, Dry - Fresh Black Walnut - Norway Maple Deciduous Forest Type    | Young to mid-age Mid-age Black Walnut and Norway Maple dominate both the canopy and the understory here, which also has several Red Oak. The shrub layer is composed mainly of Staghorn Sumac and Wild Grape, along with younger Black Walnut and small numbers of Black Raspberry.                            | Ground layer vegetation is composed mainly of Giant Goldenrod and Garlic Mustard, with Kentucky Bluegrass  |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD7, Fresh - Moist Lowland Deciduous Ecosite                   | FOD7-3, Fresh - Moist Willow Lowland Deciduous Forest Type                | Widely-spaced Crack Willow dominates the loose canopy and sub-canopy in this area, with a few smaller Crack and other willows in the shrub layer.  | Garlic Mustard carpets much of the forest floor here, and is, by far, the dominant ground cover species in this vegetation type, with small numbers of Dandelion, escaped turf grasses and sedges.   |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FODM7, Fresh - Moist Lowland Deciduous Forest Ecosite           | FODM7-6, Fresh - Moist Black Ash - Hardwood Lowland Deciduous Forest Type | This small patch of moist soil forest is dominated by young Black Ash trees in the canopy and sub-canopy. Norway Maple, Scotch Pine and small numbers of Trembling Aspen round out these layers. There are a few Red-osier Dogwood in the shrub layer, but this layer is otherwise generally sparse.           | The ground flora is virtually completely dominated by Scouring Rush, with just a few Norway Maple seedlings.   |
| Terrestrial                    | FO, Forest      | FOD, Deciduous Forest    | FOD8, Fresh - Moist Poplar - Sassafras Deciduous Forest Ecosite | FOD8-1, Fresh - Moist Poplar Deciduous Forest Type                        | Trembling Aspen dominates the canopy and sub-canopy of this vegetation type, along with only a few White Birch and Ash. The shrub layer is densely populated by Red-osier Dogwood, along with some mixed Willow shrubs.  | The ground flora is dominated by a dense mix of Scouring Rush, Giant Goldenrod and Fringed Sedge.  |
| Terrestrial                    | CV, Constructed | CVR, Residential         | CVR_3, Single Family Residential                                | N/A   | This portion of the study area is comprised of several residential yards, with the canopy and shrub levels dominated mostly by spaced landscape plantings of White Spruce and Norway Maple trees and a few White Cedar shrubs.   | Ground vegetation includes Periwinkle and Garlic Mustard at the property boundary along the forest, but is mostly comprised of domestic turfgrass species.   |
| Terrestrial                    | CU, Cultural    | CUP, Cultural Plantation | CUP3, Coniferous Plantation                                     | CUP3-9, Norway Spruce Cultural Plantation                                 | This site is a small Norway Spruce plantation. The understory contains a few Black Walnut and the shrub layer consists of a loose collection of Common Buckthorn and a few Choke Cherry.   | Ground vegetation is very sparse. The dominant plant is domesticated Lily-of-the-Valley, along with Garlic Mustard and some Norway Maple and Common Buckthorn saplings   |
| Terrestrial                    | CU, Cultural    | CUM, Cultural Meadow     | CUM1, Mineral Cultural Meadow Ecosite                           | CUM1-1, Dry - Moist Old Field Meadow                                      | The "canopy" layer in these meadow areas is naturally sparse, but is comprised mainly of sporadic Staghorn Sumac, Walnut and Siberian Elm.   | These cultural meadows are the result of earthworks to create the highway embankment and the flood control berm. They are dominated by Orchard Grass and Vetch, with some Smooth Brome Grass, Reed Canary Grass, Queen-Anne's Lace, Sweet White Clover, and New England Aster. |
| Terrestrial                    | CU, Cultural    | CUT, Cultural Thicket    | CUT1, Mineral Cultural Thicket Ecosite                          | CUT1-1, Sumac Cultural Thicket Type                                       | The canopy is composed of only a few Black Walnut, Trembling Aspen and Siberian Elm. The majority of the vegetation type is comprised of Staghorn Sumac in medium density.   | Ground cover is dominated by Smooth Brome and Orchard Grass, but also includes some Black Raspberry, Canada Goldenrod and Wild Mint.   |
| Wetland                        | SW, Swamp       | SWD, Deciduous Swamp     | SWD4, Mineral Deciduous Swamp Ecosite                           | SWD4-1, Willow Mineral Deciduous Swamp Type                               | Crack Willow dominates the canopy of this small, narrow swamp type, along with White Birch and Norway Maple. The understory contains many Buckthorn, along with Willow shrubs.   | Ground flora is comprised mostly of Scouring Rush, Norway Maple saplings and Giant Goldenrod, along with Garlic Mustard.   |
| Wetland                        | SW, Swamp       | SWT, Thicket Swamp       | SWT2, Mineral Thicket Swamp Ecosite                             | SWT2-2, Willow Mineral Thicket Swamp Type                                 | A few species of Willow shrubs, ranging from 2m-4m tall, dominate this vegetation type, with much Red-osier Dogwood throughout the shrub layer.  | Ground flora is dominated by Fringed Sedge, along with some Joe-Pye-Weed, Swamp and New England Asters, and some Reed Canary Grass.  |

**Table 1. Ecological Land Classification Vegetation Community Descriptions**

| Ecological Land Classification |                 |                    |                                       |   |  | Ground Cover  |
|--------------------------------|-----------------|--------------------|---------------------------------------|---|--|---|
| System                         | Community Class | Community Series   | Ecosite                               | Vegetation Type   | Composition  |   |
| Wetland                        | MA, Marsh       | MAM, Meadow Marsh  | MAMM1, Graminoid Mineral Meadow Marsh | MAMM1-2, Cattail Graminoid Mineral Meadow Marsh Type      | These two very small vegetation plots lie in the moist hollow between the steep highway embankment to the south and the flood protection berm to the north, just on either side of the concrete spillway. They are dominated by a monoculture of Cattails, and are ringed by Goldenrods. | N/A   |
| Wetland                        | MA, Marsh       | MAM, Meadow Marsh  | MAMM1, Graminoid Mineral Meadow Marsh | MAMM1-12, Common Reed Graminoid Mineral Meadow Marsh Type | This meadow marsh community, at the base of the highway and flood control embankments, is completely dominated by a dense mat of Common Reed Grass.  | N/A   |
| Wetland                        | MA, Marsh       | MAS, Shallow Marsh | MAS2, Mineral Shallow Marsh Ecosite   | MAS2-1, Cattail Mineral Shallow Marsh Type                | There are a few old, coniferous snags located sporadically throughout this marsh, which is dominated by Cattails. Some Willow shrubs poke their branches above the cattails and many Red-osier Dogwoods are hidden within the shrub layer, below the cattail tops.                       | There is no discernable ground layer vegetation due to the density of the Cattails. |



Table 2: Vascular Plant List, Sunnidale Road Sanitary Sewer Relocation

AEC 18-342

| FAMILY <sup>1</sup> | SCIENTIFIC NAME <sup>1</sup>               | COMMON NAME <sup>1</sup> | Vegetation Communities <sup>2</sup> |         |        |        |         |          |         |        |        |        |         | Conservation Rankings <sup>3</sup> |        |       |       |       |   |
|---------------------|--|--------------------------|-------------------------------------|---------|--------|--------|---------|----------|---------|--------|--------|--------|---------|------------------------------------|--------|-------|-------|-------|---|
|                     |  |                          | CUP3-9                              | FOD4-30 | CUT1-1 | CUM1-1 | MAMM1-2 | MAMM1-12 | FOCM6-3 | FOD8-1 | SWT2-2 | SWD4-1 | FODM7-6 | FOD7-3                             | MAS2-1 | GRANK | SRANK | TRACK |   |
| Aceraceae           | <i>Acer platanoides</i>                    | Norway Maple             | X                                   |         |        |        |         |          | X       |        |        |        |         |                                    |        |       | GNR   | SE5   | N |
| Aceraceae           | <i>Acer saccharinum</i>                    | Silver Maple             |                                     |         |        |        |         |          | X       |        | X      |        |         |                                    |        |       | G5    | S5    | N |
| Aceraceae           | <i>Acer saccharum</i>                      | Sugar Maple              |                                     | X       |        |        |         |          | X       |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Aceraceae           | <i>Acer negundo</i>                        | Manitoba Maple           |                                     | X       |        |        |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Anacardiaceae       | <i>Rhus typhina</i>                        | Staghorn Sumac           |                                     | X       | X      |        |         |          | X       |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Apiaceae            | <i>Daucus carota</i>                       | Wild Carrot              |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | GNR   | SE5   | N |
| Apocynaceae         | <i>Apocynum cannabinum</i>                 | Hemp Dogbane             |                                     | X       | X      |        |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Asclepiadaceae      | <i>Asclepias syriaca</i>                   | Common Milkweed          |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Asteraceae          | <i>Eutrochium maculatum var. maculatum</i> | Spotted Joe Pye Weed     |                                     |         |        | X      |         |          | X       |        |        | X      |         | X                                  |        |       | G5T5  | S5    | N |
| Asteraceae          | <i>Taraxacum officinale</i>                | Common Dandelion         |                                     | X       |        |        |         |          |         |        |        |        | X       |                                    |        |       | G5    | SE5   | N |
| Asteraceae          | <i>Symphyotrichum puniceum</i>             | Swamp Aster              |                                     |         |        |        |         |          | X       |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Asteraceae          | <i>Solidago canadensis var. canadensis</i> | Canada Goldenrod         |                                     | X       | X      |        |         |          | X       |        |        |        |         |                                    |        |       | G5T5  | S5    | N |
| Asteraceae          | <i>Symphyotrichum novae-angliae</i>        | New England Aster        |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Asteraceae          | <i>Symphyotrichum lateriflorum</i>         | Calico Aster             |                                     | X       | X      |        |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Asteraceae          | <i>Solidago gigantea</i>                   | Smooth Goldenrod         |                                     | X       | X      |        |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Betulaceae          | <i>Betula papyrifera</i>                   | Paper Birch              |                                     |         |        |        |         |          | X       |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Brassicaceae        | <i>Alliaria petiolaris</i>                 | Wild Garlic Mustard      |                                     | X       |        |        |         |          |         |        |        |        | X       |                                    |        |       | G5    | SE5   | N |
| Cornaceae           | <i>Cornus stolonifera</i>                  | Red-osier Dogwood        |                                     |         |        | X      |         |          | X       | X      |        | X      |         | X                                  |        |       | G5    | S5    | N |
| Rhamnaceae          | <i>Rhamnus cathartica</i>                  | Common Buckthorn         | X                                   |         |        | X      |         |          | X       |        |        | X      | X       |                                    |        |       | GNR   | SE5   | N |
| Cucurbitaceae       | <i>Echinocystis lobata</i>                 | Wild Mock-cucumber       |                                     |         |        |        |         |          |         | X      |        |        | X       |                                    |        |       | G5    | S5    | N |
| Cupressaceae        | <i>Thuja occidentalis</i>                  | Eastern White Cedar      |                                     |         | X      | X      |         |          | X       |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Cupressaceae        | <i>Juniperus virginiana</i>                | Eastern Red Cedar        |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | G5    | S5    | N |
| Cyperaceae          | <i>Carex gracillima</i>                    | Graceful Sedge           |                                     |         |        |        |         |          | X       | X      |        | X      |         |                                    |        |       | G5    | S5    | N |
| Cyperaceae          | <i>Carex crinita</i>                       | Fringed Sedge            |                                     |         |        |        |         |          | X       | X      |        |        |         |                                    |        |       | G5    | S5    | N |
| Equisetaceae        | <i>Equisetum hyemale</i>                   | Common Scouring-rush     |                                     |         |        |        |         |          | X       | X      | X      |        | X       |                                    |        |       | G5    | S5    | N |
| Fabaceae            | <i>Vicia cracca</i>                        | Tufted Vetch             |                                     |         |        |        |         |          | X       | X      |        | X      |         |                                    |        |       | G5T5  | S5    | N |
| Fabaceae            | <i>Robinia pseudoacacia</i>                | Black Locust             |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | G5    | SE5   | N |
| Fabaceae            | <i>Securigera varia</i>                    | Common Crown-vetch       |                                     |         |        | X      |         |          |         |        |        |        |         |                                    |        |       | GNR   | SE5   | N |
| Fabaceae            | <i>Vicia cracca</i>                        | Tufted Vetch             |                                     |         | X      | X      |         |          |         |        |        |        |         |                                    |        |       | GNR   | SE5   | N |

|                  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |       |     |   |
|------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|--|-------|-----|---|
| Fagaceae         | <i>Quercus rubra</i>                       | Northern Red Oak                            |   | X |   |   |   |   | X |   |   |   |   |   |  | G5    | S5  | N |
| Juglandaceae     | <i>Juglans nigra</i>                       | Black Walnut                                |   | X |   |   |   |   | X |   |   |   |   |   |  | G5    | S4? | N |
| Liliaceae        | <i>Convallaria majalis</i>                 | European Lily-of-the-valley                 | X |   |   |   |   |   |   |   |   |   |   |   |  | G5    | SE5 | N |
| Lythraceae       | <i>Lythrum salicaria</i>                   | Purple Loosestrife                          |   |   |   |   | X | X |   |   |   |   |   |   |  | G5    | SE5 | N |
| Oleaceae         | <i>Fraxinus nigra</i>                      | Black Ash                                   |   |   |   |   |   |   |   |   |   |   | X |   |  | G5    | S3  | Y |
| Oleaceae         | <i>Fraxinus americana</i>                  | White Ash                                   |   | X |   |   |   |   | X |   |   |   |   |   |  | G5    | S4  | N |
| Oleaceae         | <i>Syringa vulgaris</i>                    | Common Lilac                                | X |   |   |   |   |   |   |   |   |   |   |   |  | GNR   | SE5 | N |
| Pinaceae         | <i>Pinus sylvestris var sylvestris</i>     | Scots Pine                                  |   | X |   |   |   |   | X |   |   | X | X | X |  | G5    | SE5 | N |
| Pinaceae         | <i>Pinus strobus</i>                       | Eastern White Pine                          |   | X |   |   |   |   |   | X |   |   |   |   |  | G5    | S5  | N |
| Pinaceae         | <i>Pinus resinosa</i>                      | Red Pine                                    |   | X |   |   |   |   |   |   |   |   |   |   |  | G5    | S5  | N |
| Pinaceae         | <i>Picea abies</i>                         | Norway Spruce                               | X |   |   |   |   |   |   |   |   |   |   |   |  | G5    | SE3 | N |
| Plantaginaceae   | <i>Plantago major</i>                      | Common Plantain                             |   | X |   |   |   |   |   |   |   |   |   |   |  | G5    | SE5 | N |
| Poaceae          | <i>Phalaris arundinacea</i>                | Reed Canary Grass                           |   |   |   |   |   |   | X | X |   | X |   |   |  | G5    | S5  | N |
| Poaceae          | <i>Phragmites australis ssp. australis</i> | European Reed                               |   |   |   |   |   | X | X | X |   |   |   |   |  | G5T5  | SE5 | N |
| Poaceae          | <i>Dactylis glomerata</i>                  | Orchard Grass                               |   |   | X | X |   |   |   |   |   |   |   |   |  | GNR   | SE5 | N |
| Poaceae          | <i>Bromus inermis</i>                      | Awnless Brome                               |   |   | X | X |   |   |   |   |   |   |   |   |  | G5TNR | SE5 | N |
| Poaceae          | <i>Poa sylvestris</i>                      | Woodland Bluegrass                          |   | X |   |   |   |   |   |   |   |   |   |   |  | G5    | S1? | Y |
| Poaceae          | <i>Poa compressa</i>                       | Canada Bluegrass                            |   | X |   |   |   |   |   |   |   |   |   |   |  | GNR   | SE5 | N |
| Polygonaceae     | <i>Rumex crispus</i>                       | Curly Dock                                  |   |   |   |   |   |   | X |   |   |   |   |   |  | GNR   | SE5 | N |
| Ranunculaceae    | <i>Anemone virginiana var. virginiana</i>  | Virginia Anemone                            |   |   |   |   |   |   | X |   |   |   |   |   |  | G5T5  | S5? | N |
| Rhamnaceae       | <i>Rhamnus cathartica</i>                  | Common Buckthorn                            | X | X |   |   |   |   |   |   |   |   |   |   |  | GNR   | SE5 | N |
| Rosaceae         | <i>Fragaria virginiana</i>                 | Wild Strawberry                             |   |   | X |   |   |   |   |   |   |   |   |   |  | G5    | S5  | N |
| Rosaceae         | <i>Rubus occidentalis</i>                  | Black Raspberry                             |   | X |   |   |   |   |   |   |   |   |   |   |  | G5    | S5  | N |
| Rosaceae         | <i>Prunus virginiana</i>                   | Choke Cherry                                | X |   |   |   |   |   |   |   |   |   |   |   |  | G5    | S5  | N |
| Rosaceae         | <i>Fragaria virginiana</i>                 | Wild Strawberry                             |   |   | X | X |   |   |   |   |   |   |   |   |  | G5    | S5  | N |
| Salicaceae       | <i>Salix x fragilis</i>                    | ( <i>Salix alba</i> X <i>Salix euxina</i> ) |   |   |   |   |   |   |   | X |   |   | X |   |  | GNR   | SE4 | N |
| Salicaceae       | <i>Salix eriocephala</i>                   | Heart-leaved Willow                         |   |   |   |   |   |   |   | X | X |   |   |   |  | G5    | S5  | N |
| Salicaceae       | <i>Populus tremuloides</i>                 | Trembling Aspen                             |   | X |   |   |   |   | X |   |   |   |   |   |  | G5    | S5  | N |
| Salicaceae       | <i>Salix spp</i>                           | Willow species                              |   |   |   | X |   |   |   | X | X |   | X |   |  | G5    | S5  | N |
| Scrophulariaceae | <i>Veronica officinalis</i>                | Common Speedwell                            |   |   |   |   |   |   | X |   |   |   |   |   |  | G5    | SE5 | N |
| Scrophulariaceae | <i>Linaria vulgaris</i>                    | Butter-and-eggs                             |   |   | X | X |   |   |   |   |   |   |   |   |  | GNR   | SE5 | N |
| Tiliaceae        | <i>Tilia americana</i>                     | American Basswood                           |   |   |   |   |   |   | X |   |   |   |   |   |  | G5    | S5  | N |
| Typhaceae        | <i>Typha x glauca</i>                      | Hybrid Cattail                              |   |   |   |   | X |   |   |   |   |   |   | X |  | GNA   | SE5 | N |
| Ulmaceae         | <i>Ulmus americana</i>                     | American Elm                                |   |   |   |   |   |   | X |   |   |   |   | X |  | G5?   | S5  | N |

|             |                               |                 |   |   |   |  |  |   |  |  |  |  |  |  |  |     |     |   |
|-------------|-------------------------------|-----------------|---|---|---|--|--|---|--|--|--|--|--|--|--|-----|-----|---|
| Ulmaceae    | <i>Ulmus pumila</i>           | Siberian Elm    | X | X | X |  |  |   |  |  |  |  |  |  |  | GNR | SE3 | N |
| Verbenaceae | <i>Verbena hastata</i>        | Blue Vervain    |   |   |   |  |  | X |  |  |  |  |  |  |  | G5  | S5  | N |
| Vitaceae    | <i>Parthenocissus inserta</i> | Thicket Creeper |   |   | X |  |  |   |  |  |  |  |  |  |  | G5  | S5  | N |
| Vitaceae    | <i>Vitis riparia</i>          | Riverbank Grape | X |   |   |  |  |   |  |  |  |  |  |  |  | G5  | S5  | Y |

<sup>1</sup> Conservation Rank and Status Information from OMNRF, Natural Heritage Information Centre

**SRANK DEFINITIONS**

- S1** **Critically Imperiled** — Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province or state
- S2** **Imperiled** — Imperiled in the province or state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province or state
- S3** **Vulnerable** — Vulnerable in the province or state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation
- S4** **Apparently Secure** — Uncommon but not rare; some cause for long-term concern due to declines or other factors
- S5** **Secure** — Common, widespread, and abundant in the nation or state/province
- S#S#** **Range Rank** — Used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
- SNR** **Unranked** — Province or state conservation status not yet assessed
- SU** **Unrankable** — Currently unrankable due to lack of information or due to substantially conflicting information about status or trends
- SNA** **Not Applicable** — A conservation status rank is not applicable because the species is not a suitable target for conservation activities
- SE** **Exotic Species** — Not native to Ontario

**Table 3. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name            | Scientific Name                 | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|------------------------|---------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Amphibian         | Jefferson Salamander   | <i>Ambystoma jeffersonianum</i> | END         | Deciduous forests with vernal pools/pond within or adjacent. Generally associated with Niagara Escarpment                 | No  | No                             | No  | No                                    |
| Bird              | Henslow's Sparrow      | <i>Ammodramus henslowii</i>     | END         | Large grasslands  | No  | No                             | No  | No                                    |
| Bird              | Loggerhead Shrike      | <i>Lanius ludovicianus</i>      | END         | Alvars, large pasturelands with shrub cover   | No  | No                             | No  | No                                    |
| Bird              | King Rail              | <i>Rallus elegans</i>           | END         | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Piping Plover          | <i>Charadrius melodus</i>       | END         | Dry sandy or gravelly beaches along wetlands, rivers, or lakes  | No  | No                             | No  | No                                    |
| Bird              | Cerulean Warbler       | <i>Dendroica cerulea</i>        | THR         | Large blocks of continuous forest/swamp cover   | No  | No                             | No  | No                                    |
| Bird              | Eastern Meadowlark     | <i>Sturnella magna</i>          | THR         | Grasslands  | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Barn Swallow           | <i>Hirundo rustica</i>          | THR         | Grasslands, pastures, graminoid and other open wetlands   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Bank Swallow           | <i>Riparia riparia</i>          | THR         | Riparian habitat with sand banks for nesting  | No  | No                             | No  | Potentially                           |
| Bird              | Bobolink               | <i>Dolichonyx oryzivorus</i>    | THR         | Grasslands  | Yes   | Yes                            | No  | No                                    |
| Bird              | Eastern Whip-poor-will | <i>Caprimulgus vociferus</i>    | THR         | Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover. | Yes   | No                             | No  | No                                    |
| Bird              | Least Bittern          | <i>Ixobrychus exilis</i>        | THR         | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Louisiana Waterthrush  | <i>Seiurus motacilla</i>        | THR         | Mature forest associated with rivers  | No  | No                             | No  | No                                    |
| Bird              | Chimney Swift          | <i>Chaetura pelagica</i>        | THR         | Typically built features (chimneys, buildings), also caves, or tree cavities in old growth forests                        | No  | Yes                            | No  | Potentially                           |
| Bird              | Eastern Wood-pewee     | <i>Contopus virens</i>          | SC          | Forests, treed swamps   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Wood Thrush            | <i>Hylocichla mustelina</i>     | SC          | Forests, treed swamps   | Yes   | Yes                            | No  | Potentially                           |
| Bird              | Golden-winged Warbler  | <i>Vermivora chrysoptera</i>    | SC          | Shrublands/thickets, forest edges   | Yes   | Yes                            | No  | No                                    |
| Bird              | Grasshopper Sparrow    | <i>Ammodramus savannarum</i>    | SC          | Large grasslands  | No  | Yes                            | No  | No                                    |
| Bird              | Common Nighthawk       | <i>Chordeiles minor</i>         | SC          | Open woodlands (scattered tree cover), rock barrens and similar habitats providing mix of open land and shrub/tree cover. | Yes   | No                             | No  | No                                    |
| Bird              | Black Tern             | <i>Chlidonias niger</i>         | SC          | Large marsh wetlands  | No  | No                             | No  | No                                    |
| Bird              | Bald Eagle             | <i>Haliaeetus leucocephalus</i> | SC          | A variety of habitats adjacent a major lake or river.   | No  | No                             | No  | No                                    |

**Table 3. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                | Scientific Name                     | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|----------------------------|-------------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Bird              | Canada Warbler             | <i>Cardellina canadensis</i>        | SC          | Breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer - generally associated with the southern shield/boreal shield.   | Yes   | No                             | No  | No                                    |
| Bird              | Olive-sided Flycatcher     | <i>Contopus cooperi</i>             | SC          | Breeding occurs within coniferous or mixed forests adjacent rivers or wetlands. More often present along forest edges and clearings, including recently logged/burned areas.  | Yes   | No                             | No  | No                                    |
| Bird              | Red-headed Woodpecker      | <i>Melanerpes erythrocephalus</i>   | SC          | Open woodlands, woodland edges, parks, golf courses and cemeteries  | Yes   | No                             | No  | No                                    |
| Bird              | Short-eared Owl            | <i>Asio flammeus</i>                | SC          | Open areas such as grasslands and marshes. Preference for prairies and savannahs.   | No  | No                             | No  | No                                    |
| Bird              | Yellow Rail                | <i>Coturnicops noveboracensis</i>   | SC          | Shallow wetlands containing reeds, sedges and marshy areas with overlying dry mats of dead vegetation.  | No  | No                             | No  | No                                    |
| Fish              | American Eel               | <i>Anguilla rostrata</i>            | END         | In Ontario, connecting waterbodies from the Great Lakes as far inland as Algonquin Park.  | No  | No                             | No  | No                                    |
| Fish              | Lake Sturgeon              | <i>Acipenser fulvescens</i>         | THR         | Georgian Bay and connected rivers   | No  | No                             | No  | No                                    |
| Fish              | Grass Pickerel             | <i>Esox americanus vermiculatus</i> | SC          | Coastal wetlands in the Great Lakes and tributaries or Lake St. Clair, Lake Erie, Lake Huron, the Niagara River, Lake Ontario and the St. Lawrence River, and inland in the Severn River system.  | No  | No                             | No  | No                                    |
| Fish              | Northern Brook Lamprey     | <i>Ichthyomyzon fossor</i>          | SC          | Rivers draining into Lake Superior, Huron and Erie, and the Ottawa River.   | No  | No                             | No  | No                                    |
| Insect            | Hine's Emerald (Dragonfly) | <i>Somatochlora hineana</i>         | END         | Hine's Emeralds rely on slow-moving, calcareous water with emergent vegetation for egg-laying and larval development. These conditions are associated with fens, marshes or areas where groundwater rises to the surface. Only known to occur in Minesing Wetland | No  | No                             | No  | No                                    |

**Table 3. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                    | Scientific Name                | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|--------------------------------|--------------------------------|-------------|---|---|--------------------------------|---|---------------------------------------|
| Insect            | Lake Huron Grasshopper         | <i>Trimerotropis huroniana</i> | THR         | Lives exclusively in open dune habitat along the shores of Lake Huron, Lake Michigan and Lake Superior.   | No  | No                             | No  | No                                    |
| Insect            | Monarch                        | <i>Danaus plexippus</i>        | SC          | Caterpillars are confined to meadows and open areas containing milkweed. Adults are widespread, favouring areas with wildflowers.                               | Yes   | Yes                            | No  | Yes                                   |
| Insect            | West Virginia White            | <i>Pieris virginiensis</i>     | SC          | Moist deciduous woodlots containing the plant, Toothwort.   | No  | No                             | No  | No                                    |
| Mammal            | Little Brown Myotis            | <i>Myotis lucifugus</i>        | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity colony - typically buildings (attics, etc.) but occasionally in tree cavities.               | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Northern Myotis                | <i>Myotis septentrionalis</i>  | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - tree cavities.   | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Tri-colored Bat                | <i>Perimyotis subflavus</i>    | END         | Winter hibernation - caves, abandoned mines, etc.. Summer - day roosts and maternity colonies in older forest and occasionally in barns or other structures.    | Yes - snag trees  | Yes                            | Not Assessed                                | Potentially                           |
| Mammal            | Eastern Small-footed Bat       | <i>Myotis leibii</i>           | END         | Winter hibernation - caves, abandoned mines, etc. Summer maternity roost - talis slopes, rock outcrops.   | No  | No                             | No  | No                                    |
| Mammal            | American Badger                | <i>Taxidea taxus</i>           | END         | Variety of habitats providing small prey ( <i>i.e.</i> groundhogs, rabbits, small rodents) with a preference for tall grass prairie, sand barrens and farmland. | No  | No                             | No  | No                                    |
| Plant             | Butternut                      | <i>Juglans cinerea</i>         | END         | Forests, fencerows  | Yes   | Yes                            | No  | No                                    |
| Plant             | Forked Three-awned grass       | <i>Aristida basiramea</i>      | END         | Grasslands, open lands, trails (localized distribution)   | Yes   | No                             | No  | No                                    |
| Plant             | Eastern Prairie Fringed-orchid | <i>Platanthera leucophaea</i>  | END         | Grasslands, wet meadows, alvars, fens   | No  | No                             | No  | No                                    |
| Plant             | American Ginseng               | <i>Panax quinquefolius</i>     | END         | Mature forest cover   | No  | No                             | No  | No                                    |
| Plant             | Spotted Wintergreen            | <i>Chimaphila maculata</i>     | END         | Dry oak-pine woodlands with sandy soils.  | No  | No                             | No  | No                                    |
| Plant             | Englemann's Quillwort          | <i>Isoetes engelmannii</i>     | END         | Grows in shallow water in lakes and rivers (Severn River).  | No  | No                             | No  | No                                    |

**Table 3. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name                                      | Scientific Name                                       | SARO Status | Habitat Requirements <sup>2</sup>   | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|--|---|-------------|---|---|--------------------------------|---|---------------------------------------|
| Plant             | Hill's Thistle                                   | <i>Cirsium hillii</i>                                 | THR         | Open areas such as prairie, sand dunes and alvar grasslands surrounded by coniferous forests.   | No  | No                             | No  | No                                    |
| Plant             | Broad Beech Fern                                 | <i>Phegopteris hexagonoptera</i>                      | SC          | Prefers rich, undisturbed deciduous forest, particularly mature beech-maple forests, typically occurs in moister situations such as lower valley slopes, bottomlands and even swamps. | No  | No                             | No  | No                                    |
| Plant             | American Hart's-tongue Fern                      | <i>Asplenium scolopendrium</i> var. <i>americanum</i> | SC          | Moist deciduous forests, generally associated with Niagara Escarpment.  | No  | No                             | No  | No                                    |
| Reptile           | Spotted Turtle                                   | <i>Clemmys guttata</i>                                | END         | Wetlands with open water  | No  | No                             | No  | No                                    |
| Reptile           | Wood Turtle                                      | <i>Glyptemys insculpta</i>                            | END         | Clear rivers, streams or creeks with a sandy or gravelly bottom. Preference for wooded areas but have also been found in wet meadows, swamps and fields.                              | No  | No                             | No  | No                                    |
| Reptile           | Massasauga (Great Lakes-St. Lawrence Population) | <i>Sistrurus catenatus</i>                            | END         | Wide variety of habitats: tall grass prairie, bogs, marshes, shorelines, forests and forest clearings, alvars, rock barrens, and grasslands   | Yes   | No                             | No  | No                                    |
| Reptile           | Blanding's Turtle                                | <i>Emydoidea blandingii</i>                           | THR         | Wetlands with open water  | No  | Yes                            | No  | No                                    |
| Reptile           | Eastern Hog-nosed Snake                          | <i>Heterodon platirhinos</i>                          | THR         | Forests, sand barrens and wetlands providing breeding habitat for primary prey (i.e., American Toad and other amphibians)   | Yes   | No                             | No  | No                                    |
| Reptile           | Eastern Foxsnake (Georgian Bay Population)       | <i>Pantherophis gloydi</i>                            | END         | Rocky habitats with trees and shrubs within, usually within 150 m of a shoreline  | No  | No                             | No  | No                                    |
| Reptile           | Snapping Turtle                                  | <i>Chelydra serpentina</i>                            | SC          | Lakes, ponds, marshes and slow moving rivers, various wetlands with open water  | Yes   | Yes                            | No  | No                                    |
| Reptile           | Eastern Ribbonsnake                              | <i>Thamnophis sauritus</i>                            | SC          | Wetlands with open water  | No  | No                             | No  | No                                    |
| Reptile           | Northern Map Turtle                              | <i>Graptemys geographica</i>                          | SC          | Lakes   | No  | No                             | No  | No                                    |
| Reptile           | Eastern Musk Turtle                              | <i>Sternotherus odoratus</i>                          | SC          | Ponds, lakes, marshes and rivers with an abundance of emergent vegetation and muddy bottoms   | No  | No                             | No  | No                                    |
| Reptile           | Five-lined Skink (Georgian Bay Population)       | <i>Plestiodon fasciatus</i>                           | SC          | Shorelines, rock barrens.   | No  | Yes                            | No  | No                                    |

**Table 3. Species At Risk Assessment, Sunnidale Road Sanitary Sewer Relocation, Barrie, ON - 2019**

| Taxa <sup>1</sup> | Common Name | Scientific Name | SARO Status | Habitat Requirements <sup>2</sup> | Habitat Within or Adjacent to Site of Proposed Development? | Reported Locally? <sup>3</sup> | Detected During Field Surveys? <sup>4</sup> | Issue Affecting Proposed Development? |
|-------------------|-------------|-----------------|-------------|-----------------------------------|---|--------------------------------|---|---------------------------------------|
|-------------------|-------------|-----------------|-------------|-----------------------------------|---|--------------------------------|---|---------------------------------------|

<sup>1</sup>Comprehensive list compiled based on Species at Risk in Simcoe County - MNRF, Midhurst District (October 19, 2017)

<sup>2</sup>Based on the SARO List descriptions (<https://www.ontario.ca/page/species-risk-ontario>)

<sup>3</sup>Based on following sources: Species at Risk Ontario (<https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>); Land Information Ontario (<https://www.ontario.ca/page/land-information-ontario>); Make a Natural Heritage Map - Natural Heritage Information Centre ([http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR\\_NHLUPS\\_NaturalHeritage&viewer=NaturalHeritage&locale=en-US](http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US)); Ontario Breeding Bird Atlas (<http://www.birdsontario.org/atlas/maps.jsp?lang=en>); Ontario Reptile and Amphibian Atlas (<https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/>), eBird (<https://ebird.org/explore>); Fisheries and Oceans Canada (<http://www.dfo-mpo.gc.ca/species-especies/index-eng.htm>); Fish Online (<https://www.gisapplication.lrc.gov.on.ca/FishONLine/Index.html?site=FishONLine&viewer=FishONLine&locale=en-US>); Ontario Butterfly Atlas ([http://www.ontarioinsects.org/atlas\\_online.htm](http://www.ontarioinsects.org/atlas_online.htm)); and Atlas of the Mammals of Ontario (Dobbyn, J. 1994. Federation of Ontario Naturalists).

<sup>4</sup>Based on field survey on November 8, 2018.





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## APPENDICES

- Appendix A: LSRCA Regulated Lands**
  - Appendix B: MNRF Natural Heritage System**
  - Appendix C: City of Barrie Schedule A Land Use Map**
  - Appendix D: MNRF and Simcoe County Wetland Maps**
  - Appendix E: Simcoe County Woodland Cover Map**
  - Appendix F: NHIC SAR Data Query**
  - Appendix G: Photographs of Study Site**
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**APPENDIX A**








**LSRCA Regulated Lands**

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Features

-  Regulation Map Index
-  LSRCA Watershed Boundary
-  Lake Simcoe
-  Watercourse
-  Regulated Area Boundary
-  Regulated Area
-  Assessment Parcel



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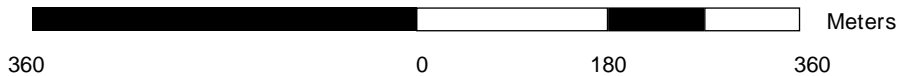


WGS\_1984\_Web\_Mercator\_ Auxiliary\_Sphere

Mapped By: S.A.M.

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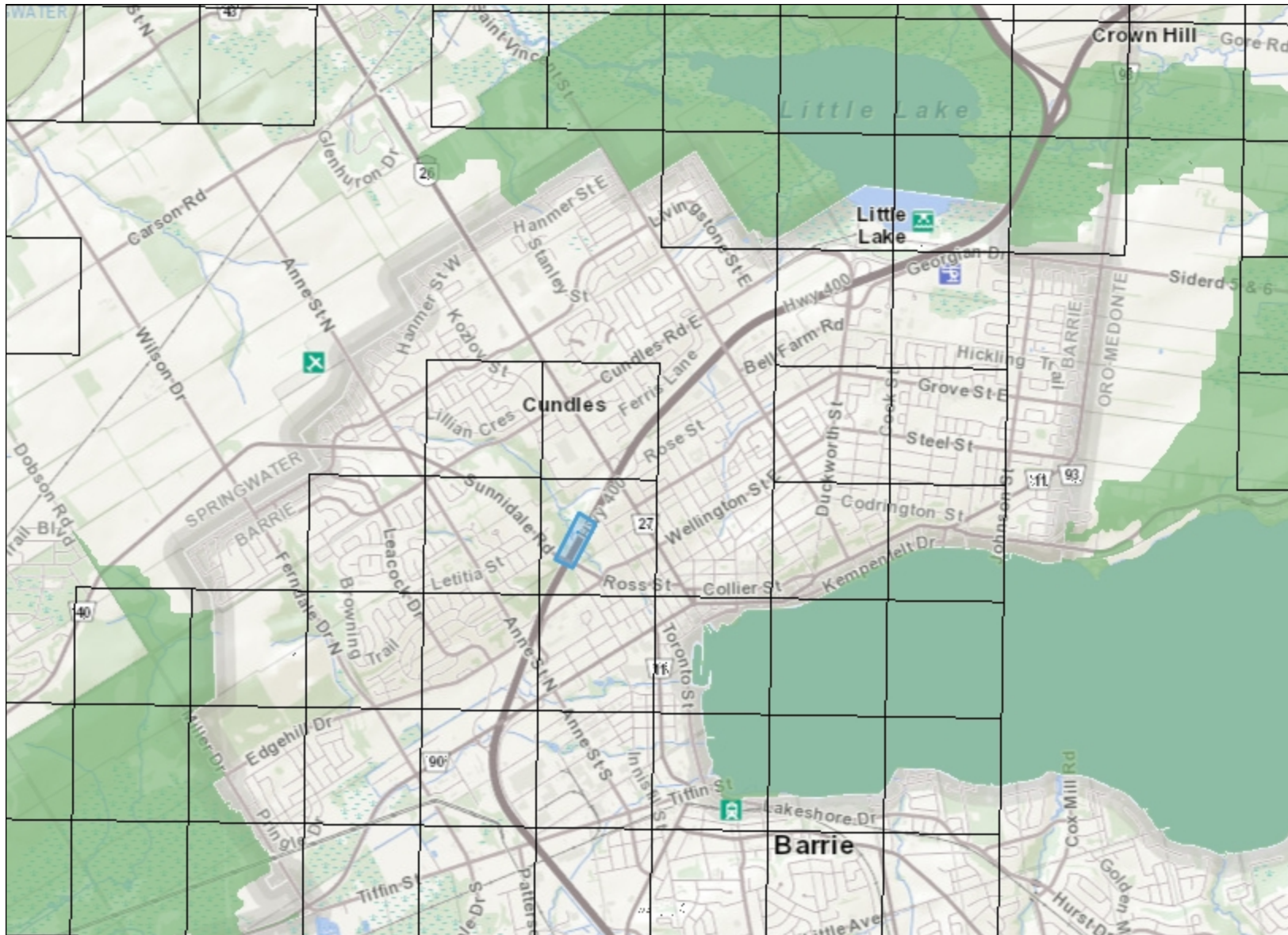
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**APPENDIX B**

**MNRF Natural Heritage System**

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## Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion
- Wetland**
  - Provincially Significant Wetland Evaluated
  - Non - Provincially Significant Wetland Evaluated
  - Unevaluated Wetland
- Area of Natural Heritage & Scientific Interest (ANSI)**
  - Provincially Significant Life Science ANSI
  - Provincially Significant Earth Science ANSI
- Greenbelt Plan**
  - Boundary
  - River Valley Connections
- Land Use Designations**
  - Protected Countryside
  - Towns and Villages
  - Hamlets
  - Urban River Valley
  - Specialty Crop Area
- Niagara Escarpment Plan (NEP)**
  - Boundary
  - Parks and Open Space System
- Land Use Designations**
  - Escarpment Natural Area
  - Escarpment Protection Area
  - Escarpment Rural Area
  - Mineral Resource Extraction Area
  - Escarpment Recreation Area
  - Urban Area
  - Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)**
  - Boundary
- Land Use Designations**
  - Natural Core Area
  - Natural Linkage Area
  - Countryside Area
  - Rural Settlement
  - Paigrave Estates Residential Community
  - Settlement Area



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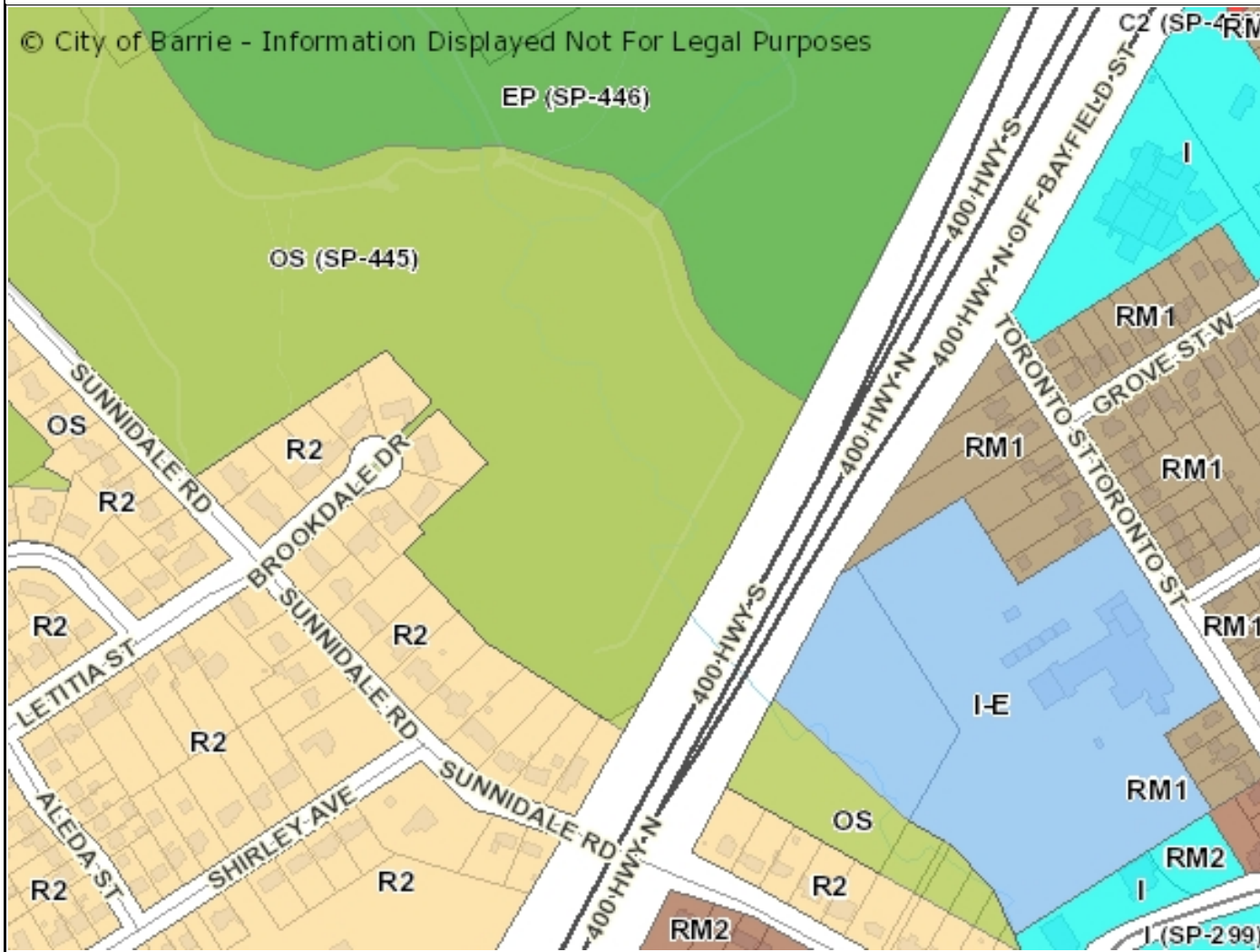
**APPENDIX C**

**City of Barrie Schedule A Land Use Map**

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Legend

- Business\_v7
- Barrie Roads
- Roads
- ROAD CLASS
- Arterial Roads
- Highway / Expressway
- Surrounding Roads
- Roads
- TYPE
- Expressway / Highway
- Freeway
- ↔ Railways
- Zoning By-Law
- Central Area Commercial (C1, C1-1, C1-2)
- Transition Centre Commercial (C2, C2-1, C2-2)
- Shopping Centre Commercial (C3)
- General Commercial (C4)
- Convenience Commercial (C5)
- Mixed Use Node (MU1)
- Mixed Use Corridor (MU2)
- Neighbourhood Mixed Use (NMMU)
- Residential Hold (RH)
- Residential Single Detached Dwelling First Density (R1)
- Residential Single Detached Dwelling Second Density (R2, R2-WS)
- Residential Single Detached Dwelling Third Density (R3, R3-WS)
- Residential Single Detached Dwelling Fourth Density (R4, R4-WS)
- Neighbourhood Residential (R5)
- Residential Apartment Dwelling First Density (RA1, RA1-1, RA1-2, RA1-3)
- Residential Apartment Dwelling Second Density (RA2, RA2-1, RA2-2)
- Residential Multiple Dwelling First Density (RM1, RM1-SS, RM1-WS)
- Residential Multiple Dwelling Second Density (RM2, RM2-TH, RM2-TH WS)
- RM3, Neighbourhood Multiple Residential
- Institutional (I)
- Educational Institutional (I-E)
- Major Institutional (I-M, I-M-1)
- Open Space (OS)
- Environmental Protection Area (EP)
- Agriculture (A)
- Business Park (BP)
- Highway Industrial (HI)
- Light Industrial (LI)
- General Industrial (GI)
- Restrictive Industrial (RI)
- Municipal Services and Utilities (MSU)
- Refer to Zoning By-law 054-04 Innisfil
- Highway Exit Numbers
- Town Names
- Barrie Boundary
- Surrounding Boundaries
- Surrounding Areas
- Water Course
- Building Outlines
- Parking Lots
- Parking Lots - Parks
- Lakes
- Parks and Natural Areas
- Barrie Lands
- Municipal Boundaries
- Surrounding Areas

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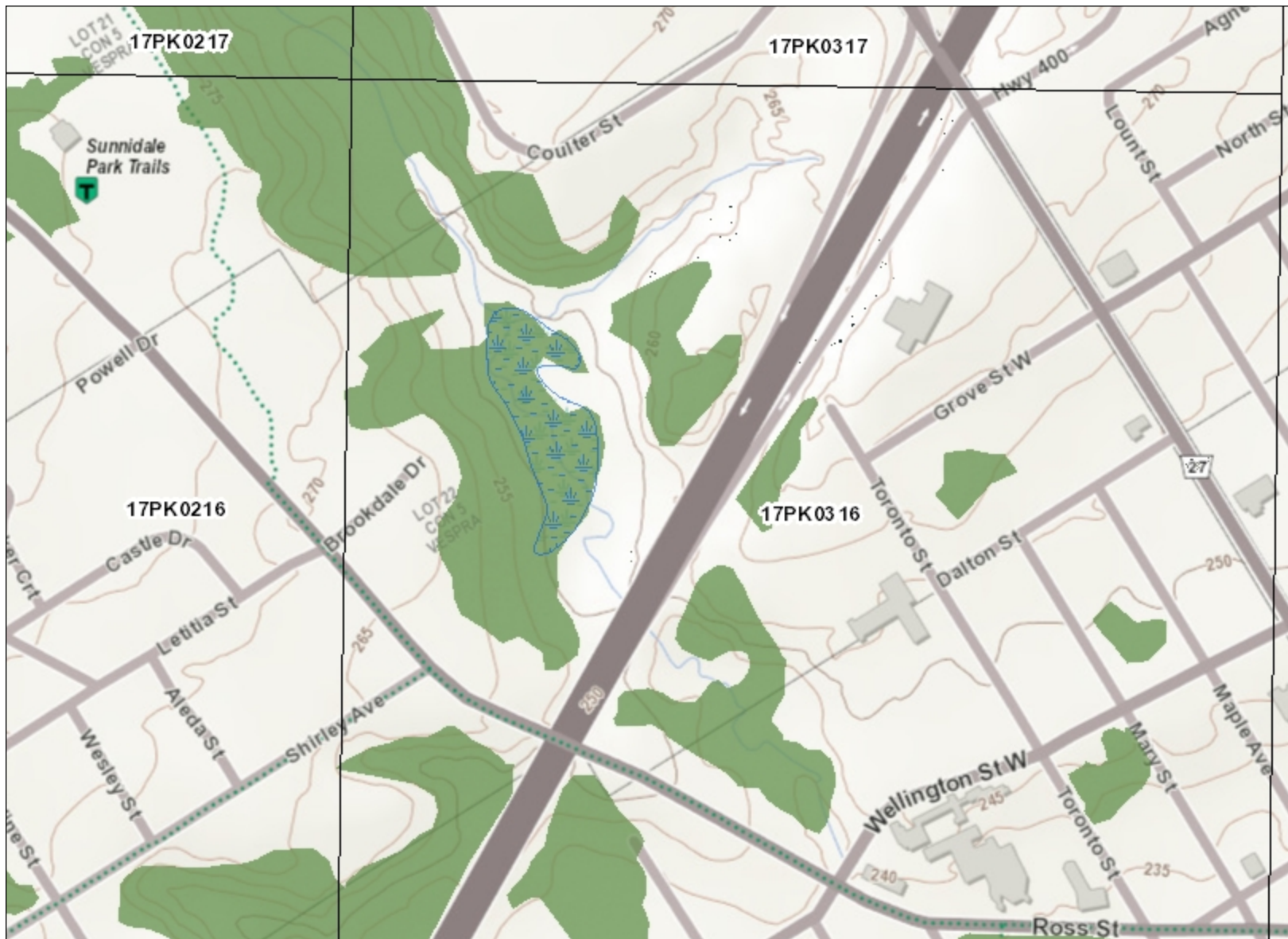
**APPENDIX D**

**MNRF and Simcoe County Wetland Maps**

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### Legend

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion

#### Wetland

- Provincially Significant Wetland Evaluated
- Non - Provincially Significant Wetland Evaluated
- Unevaluated Wetland

#### Area of Natural Heritage & Scientific Interest (ANSI)

- Provincially Significant Life Science ANSI
- Provincially Significant Earth Science ANSI

#### Greenbelt Plan

- Boundary
- River Valley Connections

#### Land Use Designations

- Protected Countryside
- Towns and Villages
- Hamlets
- Urban River Valley
- Specialty Crop Area

#### Niagara Escarpment Plan (NEP)

- Boundary
- Parks and Open Space System

#### Land Use Designations

- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Mineral Resource Extraction Area
- Escarpment Recreation Area
- Urban Area
- Minor Urban Centre

#### Oak Ridges Moraine Conservation Plan (ORM)

- Boundary
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement
- Paigrave Estates Residential Community
- Settlement Area



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# Sunnidale Road Sanitary Sewer Relocation: Simcoe Cnty.



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0 0.05 0.1 0.2 km

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January 14, 2019



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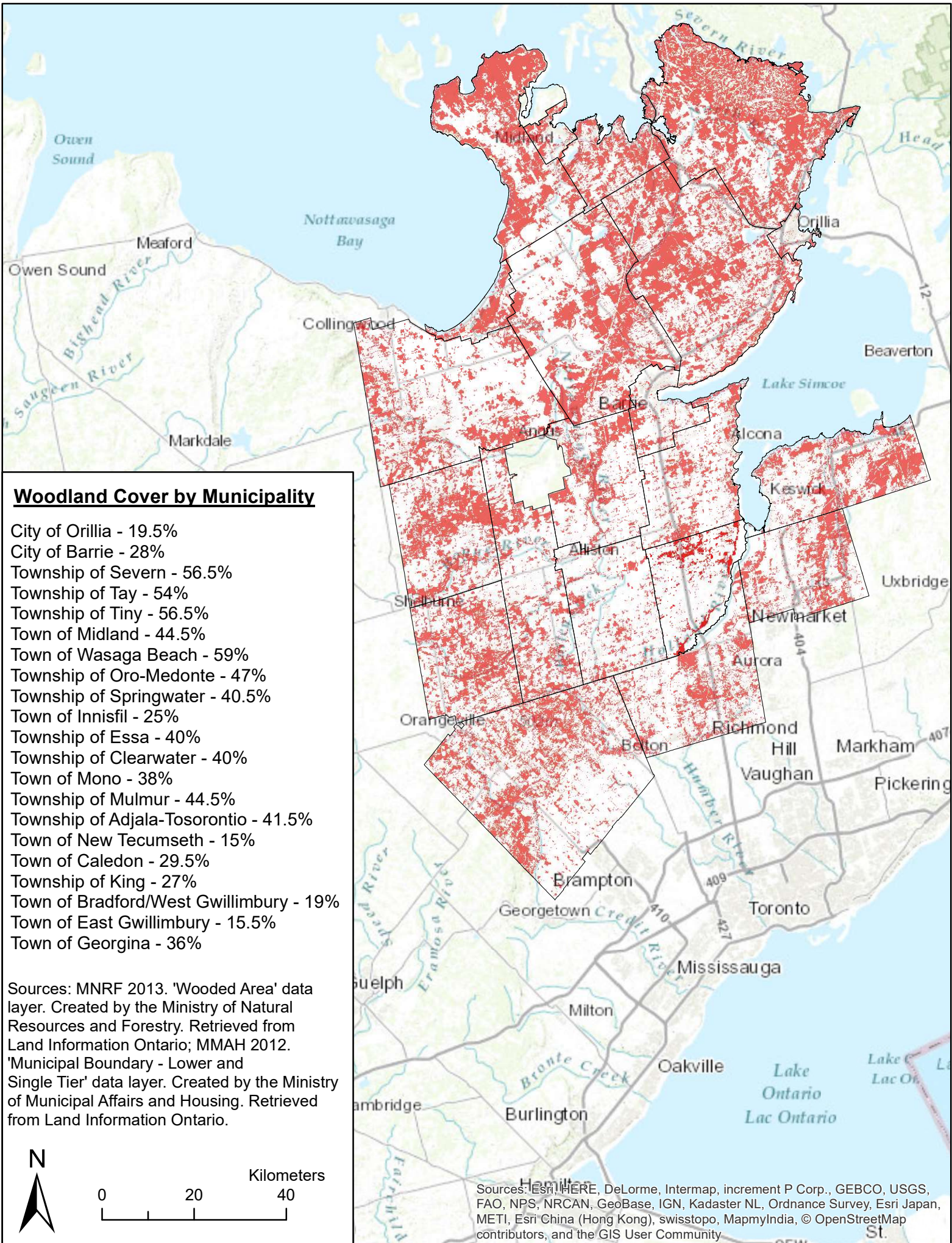
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**APPENDIX E**

**Simcoe County Woodland Cover Map**

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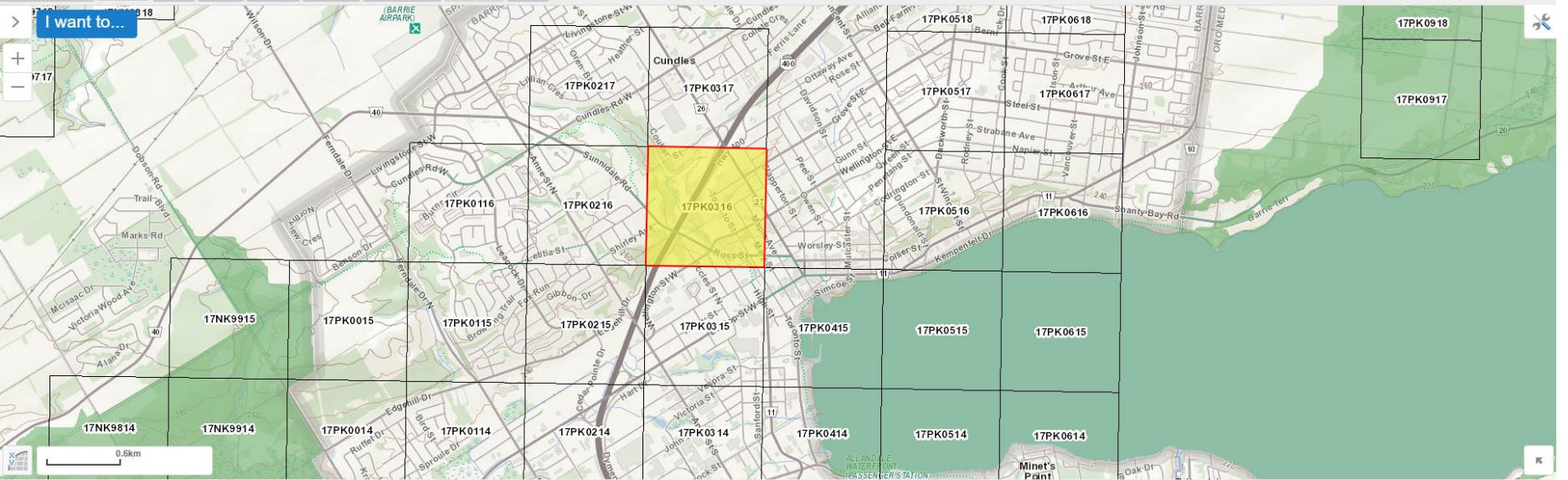
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**APPENDIX F**

**NHIC SAR Data Query**

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NHIC Data -- Grid ID = 1008270

| Element Type | Common Name          | Scientific Name    | SRank | SARO Status | COSEWIC Status | Last Obs Date | EO ID  | Details URL   |
|--------------|----------------------|--------------------|-------|-------------|----------------|---------------|--------|---|
| SPECIES      | Houghton's Flatsedge | Cyperus houghtonii | S3    |             |                | 1972-08-08    | 59354  | <a href="http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=59354">http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=59354</a>       |
| SPECIES      | Eastern Wood-pewee   | Contopus virens    | S4B   | SC          | SC             |               | 180294 | <a href="http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=180294.1">http://nhic.mnr.gov.on.ca/reports/public_details.php?source=1kmgriddetail&amp;nhic_eo_id=180294.1</a> |



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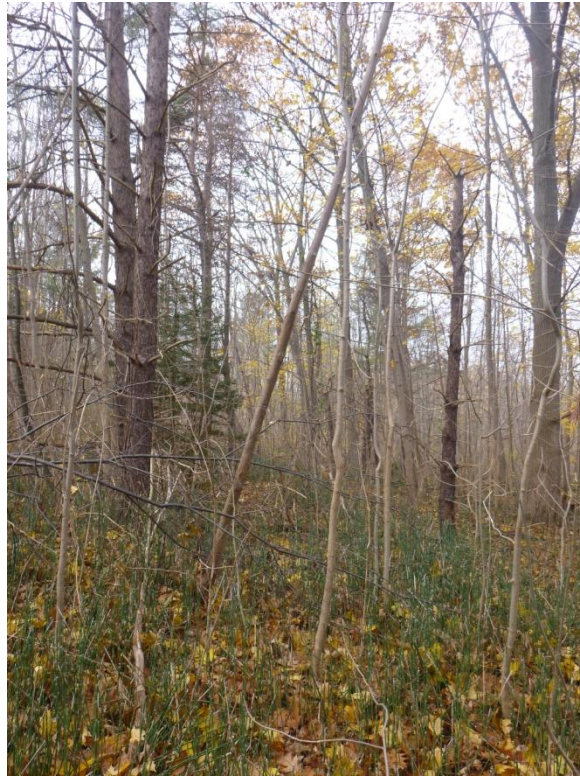
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**APPENDIX G**

**Photographs of Study Site**

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FOCM6-3 Dry-Fresh Scotch Pine Naturalized Coniferous Plantation Type



CUT1-1 Sumac Cultural Thicket Type





MAMM1-2 and MAMM1-12 (Cattail Meadow Marsh and Common Reed Grass Meadow Marsh) along highway



CUM1-1 Cultural Meadow along crest and sides of berm



FOD8-1 Fresh-Moist Poplar Deciduous Forest Type



MAS2-1(Cattail Shallow Marsh) and SWT2-2 (Willow Thicket Swamp Types



FOD7-3 Fresh-Moist Willow Lowland Deciduous Forest Type



FODM7-6 Fresh-Moist Black Ash – Hardwood Lowland Deciduous Forest Type



FOD4-30 Dry-Fresh Black Walnut – Norway Maple Deciduous Forest Type



Potential Bat Snag #1