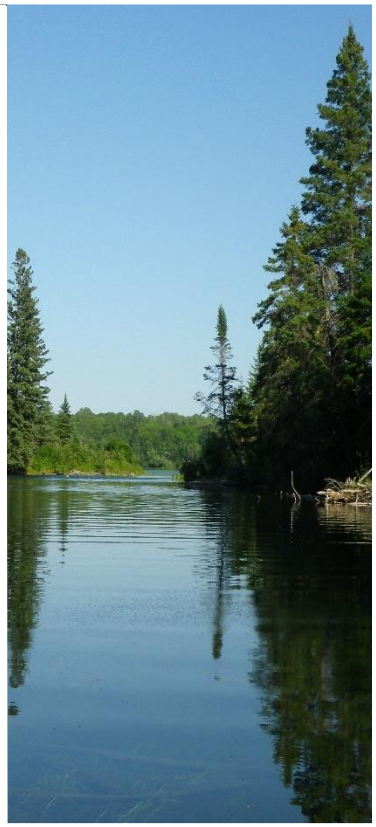
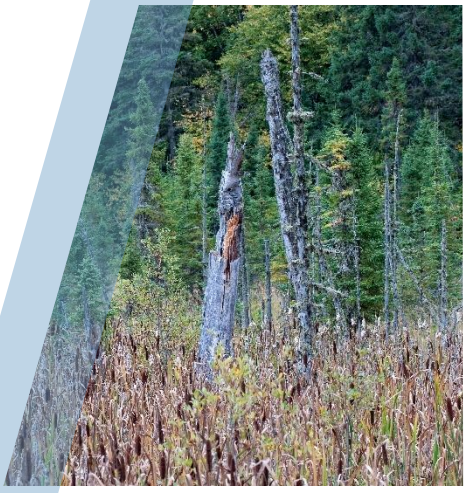
Environmental Impact Study

Trails Edge Development: North/Phase 5

Part Lots 1 & 2, Concession 3
City of Ottawa

Richcraft Group of Companies





Executive Summary

GHD Limited (GHD) was retained by Richcraft Group of Companies to complete an Environmental Impact Statement report for the proposed Trails Edge North development. The proposed development is located north of the hydro corridor. The property is bounded by the hydro corridor to the South, Mer Bleue Road to the east, commercial development to the north and Glenview's development to the west. The development also surrounds the City of Ottawa snow disposal facility.

GHD had completed an EIS for the East Urban Community concept plans for Richcraft and Minto, which included biological inventories on these lands in 2002. The development proposed at the time and since constructed is the Trails Edge West and Phases 2, 3 and 4.

A Natural Environment Existing Conditions Report was prepared by GHD for the East Urban Community (EUC) lands that fall within an area requiring a Community Design Plan (CDP) prior to development. Natural environmental surveys and background research were conducted by NEA (now GHD Limited) over multiple site assessments to inventory vegetation, birds, mammals, reptiles amphibians, fish and their habitat in 2012 and 2013. Additional surveys were conducted in 2017, 2018 and 2019 on bats, reptiles and butternut.

The study area was generally flat with mostly former agricultural fields that have regenerated in early successional species. A majority of the site was fields, with swamp and woodland pockets. A rock barren was identified south of Innes Park Woods.

The proposed development will not result in negative impacts on the identified natural heritage features or their functions, provided the measures described in Sections 5 and 7 are implemented.

GHD's recommendations have been made to address potential impacts to natural heritage features and/or their functions during site preparation, construction and post-construction periods. Additional dialogue with the MECP is required to ensure compliance with the Endangered Species Act. As well, discussions are required with the conservation authority regarding the wetlands. The extension of Frank Bender Street will also require especial construction to allow for snake passages under the roadway.

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1. Introduction

1.1 Background

GHD Limited (GHD) was retained by Richcraft Group of Companies to complete an Environmental Impact Statement report for the north portion of the proposed Trails Edge development. The proposed development is located north of the Phase 4 development. The property is bounded by Mer Bleue Road to the east and lands south of the commercial plaza on Innes Road, east of Glenview's development and north of the hydro corridor and future transit way.

GHD had completed an EIS for the Trail's Edge development for Richcraft and Minto, which included biological inventories on these lands in 2002. The development proposed at the time and since constructed is the Trails Edge West development. Another EIS had also been completed for Richcraft in August 2020 for the Trails Edge Phase 4 development, located south of the hydro corridor and Brian Coburn Boulevard.

A Natural Environment Existing Conditions Report was prepared by GHD for the East Urban Community (EUC) lands that fall within an area requiring a Community Design Plan (CDP) prior to development. Natural environmental surveys and background research were conducted by GHD Limited over multiple site assessments to inventory vegetation, birds, mammals, herptiles, fish and their habitat in 2012 and 2013, 2014, 2017, 2018, and 2019.

An Environmental Impact Statement was also completed for the Trails Edge East property as it contained a natural feature (watercourse) as identified in Schedule L1 in the City of Ottawa Official Plan (2003). Natural environmental surveys over multiple site assessments, background research including a review of GHD's existing report as mentioned above were reviewed.

1.2 Location and Study Area

The subject lands encompass approximately 100 ha. The study area includes the subject lands (as defined above) as well and all natural features within 120 meters. This includes any woodlots, wetlands and/or watercourses found in the adjacent lands.

The study area consisted of a large area containing cultural meadows, numerous deciduous woodlots, wetlands and rock barrens.

Extensive works have and are occurring in the area including construction of Brian Coburn Parkway, widening of Mer Bleue Road, subdivision development to the east of Mer Bleue Road, commercial developments to the north and construction of Trails' Edge West development final phases and a new school on Renaud Road.

MTM ZONE 9, NAD83

CA-PET-11217236

FIGURE 1.1 - NATURAL FEATURES, VEGETATION COMMUNITIES, SURVEYS & CONSTRAINTS

ELC TYPES - 1ST APPROXIMATION

Ecological Land Classification for Southern Ontario: First Approximation and Its Application

ELC CODE	ECOSITE/VEG TYPE DESCRIPTION
CUM1-1	Dry-moist Old Field Meadow
FOD2-1	Dry-fresh oak-red maple deciduous
FOD5-8	Dry-fresh sugar maple-white ash deciduous
FOD7-1	Fresh-moist white elm lowland deciduous
MAS2-1	Cattail mineral shallow marsh
MAS3-1	Cattail organic shallow marsh
RBO1-1	Dry carbonate open rock barren
SWT2-1	Alder mineral thicket swamp

NON-ELC TYPES

CODE	TYPE DESCRIPTION
AGR	Agriculture
BLT	Built-up Area
DST	Disturbed Area

GEOPDF ENABLED FOR MOBILE USE

LEGEND

- Breeding Bird Survey
- Modified Marsh Monitoring Amphibian Survey
- Least Bittern Survey
- SAR Observation
- Development Area Limit (Annis, O'Sullivan, Vollebekk Ltd.)
- Watercourse
- Urban Natural Area, UNA (City of Ottawa)
- CUM1-1 Vegetation Community
  - Forest Community
  - Wetland Community

LABELS

1,045 m² 0.45 ha	Area (meters squared) Area (hecates)
01BBS	Breeding Bird Survey Label
01MAS	Marsh Monitoring Amphibian Survey Label
01LEB	Least Bittern Survey Label

CITATIONS

- Composite imagery obtained via Google, 2020.
- 18818-19. Draft Plan of Subdivision. Annis, O'Sullivan, Vollebekk Ltd., 2020.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray, 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

REVISION & WORK HISTORY

REV	BY	DATE	DESCRIPTION	REQUEST
rev-0	W.P.	2017-04-17	Initial map creation.	K.R.
rev-1	W.P.	2020-10-27	Make current. Amendments to labeling, vegetation, symbology. New development boundary.	C.E.
rev-2	W.P.	2020-11-23	Phase 5 labeling.	C.E.

CONTACT: Will Pridham / GIS Specialist
EMAIL: will.pridham@ghd.com
PROJECT NO: CA-PET-11217236
RECENT DATE: 2020-11-23
PROJECT: Trail's Edge East - Phase 5
CLIENT: Richcraft Homes
ATTRIBUTION: Produced by GHD Limited under Licence with the Ontario Ministry of Natural Resources and Forestry© Queen's Printer for Ontario, 2020 (2020).

MTM ZONE 9

GHD LIMITED
NATURAL RESOURCES - SERVICES
www.ghd.com

FIGURE 1.1 - NATURAL FEATURES, VEGETATION COMMUNITIES, SURVEYS & CONSTRAINTS

Trail's Edge North - Phase 5
City of Ottawa
Rideau Valley Conservation Authority (RVCA)

SCALE
1 cm : 85 meters
1 inch : 708 feet

Meters: 0 — 135 — 270 — 540
Feet: 0 — 345 — 690 — 1,380

Document Name: Figure 1.1- Vegetation Communities, Surveys and Natural Features_Updated

1.3 Study Rationale

This section identifies federal, provincial and other regulatory legislation, policies, official plans (OP) and OP amendments that are applicable and relevant to the study area and the immediate vicinity. This includes policies that triggered the study. These documents may identify natural features, Species at Risk and other habitat as well as other features relevant to this study.

1.3.1 Federal Legislation

Migratory Birds Convention Act

The purpose of the Migratory Birds Convention Act (MBCA 1994) is to implement the Convention by protecting and conserving migratory birds, as populations and individual birds, and their nests.

No work is permitted to proceed that would result in the destruction of active nests (i.e., nests with eggs or young birds), or the wounding or killing of bird species protected under the MBCA and/or Regulations under that Act.

1.3.2 Provincial Legislation

Endangered Species Act, 2007

The purposes of the Ontario Endangered Species Act (ESA 2007) area:

- To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.
- To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk.
- To promote stewardship activities to assist in the protection and recovery of species that are at risk. 2007, c. 6, s.1. (Government of Ontario, 2019)

The ESA clearly defines the five classifications of species status as *extinct, extirpated, endangered, threatened*, or *special concern*, and provides guidelines on the process of species status determination.

Regulations made under this act include: Ontario Regulation 230/08 and 242/08.

Ontario Regulation 230/80 provides the list of Species at Risk (SAR) in Ontario, which is updated regularly. This list was most recently consolidated on August 1, 2018 (Government of Ontario, 2019b). Species status provided in the list is assessed by an independent body, the Committee on the Status of Species at Risk in Ontario (COSSARO), based on the best available science and Aboriginal Traditional Knowledge.

General habitat protection is afforded to all species listed as *endangered or threatened*. General habitat descriptions are technical, science-based documents that have been developed for some of the species that are most likely to be affected by human activity (Government of Ontario 2019c). Further information including a *Recovery Strategy* or *Management Plan* is required for each listed species, on a timeline dictated by the species status.

Ontario Regulation 242/80 explains possible exemptions of the ESA and details on how the purpose of the ESA is to be carried out.

Planning Act and Provincial Policy Statement

The Provincial Policy Statement, 2020 (PPS) is the statement of the Ontario government's policies on land use planning. It applies province wide (in the province of Ontario) and provides provincial policy direction on land use planning. Municipalities use the PPS to develop their official plans and to guide and inform decisions on other planning matters. The PPS is issued under section 3 of the Planning Act and all decisions affecting land use planning matters shall be consistent with the Provincial Policy Statement (Government of Ontario, 2014).

Portions of Sections 2.1.4.-2.1.8. of the Provincial Policy Statement (PPS 2014) apply to this project.

2.1.4. Development and site alteration shall not be permitted in:

a) significant wetlands in Ecoregions 5E, 6E, and 7E, and

2.1.5. Development and site alterations shall not be permitted in:

a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E, and 7E;

d) significant wildlife habitat;

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

2.1.8. Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4., 2.1.5., and 2.1.6. unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

1.3.3 Local and Other Regulatory Bodies

City of Ottawa Official Plan (2003) Requirements

The property is adjacent to the Natural Heritage System, as identified in the City of Ottawa OP, Schedule L1.

Sections: 2.4.2, 4.7.3, 4.7.4, 4.7.8 of the City of Ottawa OP (City of Ottawa, 2003) apply.

2.4.2 Natural Features and Functions

1) The natural heritage system in Ottawa comprises the following significant features and the natural functions they perform:

a) Provincially significant wetlands as identified by the Ministry of Natural Resources

b) Significant habitat for endangered and threatened species, as approved by the Ministry of Natural Resources;

c) *Significant woodlands defined in the rural area as woodlands that combine all three features listed below in a contiguous, forested area:*

   i. *Mature stands of trees 80 years of age or older; and*

   ii. *Interior forest habitat located more than 100 m inside the edge of a forest patch; and*

   iii. *Woodland adjacent to a surface water feature such as a river, stream, drain, pond or wetland, or any groundwater feature including springs, seepage areas, or areas of groundwater upwelling;*

d) *Wetlands found in association with significant woodlands;*

e) *Significant valleylands defined as valleylands with slopes greater than 15% and a length of more than 50 m, with water present for some period of the year, excluding man-made features such as pits and quarries;*

f) *Significant wildlife habitat found on escarpments with slopes exceeding 75% and heights greater than 3 m; or within significant woodlands, wetlands, and valleylands; or that may be identified through sub watershed studies or site investigation;*

g) *Life Science Areas of Natural and Scientific Interest as identified by the Ministry of Natural Resources;*

h) *Earth Science Areas of Natural and Scientific Interest as identified by the Ministry of Natural Resources designated on Schedule K;*

i) *Urban Natural Features, consisting of remnant woodlands, wetlands and ravines within the urban area;*

j) *Forest remnants and natural corridors such as floodplains that create linkages among the significant features defined above, but that may not meet the criteria for significance;*

k) *Groundwater features, defined as water-related features in the earth's subsurface, including recharge/discharge areas, water tables, aquifers and unsaturated zones that can be defined by surface and subsurface hydrogeologic investigations;*

l) *Surface water features, defined as water-related features on the earth's surface, including headwaters, rivers, stream channels, drains, inland lakes, seepage areas, recharge/discharge areas, springs, and associated riparian lands that can be defined by their soil moisture, soil type, vegetation or topographic characteristics, including fish habitat.*

2. *The natural heritage system, as defined in policy 1, is protected by:*

   a) *Establishing watershed and subwater shed plans as the basis for land-use planning in Ottawa through policies in Section 2 of this Plan. These plans may use additional criteria to define significant features that reflect unique*

characteristics of the area or the presence or relative abundance of the feature within the subwater shed compared with other subwater sheds;

b) *Protecting the quality and quantity of groundwater through policies in Section 2;c. Designating most significant features as Significant Wetlands, Natural Environment Areas, and Rural Natural Features on schedules within the Plan and setting policies in Section 3 to ensure they are preserved;*

d) *Ensuring that land is developed in a manner that is environmentally-sensitive through the development review process in keeping with policies in Section 4 regarding such matters as design with nature, erosion protection and protection of surface water, protection of significant habitat for endangered and threatened species and requirements for Environmental Impact Statements.*

3. *Regardless of whether the features are designated in this Plan, an Environmental Impact Statement is required for development proposed within or adjacent to features described in Policy 1 above, with the exception of surface and groundwater features. Development and site alteration within or adjacent to these features will not be permitted unless it is demonstrated through an Environmental Impact Statement that there will be no negative impact on the feature or its ecological functions. The policies regarding Environmental Impact Statements and the definition of terms are contained in Section 4.7.8.*

Other guiding Policies of the OP which apply to this project included:

Section 4.7.3 of the OP contains policies on the identification of surface water features and aquatic habitat and development constraint/opportunity considerations relating to their presence.

Section 4.7.4 of the OP protects Endangered and Threatened species as listed under the Ontario Regulation 230/08 of the Endangered Species Act, 2007.

Section 4.7.8 of the OP outlines what should be included in an Environmental Impact Statement and in what cases one is required.

South Nation Conservation Authority Regulation 170/06

Establishes regulated areas where development may be subject to flooding, erosion or dynamic beaches; or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. Any proposed development, interference or alteration within a Regulated Area requires a permit, including altering a river, stream or watercourse or interfering with a wetland.

1.4 Other Resources Referenced

Prior to field surveys, background information for the study area and surrounding lands from a variety of sources were reviewed to provide context for the setting and sensitivity of the site. Background information sources include:

1.4.1 Data Sources

- Aerial imagery
- OMNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make a Map tool (2018)
- Ontario Breeding Bird Atlas data (Bird Studies Canada, 2007)
- Species at Risk in Ottawa (May 2014)
- MNR natural heritage GIS database;

1.4.2 Literature and Resources

- Natural Heritage Reference Manual (MNRF, 2010)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. 45pp. (OMNRF, 2015)
- Trails Edge subdivision EIS (NEA, 2009);
- East Urban Community Mixed Use Centre CDP Natural Environment Existing Conditions Report (NEA, 2014)
- Trails Edge East Subdivision EIS (NEA, 2016)
- UNAEES (Muncaster and Brunton, 2005

1.5 Description of Development

The proposal is for a draft plan of subdivision including single-family dwellings and townhomes. The northern triangle is slotted for mixed use (Figure 1.1). The conceptual site plan for the North development is found in Appendix III.

1.6 Scope of Report

The Environmental Impact Statement documents the existing conditions of the terrestrial habitat, urban natural features, and wetlands. Significant natural features and linkages within the study area including Species at Risk and other Areas of Interest area identified. The potential impacts of existing and future land-use activities will also be outlined.

Specifically, the Environmental Impact Statement will:

a) Identify the location and extent of sensitive or significant natural heritage features within the Study area

b) Identify any lands to be preserved in their natural state;

c) Identify mitigating measures to address the negative effects of development on the natural heritage features and their ecological functions;

d) Determine the development limit setback from any natural heritage features

e) Identify the potential for restoration and/or creation of wildlife habitat on the remaining lands outside the development parcel; and in buffers/setbacks

f) Provide information on the natural features within the Study Area as suitable for input into the City of Ottawa's Natural Heritage Resource inventory.

g) Discuss Impacts on natural features or functions as a result of the proposed development.

2. Study Methods

2.1 General Approach

Our approach to preparation of this Environmental Impact Statement consisted of three distinct phases. In the first phase we collected and reviewed available information on the site including recent air photography, SNCA and RVCA regulated area and wetland mapping, key natural features GIS mapping, City of Ottawa Official Plan schedules, City of Ottawa guidelines and other correspondence or files.

The second phase consisted of site visits by GHD biologists on August 14, 2020 to confirm the data collected in the literature review. Vegetation boundaries were delineated and detailed inventories of the flora and fauna completed. The boundaries of the vegetation communities were confirmed in the field. The inventory included vegetation community mapping and determination of significant features on site.

The third phase consisted of preparing an EIS report based upon the information gathered from the literature review and any field surveys completed. The report has been designed to in accordance with applicable legislation and policies (as outlined in Section 1.3). Specific mitigation measures for protecting natural features and sensitive species in the study area are included. The report also contains a figure that illustrates the location of vegetation communities and any recommended buffers or setbacks.

2.2 Site Study Methodology

2.2.1 Physical Site Characteristics

Site characteristics were assessed during several visits to the study area. Documented characteristics included existing disturbances, current use of the site, age of vegetation cover, access lanes, trails, general topography and soils.

2.2.2 Biophysical Inventory

2.2.2.1 Vegetation

ELC Survey Method

All vegetation communities on and adjacent to the study lands were visited and species composition determined. Community type determination criterion followed that of MNRF's Ecological Land Classification for Southern Ontario (ELC) program (Lee et al., 1998) was done to the vegetation type level. The presence of rare species or significant communities was documented and locations mapped.

Photographs and/or specimens were taken of plants requiring verification of identification.

National, provincial and regional significance was determined from accepted status lists and published reference lists such as COSEWIC (2019), COSSARO (2018), ESA (2007), MNRF's Make-a-map (2020), Brunton (2005) and Cuddy (1991).

2.2.2.2 Birds

Breeding Bird Survey BBS Survey

Breeding Bird surveys were not conducted specifically in 2020 for the study area, however the surveys conducted in 2014 and 2016 for previous reports captured the study area for North. Breeding bird surveys were conducted on June 19, 2014 and June 12 and July 9, 2016 in the general area of the subject property during the peak breeding season (Figure 1.1.) Surveys were timed to coincide with the dawn chorus and within acceptable weather parameters. The surveys were a combination of point counts and area searches and covered all portions of the property. Specific effort was made to identify habitat for Species at Risk and presence-absence.

Marsh Monitoring Program – Bird Surveys

The wetland areas were surveyed using Bird Studies Canada's Marsh Monitoring Program (MMP) protocols (BSC, 2005). The protocol includes a combination of listening periods and playing of taped bird calls over a 13 minute survey period for each station. Birds were recorded on standard MMP data sheets within the 100 m circle and recording of individual birds for the primary or target species. All secondary birds were recorded on the standardized forms. Habitat forms were also prepared for each station using the standardized MMP forms. Surveys were conducted during the peak breeding bird season for the MMP Significance.

Area Searches

Incidental observations and area searches were also completed for the north portion area on August 14, 2020 to identify any additional birds using the property.

Significance on a national, provincial or regional level will be based on COSEWIC (2019), SARO (2018), ESA (2007), SARA (2016) and MNR (1993 and 2000 updates).

2.2.2.3 Amphibians

Targeted spring surveys for breeding amphibians were completed in the evenings to record any calling breeding frogs. Surveys covered all wetland and adjacent upland habitats, vernal pools and backwaters of any watercourses and wetlands. These stations were visited twice between April 1st and July 31st 2014 with a minimum of 15 days between visits. Two surveys were conducted instead of three as by the second survey the calls had slowed down and the species that call later were already identified in the second survey. It is for that reason a third visit was not conducted.

Surveys were completed at least 30 minutes after sunset and completed by midnight. Field conditions were recorded upon arrival (cloud cover, temperature, wind, precipitation). Observations at each station would sustain for 3 minutes where Call level codes were recorded. Protocol from Environment Canada's Marsh Monitoring Program (BSC, 2008) was utilized using associated call level codes:

Code 1: Calls not simultaneous, number of individuals can be accurately counted
Code 2: Some calls simultaneous, number of individuals can be reliably estimated
Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated.

Whether the species were located within or outside of 100 meters of the survey station was recorded.

2.2.2.4 Reptiles

Incidental observations of turtles, turtle nests, snake hibernacula and snakes were also recorded. Reptile searches were active with brush piles, fencerows, stone piles, crevasses, woody debris, refuse and rock slopes checked for snakes and evidence of hibernacula. All reptiles encountered were located by GPS and number and size of individuals noted. Surveys for turtles were conducted by walking through and along the edge of suitable wetland habitat in the evening. Surveys were also timed to the peak nesting period for turtles and suitable nesting habitat checked for recent activity or predated nests.

2.2.2.5 Other Wildlife

Incidental observations of amphibians, turtles, turtle nests, snake hibernacula and snakes were also recorded. Reptile searches were active with brush piles, fencerows, stone piles, crevasses, woody debris, refuse and rock slopes checked for snakes and evidence of hibernacula.

Incidental observations of mammals were made during the site visit. Observations included direct sightings and indirect evidence such as calls, scat, browse, burrows, tracks, dens and nests. The occurrence of linkages and corridors within the area were assessed based on field work and existing literature.

Surveys were also conducted to identify potential bat maternity roosting trees.

Significance on a national, provincial or regional level was based on COSEWIC (2019), COSSARO (2018), SARA (2016) and MNRF (1993 and 2000).

2.2.2.6 Wetlands

The wetland boundary was delineated in two phases. The first phase involved reviewing aerial photographs and available wetland mapping and the presence of wetland habitats on the adjacent property and confirmation the wetland boundary was done by applying the methodologies of the Ontario Wetland Evaluation System, third edition, version 3.2, southern Ontario manual (2013) and CLOCA definitions. The entire property was walked and the plant species, soils and soil moisture checked. The boundary of the wetland was delineated in the field using a high accuracy GPS unit.

2.2.2.7 Significant Wildlife Habitat

The identification of Significant Wildlife Habitat is completed in several stages. As part of the background review, natural areas in the study area are examined along with aerial photography. A candidate list of SWH criteria/feature is determined. During the field visits searches for evidence of those identified candidate features are conducted and the features assessed.

After the field inventories, GHD biologists analyze the information collected and determine which SWH features were confirmed based on the habitats on site and on the Ecological Land Classification communities present on the subject property, using the criteria for Significant Wildlife Habitat in Ecoregion 6E (2015).

2.2.2.8 Species at Risk

A complete background literature review from MNR-NHIC, and the City of Ottawa was conducted to ensure the project met the strict policies of these Acts.

- Reviewed and analysed list of federal and/or provincially significant species found within the study area;
- Conducted detailed targeted inventories within the appropriate season to determine presence or absence of species that may find suitable habitat within the development area. Current target species included the barn swallow, common nighthawk, chimney swift, eastern wood-pewee, bank swallow, wood thrush, bobolink, eastern meadowlark, short-eared owl, whip-poor-will, black tern, loggerhead shrike and Canada warbler (as identified in the BBS 10km 10 km square containing the study area); large purple fringed-orchid and woodland pinedrops (as identified by NHIC using a 1km by 1km square containing the study area).

Bobolink and Eastern Meadowlark

Eastern meadowlark and bobolink surveys were conducted on June 14, 18 & 19, 2014. Walking transects were done through the grassland habitats on the property suitable for bobolink/meadowlark habitat (portions of Community 1). Surveys were conducted with no precipitation and calm winds. The temperature ranged between 14 °C and 22 °C. Transects were established and walked between breeding bird stations. Information was recorded and any sightings of bobolinks or meadowlarks were identified. Surveys were conducted between 5 and 9 am.

Whip-poor-will/Common Nighthawk Surveys

One survey was conducted on June 18, 2014 for whip-poor-will and common nighthawk using the established MNRF protocol (2012). Points were established throughout the property including the open portions of the site and near woodlands, in particular where possible foraging habitat may exist. All calling males were recorded including the direction and distance to each. As the property wasn't deemed ideal habitat for whip-poor only one survey was conducted (instead of 3).

2.2.3 Fisheries

2.2.3.1 Aquatic Habitat Assessment

Biophysical habitat characteristics and boundaries of the watercourses within the study area were assessed on June 5th 2014, July 21st 2014 and October 15th 2014 by GHD biologists using aerial photography, literature and confirmed by ground-truthing to determine the study area constraints and identify the presence of aquatic features and habitat to be fully assessed in an Environmental Impact Statement.

General aquatic habitat assessments were made using qualitative and quantitative studies. Existing aquatic habitat form and function, dominant substrate, riparian habitat, in-stream cover, average channel dimensions, flow, connectivity, sediment transportation, and unique features were recorded for all watercourses. Assessments were conducted using standardized provincial aquatic protocols and GHD's standardized habitat analysis techniques. Specifically, GHD implemented the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC and TRCA, 2014) and OSAP Section 4: Module 10, Assessing headwater drainage features.

2.2.3.2 Fish Habitat

Fish sampling was not a component of the initial project scope and is not required as per the “Rapid” survey type outline in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC and TRCA, 2014). While GHD biologists were onsite assessing headwater drainage features, fish visual and presence/absence assessments were conducted only in watercourse classified as having a high potential of supporting fish.

3. Survey Results

The following section presents GHD site-specific survey data only. Supporting information, the background review or other sources will be presented and discussed in Section 4.0 – Discussions and Analysis.

3.1 Physical Site Characteristics

3.1.1 General Site Characteristics

The study area was generally flat with mostly former agricultural fields that have regenerating shrub and tree growth. In general, the regeneration was less than 15 years old and was patchy in nature depending on soil, disturbance and moisture conditions. The site is dominated by clay soils with the exception or limestone bedrock exposed at the south edge of the Innes Park Woods that creates a rock cut behind the commercial plaza. This same feature is also at surface just east of Mer Bleue Road. A hydro transmission corridor bisects the study area. This area was disturbed from recent construction activity and included a gravel road. The communities along the hydro corridor were primarily disturbed habitats, with pioneer communities, marshes, swampy areas and young forest communities.

3.2 Biological Inventories

3.2.1 Vegetation Communities

3.2.1.1 Level of Effort

The vegetation communities were delineated within the study by GHD biologists according to the methodologies outlined in Section 2. A summary of the level of effort and environmental conditions have been provided in Table 3.1.

Table 3.1 Vegetation Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
September 25, 2013	ELC	N/A	N/A	N/A
May 13, 2014	ELC	N/A	N/A	N/A
Oct. 25, 2014	ELC	N/A	N/A	N/A
August 12, 2020	ELC	20°C, Beaufort wind scale: 1, no precipitation	09:30	2.0

The study area contained 20 vegetation communities including an old field meadow, ditch, meadow marsh and deciduous forest and rock barren. All plants observed were recorded within this area area. GHD identified 234 different plant species on site and 20 different communities (Appendix I-A).

Community 1 Old Field Meadow (ELC Code: CUM1-1)

This community comprises the majority of the property and was approximately 130 ha in size. This was likely once agricultural fields, and is now in an early successional stage containing a mixture of ages of regenerating meadow species. Some shrub cover was found scattered throughout, however was not dominant enough to be considered a thicket. Awnless brome grass (*Bromus inermis ssp inermis*), reed canary grass (*Phalaris arundinacea*), and rough hair grass (*Agrostis scabra*) dominated the meadow while some wool grass (*Scirpus cyperinus*) and timothy (*Phleum pratense*) existed also. An abundance of goldenrods, grasses, New England aster (Symphyotrichum novae-angliae) and calico aster (*Symphyotrichum lateriflorum var. lateriflorum*) was identified within the old field meadow, along with other typical meadow species including common milkweed (*Asclepias syriaca*), common ragweed (*Ambrosia artemisiifolia*), common yarrow (*Archillea millefolium*) and ox-eye daisy (*Chrysanthemum leucanthemum*).

Photo 1: Old Field Meadow facing west (September 25th, 2013)

Community 2 Fresh-Moist Elm Lowland Deciduous Forest (ELC Code: FOD7-1)

This community was identified just on the northern limits of the subject property south of the Canadian Tire parking lot and was approximately 5 ha in size. American elm (*Ulmus americana*) dominated this woodlot pocket and was quite young in nature. Green ash (*Fraxinus pennsylvanica var. subintegerrima*) was also found interspersed with the American elm however was less abundant. The ground species contained a lot of the same species as Community 1, additional species found included grass-leaved goldenrod (*Euthamia graminifolia*), heal-all (*Prunella vulgaris ssp. lanceolata*), poverty grass (*Aristida dichotoma*), purple-stemmed aster (*Symphyotrichum puniceum*), scotch thistle (*Onopordum acanthium*) and slender-leaved agalinis (*Agalinis tenuifolia*).

Community 3 Alder Mineral Deciduous Swamp (ELC Code: SWT2-1)

This small pocket was located on the northern edge of Community 5 covering approximately 0.06 ha. Some standing water was found and contained mostly emergent wetland species. Some of the species identified included American water-horehound (*Lycopus americanus*), Canada bluejoint grass (*Calamagrostis canadensis*), Canadian rush (*Juncus canadensis*), common cattail (*Typha latifolia*) and reed canary grass. Shrubs were also found in this wet pocket including mostly willow species (crack willow (*Salix fragilis*), pussy willow (*Salix discolor*) and slender willow (*Salix petiolaris*)), glossy buckthorn (*Rhamnus frangula*) and narrow-leaved meadowsweet (*Spiraea alba*).

Community 4 Cattail Mineral Shallow Marsh (ELC Code: MAS2-1)

Community 4 was also a very small wetland pocket located directly west of the snow disposal facility and was approximately 0.16 ha in size. This wetland may have been a result of pooling water, creating a depression from the adjacent facility. The majority of species were hydrophilic species, with the dominant being common cattail (*Typha latifolia*). Other species included bladder sedge (*Carex intumescens*), Canadian rush, needle spike-rush (*Eleocharis acicularis*), softstem bulrush (*Scirpus validus*) and wool-grass (*Scirpus cyperinus*).

Community 5 Fresh-Moist White Elm Lowland Deciduous Forest (ELC Code: FOD 7-1)

On the central portions of the property just north of the hydro cut (Community 14) a mid-aged white elm deciduous forest existed 2.2 ha in size. Several shrub species existed in the understory including species such as hawthorn (*Crataegus spp.)* and nannyberry (*Viburnum lentago*). Herbaceous species included calico aster, common milkweed, cow parsnip (*Heracleum lanatum*) and tall goldenrod (*Solidago altissima*).

Community 6 Fresh-Moist Poplar Deciduous Forest (ELC Code: FOD8-1)

Community 6 (6.7 ha in size) was identified adjacent Community 5 and was dominated by trembling aspen (*Populus tremuloides*), with some American elm and white ash (*Fraxinus americana*) interspersed. This woodlot was part of the fragmented Navan Rd at Pagé Rd UNA. This mid aged woodlot contained ground species such as tall buttercup (*Ranunculus acris*), upland white aster (*Solidago ptarmicoides*), Virginia creeper (*Parthenocissus inserta*) and yellow avens (*Geum aleppicum*).

Photo 2: Poplar deciduous forest (Photo date: May 29th, 2014)

Community 7 Dry Carbonate Open Rock Barren (ELC Code: RBO1-1)

The large woodlot community found in the northern portion of the property is part of the Urban Natural Area # 87 Innes Park Woods (Community 8) (designated UNF in the City of Ottawa OP). The southern limits of this woodlot contained an open rock barren approximately 1.3 ha in size. Some disturbance had occurred in this area and evidence of human use (i.e. a fire pit) existed. Most of this area was open rock however numerous plants were found growing in the cracks and crevices throughout the area. The rock barren community was not large (approximately 0.12 ha) and was located between the edge of the old field meadow to the south and the sugar maple/ash forest to the north. Species identified in the rock barren included American basswood (*Tilia americana*), snowberry (*Symphoricarpos albus*), staghorn sumac (*Rhus typhina*), Tartarian honeysuckle (*Lonicera tatarica*) and western poison-ivy (*Rhus rydbergii*). The herbaceous layer included bitter nightshade (*Solanum dulcamara*), bladder campion (*Silene vulgaris*) common dandelion (*Taraxacum officinale*), common milkweed and common mullein (*Verbascum thapsus*).


Photo 3 & 4: Rock Barren Community (Photo date: September 25th, 2013).

Community 8: Dry-Fresh Sugar Maple-White Ash Deciduous Forest (ELC Code: FOD5-8)

Community 8 (approximately 1.3 ha in size) was identified as UNA # 87 Innes Park Woods and is designated within the City of Ottawa Official Plan as an Urban Natural Feature. Different from the remainder of the property this community was situated on a slight incline. Rock underlay the southern portion of the woodlot connecting to the open rock barren (Community 7). This woodlot contained the most mature trees species in the study area dominated by sugar maple (*Acer saccharum*) and white ash. A large variety of other tree species were also present including American basswood, American elm, apple (*Malus domestica*), bitternut hickory (*Carya cordiformis*), black cherry (*Prunus serotina*) and bur oak (*Quercus macrocarpa*).


Photo 5 & 6: Sugar maple/ash woodlot (Photo date: September 25th, 2013).

Community 9 Cattail Organic Shallow Marsh (ELC Code: MAS3-1)

Community 9 (approximately 0.85 ha in size) was a man-made storm water pond, however was classified as a cattail marsh because of its abundance in cattails. Located on the western half of the subject lands, this pond contained a ditch inflow and outflow and likely received an abundance of its water from the adjacent commercial areas to the north. Rock walls bordered the ditch running into the pond containing cattail and a small amount of water. The pond in September was not full of water and contained some exposed rock surfaces. The areas of the pond with water contained a dense number of cattail, both narrow-leaved (*Typha angustifolia*) and common cattail. A good mixture of wetlands plants were located within and along the edges of the pond including bulbous water-hemlock (*Cicuta bulbifera*), common lake sedge (*Carex lacustris*), common water plantain (*Alisma plantago-aquatica*), frog's-bit (*Hydrocharus morsus-ranae*) and needle spikerush (*Eleocharis acicularis*).

Photo 7 & 8: Cattail filled temporary stormwater pond and inlet ditch (Photo date: September 25th, 2014).

Community 10 Old Field Meadow (ELC Code: CUM1-1)

Community 10 existed on the east side of Mer Bleue Road (approximately 4 ha in size) and was found to be quite disturbed. Grading and/or movement of earth had occurred in this area as exposed soils were evident. Species common to disturbed areas dominated these lands including black medick (*Medicago lupulina*), broad-leaved plantain (*Plantago major*), catnip (*Nepeta cataria*), common barnyard grass (*Echinocloa crusgalli*), common dandelion (*Taraxacum officinale*), common ragweed (*Ambrosia artemisiifolia*) and lady's thumb (*Polygonum persicaria*).

Community 11 Drainage Ditch (No ELC Code Applicable)

This community was identified on the most westerly boundary of the subject property and was oriented in a north-south direction, north of the stormwater pond. This was a linear feature and no area calculation was done for this community. Only a few species were identified in this ditch including common cattail, narrow-leaved cattail, common waterplantain (*Alisma plantago-aquatica*), foxtail millet (*Setaria italica*) and mossy stonecrop (*Sedum acre*).

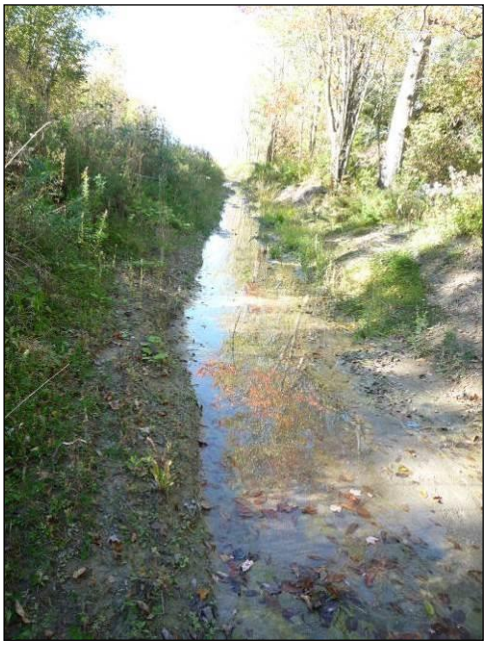

Photo 9 & 10: Watercourse 1 drainage ditch facing north (Photo date: September 25th, 2014).

Community 12 Old Field Meadow (ELC Code: CUM1-1)

Community 12 was identified as a strip of old field meadow surrounding the drainage ditch. As this also was a linear feature no area was calculated for it. This community contained species characteristic of disturbed areas including calico aster, Canada goldenrod, Canada thistle, coltsfoot (*Tussilago farfara*), common dandelion and common ragweed.

Photo 11: Open field meadow surrounding Watercourse 2 drainage ditch (Photo date: September 25th, 2014).

Community 13 Dry-Fresh Oak Red Maple Deciduous Forest (ELC Code: FOD2-1)

This forest community (approximately 4.1 ha in size) straddled the western boundary of the subject lands and was part of the fragmented Navan Rd at Pagé Rd UNA (known as UNF in OP) was dominated by oak and red maple and was found on the western side of the drainage ditch. A variety of young and mid-aged tree species were observed in this woodlot including species such as American basswood, butternut, red maple (*Acer rubrum*), red oak (*Quercus rubra*), white ash and white spruce (*Picea glauca*). Shrubs identified under the canopy included beaked hazel (*Corylus cornuta*), dwarf raspberry (*Rubus pubescens*), glossy buckthorn (*Rhamnus frangula*) and narrow-leaved meadowsweet (*Spiraea alba*). Groundcover species observed included Canada enchanter's nightshade (*Circaea lutetiana L. ssp canadensis*), heart-leaved aster (*Symphyotrichum cordifolium*), marginal wood-fern (*Dryopteris marginalis*) and Pennsylvania sedge (*Carex pennsylvanica*).

Photo 12: Oak Maple forest (Photo date: May 29th, 2014).

Community 14 Hydro Corridor (ELC Code: CUM1-1)

The hydro corridor was found bisecting the subject lands in the southern portion of the property and was approximately 10 ha in size. This disturbed area contained exposed soils likely from the installation of the hydro towers and lines. This corridor is approximately 70 meters in width and is mowed regularly and was dominated by species typical of disturbed areas. Species included shrub such as Alleghany blackberry (*Rubus allegheniensis*) and narrow-leaved meadowsweet along the edges of the corridor. Herbaceous plants inhabiting the hydro cut included black-eyed Susan (*Rudbeckia hirta*), common milkweed, elecampane (*Inula helenium*), low hop clover (*Trifolium agrarium*), Queen-Anne's lace (*Daucus carota*), red clover (*Trifolium pratense*), tall buttercup (*Ranunculus acris*) and white clover (*Trifolium repens*).

Photo 13: Hydro corridor (Photo date: May 29th, 2014).

Community 15 Willow Mineral Thicket Swamp (ELC Code: SWT2-2)

This community was identified as small pockets throughout the old field meadow in the central portions of the study area and covered a total area of approximately 5.8 ha. Several of these thicket swamps were found north of the hydro cut. Dominated by willow species (Bebb's, slender and pussy willow) this community contained other shrubs growth including Alleghany blackberry, downy serviceberry (*Amelanchier arborea*), glossy buckthorn (*Rhamnus frangula*), narrow-leaved meadowsweet (*Spiraea alba*) and purple-flowering raspberry (*Rubus odoratus*). Some groundcover species identified within these communities included typical wetland species like, purple loosestrife (*Lythrum salicaria*), purple-stemmed aster (*Symphyotrichum puniceaum*), red clover (*Trifolium pratense*), reed canary grass (*Phalaris arundinacea*), rice-cut grass (*Leersia oryzoides*) and sensitive fern (*Onoclea sensibilis*).

Photo 14: Willow thicket swamp (Photo date: May 29th, 2014).

Community 16 Fresh-Moist Ash Lowland Deciduous Forest (ELC Code: FOD7-2)

This community was identified as a series of fingers found along the western edge of the study area boundary and covered an area of approximately 4.8 ha. These linear features were dominated by white ash and contained other deciduous tree species such as American elm, apple, green ash (*Fraxinus pennsylvanica var. subintegerrima*), Norway maple (*Acer platanoides*), red maple and trembling aspen. Shrubs identified in the understory included tartarian honeysuckle (*Lonicera tatarica*), choke cherry (*Prunus virginiana*), green alder (*Alnus veridis ssp. Crispa terrill*) and glossy buckthorn. The ground species were identified as awl-fruited sedge (*Carex stipata*), Canada bluejoint grass (*Calamagrostis canadensis*), cleavers (*Galium aparine*), common strawberry (*Fragaria virginiana*) and common yarrow (*Achillea millefolium*).

Photo 15: Ash Deciduous Forest (Photo date: May 29th, 2014).

Community 17 Regenerating Field (No ELC Code Applicable)

This community was identified between the fingers of Community 16 and covered a total area of approximately 5 ha. This regenerating field contained an equal amount of shrub cover and field meadow growth, and due to the amount of shrub growth was not considered field meadow. Shrub species identified included choke cherry, glossy buckthorn, narrow-leaved meadowsweet, red-osier dogwood (*Cornus stolonifera*) and slender willow. Ground cover included Canada bluejoint (*Calamagrostis canadensis*), common dandelion (*Taraxacum officinale*), drooping wood sedge (*Carex arctata Boott*), orange hawkweed (*Hieracium aurantiacum*) and tall buttercup (*Rananculus acris*).

Photo 16: Regenerating Field (Photo date: May 29th, 2014).

Community 18 Regenerating Elm (No ELC Code Applicable)

This community was identified in several locations throughout the property and covered an area of approximately 17 ha. No suitable ELC code was applicable as the community was comprised of regenerating American elm. The ground species contained similar composition of the field meadows including awnless brome grass (*Bromus inermis var inermis*), broad-leaved plantain (*Plantago major*), butter-and-eggs (*Linaria vulgaris*), Canada goldenrod (*Solidago canadensis*), cleavers (*Galium aparine*), early goldenrod (*Solidago juncea*) and large-leaved aster (*Eurybia macrophylla*).

Photo 17: Regenerating Elm (Photo date: May 29th, 2014).

Community 19 Dry-Fresh Sugar Maple-Ironwood Deciduous Forest (ELC Code: FOD5-4)

This community was identified on the south-western borders of the study area and was approximately 2.3 ha in size. This community was identified as the Navan Road at Pagé Road UNA #97 and was designated under the City of Ottawa Official Plan as an Urban Natural Feature. This community used to be a lot larger based on the boundary Evaluated in 2003. Now a long narrow remnant of the forest this community was dominated by mature sugar maple and ironwood. Shrub and herbaceous species identified in the understory included common juniper (*Juniperus communis*), prickly gooseberry (*Ribes cynosbati*), skunk currant (*Ribes glandulosum*), smooth gooseberry (*Ribes hirtellum*) and red currant (*Ribes rubrum*). Ground species included shinleaf (*Pyrola elliptica*), indian pipe (*Monotropa uniflora*), starflower (*Trientalis borealis*), ditch stonecrop (*Penthorum sedoides*) and foam flower (*Tiarella cordifolia*).

Photo 18: Sugar Maple, Ironwood Forest (Photo date: May 29th, 2014).

Community 20 Man-Made Pond (No ELC Code Applicable)

This pond was identified on the southern side of the hydro-cut and was approximately 0.089 ha in size. The vegetation found around the perimeter included common cattail, blue vervain (*Verbena hastata*) and slender willow (*Salix petiolaris*). Vegetation identified within the pond included common duckweed (*Lemna minor*), common floating pondweed (*Potamogeton natans*) and water celery (*Vallisneria americana*).

Photo 19: Man-made pond (Photo date: May 29th, 2014

3.3 Birds and Other Wildlife

3.3.1 Level of Effort

Surveys for breeding birds were conducted in the study area by GHD biologists according to the methodologies outlined in Section 2.2.2.2. A summary of the level of effort and environmental conditions have been provided in Table 3.2.

Table 3.2 Significant Wildlife Habitat Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
June 19, 2014	Breeding Bird Survey	22°C, Beaufort wind scale: 1, no precipitation	N/A	N/A
June 12, 2016	Breeding Bird Survey	N/A	N/A	N/A
July 7, 2016	Breeding Bird Survey	Beaufort wind scale: 1, no precipitation	06:04	N/A
August 12, 2020	Incidental/Area searches for Birds and other wildlife	20°C, Beaufort wind scale: 1, no precipitation	09:30	2.0

A total of 72 bird species were identified in the study area (Appendix II). Species identified included a variety of open meadow and forest species. Open meadow species included eastern meadowlark (*Sturnella magna*), clay-coloured sparrow (*Spizella pallida*) and savannah sparrow (*Passerculus sandwichensis*).

Forest species identified included eastern wood-pewee (*Contopus virens*), red-eyed vireo (*Vireo olivaceus*), warbling vireo (*Vireo gilvus*), ovenbird (*Seiurus aurocapillus*) and great-crested flycatcher (*Myiarchus crinitus*).

Some marsh birds were also observed including red-winged blackbird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), least bittern (*Ixobrychus exilis*), marsh wren (*Cistothorus palustris*), sora (*Porzana carolina*) and alder flycatcher (*Empidonax alnorum*).

3.3.1.1 Mammals

A total of six mammal species were observed during all field visits. Species included coyote (*Canis latrans*), eastern chipmunk (*Tamias striatus*), eastern gray squirrel (Gray and black Phase) (*Sciurus carolinensis*), red fox, (Vulpes vulpes), white-tailed deer (*Odocoileus virginianus*), pygmy shrew (*Sorex hoyi*) and common raccoon (*Procyon lotor*).

Bat maternity colony surveys found 10 potential maternity roost trees in the south west corner of the adjacent property in Communities 13 and 6. However no physical evidence of bats were identified.

3.3.1.2 Herpetozoa

A total of five amphibian species were observed during both incidental observations and spring amphibian marsh monitoring surveys. Species identified included green frog (*Lithobates clamitans*), gray treefrog (*Hyla versicolor*), northern leopard frog (*Lithobates pipiens*), spring peeper (*Pseudacris crucifer*) and American toad (*Anaxyrus americanus*). Spring peepers and gray treefrog were found in

the spring in the various ponded areas and stormwater ponds. Leopard frogs were common in the summer foraging in the adjacent fields.

Four snake species were observed during field surveys to assess confirmed snake hibernacula in the rock barren community, the common gartersnake (*Thamnophis sirtalis*) and northern redbelly snake (*Storeria occipitomaculata*), DeKay's brown snake (*Storeria dekayi)* and eastern milksnake (*Lampropeltis triangulum*).

3.3.1.3 Unevaluated Wetland

Four wetland communities were identified within the study area. These included marsh and swamp Communities 3, 4, 9 & 15.

3.3.1.4 Significant Wildlife Habitat

Seven candidate significant wildlife habitats were identified during field surveys and preliminary research. These included: Raptor Wintering Area, Reptile Hibernacula, Area Sensitive Bird Breeding Habitat, Amphibian Breeding Habitat (woodland), Open Country Bird Breeding Habitat, Bat Maternity colonies, Special Concern Species.

4. Discussion and Analysis

4.1 Species and Communities

4.1.1 Vegetation and ELC Communities

A review of the NHIC database found two (2) records of nationally or provincially significant vegetation species within the 1km by 1km squares containing the study lands, these included large purple fringed-orchid (*Platanthera grandiflora*) and woodland pinedrops (*Pterospora andromedea*).

The large purple-fringed orchid is considered an S1 species and was last observed in 1984. This species inhabits wet meadows, riparian areas and moist road-side banks. There is potential habitat for this species within the small wet meadows however the wet meadows were likely agricultural lands not too long ago. And it is unlikely the species would thrive in these areas especially since the last record was from 1984. This record is more likely from the Mer Bleue Swamp PSW.

Woodland pinedrops is designated as an S2 species and was last observed in 1982. This species inhabits conifer forest or mixed conifer-hardwood forest. No conifer forest or mixed conifer-hardwood forests were identified within the boundaries of the study area.

One provincially and federally endangered plant species, the butternut, was identified within the Urban Natural Areas Environmental Evaluation Study (Muncaster and Brunton, 2005).

Butternut is listed as an endangered species both provincially (COSSARO, 2017) and federally (COSEWIC, 2017). This species was observed within Innes Park Woods (Brunton, 2005) however was not observed during GHD surveys (2014). The location where this tree was identified by Muncaster and Brunton (2005) is protected by the UNF and is located outside the development limits. Surveys in 2017 located the tree and noted that it is affected by butternut canker disease, with 5 callous wounds. Subsequent analysis identified that the tree was class 2, retainable. The tree was identified well outside of the study area and on the northern edges of the woodlot.

Black ash is a threatened species as of November 2018 (COSEWIC, 2018) in Canada. This species was observed within Community 15.

A review of the plant list for the study area (Appendix I) found that 16 were considered regionally rare according to Muncaster and Brunton, (2005) and 14 species for Cuddy (1991) (Table 4.1). These species were based on GHD surveys (NEA, 2014), in addition to literature reviewed for the study area (Brunton, 2005 & NEA, 2009).

Table 4.1 Observed Regionally Rare Species Based on Brunton and Cuddy Lists and Their Location.

Species	Latin Name	Habitat	Community	Brunton (2005)	Cuddy (1991)
Witch Hazel	*Hamamelis virginiana*	Moist, shaded sites where it grows as an understory and the forest edge.	6		
Clearweed	*Pilea pumila*	Moist, open and shaded sites		X	
Kidney-leaved Violet	*Viola renifolia*	Cool moist woods and swamps	19	X	
Red Currant	*Ribes rubrum*	Well-drained soil and is shade tolerant	6,13,16		X
Slender Vetch	*Vicia tetrasperma*	Waste places and fields.	6,16,19	X	
Leafy Spurge	*Euphorbia esula*	Roadsides and waste places	9	X	X
Cow Parsnip	*Heracleum lanatum*	Moist rich ground	7	X	X
True Forget-me-not	*Myosotis scorpioides*	Muddy shores and springs	1,5,6,	X	X
Cleavers	*Galium aparine*	Woods, thickets and shores	13	X	X
Common Valerian	*Valeriana officinalis*	Roadsides and meadows	6,7,14,15,16 ,18,19		X
Palmate-leaf Sweet-coltsfoot	*Petasites frigidus*	Cool swamp and moist woodland	1	X	
Variable-leaved Pondweed	*Potamogeton gramineus*		13		X
Canadian rush	*Juncus canadensis*	Grows submerged in water along the edges of ponds and lakes in depth up to 8 feet.	9		X
Drooping Wood Sedge	*Carex arctata Boott*	Shorelines, and wetlands	1,3,4		X
Slender Sedge	*Carex lasiocarpa*	Woods, thickets, and openings	6,13,15, 16, 17, 18,		X
Drooping Sedge	*Carex prasina*	Wetlands like bogs, fens and shorelines	8		X
Broom Sedge	*Carex scoparia*		19	X	X
Pedicelled Bulrush	*Scirpus pedicellatus*	Shaded ravine bottom in deciduous and mixed forest	19		
Softstem Bulrush	*Scirpus validus*	Wetlands and wet places like irrigation ditches and meadows		X	
Bearded Shorthusk	*Brachyelytrum erectum*	Openings in swamps and meadows	19	X	
Foxtail Millet	*Setaria italica*	Moist and wet habitat, sometimes in shallow water	2,4,9		

Table 4.1 Observed Regionally Rare Species Based on Brunton and Cuddy Lists and Their Location.

Species	Latin Name	Habitat	Community	Brunton (2005)	Cuddy (1991)
Two-Flowered Solomon's seal	*Polygonatum biflorum*	Moist to dry undisturbed woodlots			
Painted Trillium	*Trillium undulatum*	Grows well in all soils and can be found in waste places and roadsides		X	
Little Blue-eyed Grass	*Sisyrinchium montanum*	Woods	19		

Table 4.2 Regionally Rare Species and Associated Literature Source.

Species	Muncaster & Brunton, 2005	GHD, 2014
Witch Hazel		X
Clearweed	X	
Kidney-leaved Violet		X
Red Currant		X
Slender Vetch		X
Leafy Spurge		X
Cow Parsnip		X
True Forget-me-not		X
Cleavers		X
Common Valerian		X
Palmate-leaf Sweet-coltsfoot		X
Variable-leaved Pondweed		X
Canadian Rush		X
Drooping Wood Sedge		X
Slender Sedge	X	
Drooping Sedge	X	
Broom Sedge	X	
Pedicelled Bulrush		X
Softstem Bulrush		X
Bearded Shorthusk	X	
Foxtail Millet		X
Two-Flowered Solomon's seal		X
Painted Trillium	X	
Little Blue-eyed Grass		X

4.1.2 Birds

A review of the list of breeding bird species recorded for the study area (Appendix II) found that seven were considered significant at a nationally or provincially level. These included eastern wood-pewee (*Contopus virens*), barn swallow (*Hirundo rustica*), wood thrush (*Hylocichla mustelina*), bobolink (*Dolichonyx oryzivorus*), bank swallow (*Riparia riparia*), least bittern (*Ixobrychus exilis*) and eastern meadowlark (*Sturnella magna*). The species listed above will be discussed in later paragraphs as they were all identified within the Ontario Breeding Bird Atlas squares as well, with the exception of the least bittern.

The least bittern is listed as a threatened species provincially and federally (COSSARO, 2019; COSEWIC, 2018). This species generally inhabits marshes. The least bittern was identified on the property within Community 9 (temporary stormwater pond south of the movie theatre) on June 14, 2014. Surveys should be conducted within this stormwater pond prior to removal of this temporary

pond. Discussions should be conducted with MECP SAR biologists if it is identified in future surveys. The requirements under the Ontario Endangered Species Act would need to be identified. It is recommended that the pond not be removed between April 15th and September 15th, as this is the time when least bitterns are on territory.

No regionally rare bird species were observed, however eight area sensitive species (AS) were recorded during field surveys. These included hairy woodpecker (*Picoides villosus*), least flycatcher (*Empidonax minimus*), veery (*Catharus fuscescens*), ovenbird (*Seiurus aurocapillus*), American redstart (*Setophaga ruticilla*), scarlet tanager (*Piranga olivacea*), least bittern (*Ixobrychus exilis*) and savannah sparrow (*Passerculus sandwichensis*). Area sensitive species are included as part of the Species of Conservation Concern criteria within the Significant Wildlife Habitat designation.

The study area is within a 10 x 10 km Ontario Breeding Bird Atlas squares (18VR63). The database includes a summary of results from the 1st atlas (1981-1985) and the current or second atlas (2001-2005). A list of significant species was generated for these squares. There were fourteen (14) species listed, specifically: black tern (*Chlidonias niger*), common nighthawk (*Chordeiles minor*), whip-poor-will (*Antrostomus vociferous*), loggerhead shrike (*Lanius ludovicianus*), barn swallow (*Hirundo rustica*), bank swallow (*Riparia riparia*), bobolink (*Dolichonyx oryzivorus*), eastern meadowlark (*Sturnella magna*), eastern wood-pewee (*Contopus virens*), wood thrush (*Hylocichla mustelina*), grasshopper sparrow (*Ammodramus savannarum*), chimney swift (*Chaetura pelagica*), short-eared owl (*Asio flammeus*) and Canada warbler (*Cardellina canadensis*).

The black tern is listed as a special concern provincially but not at risk nationally (COSSARO, 2016). This species nests in shallow marshes, especially cattails. This record is likely from the Mer Beue PSW south of the property and outside of the study area.

The common nighthawk is listed by COSEWIC as a threatened species (2016) and provincially is a special concern (COSSARO, 2019). The common nighthawk is typically found in open areas such as sand dunes, recently logged or burned over areas, pastures, open forest, gravel roads, rocky outcrops and rocky barrens, and even military base and airports). This species was not observed during GHD surveys. There is no nesting habitat for this species on the property.

The eastern whip-poor-will is listed as a threatened species nationally and provincially (COSEWIC, 2019; COSSARO, 2018). The whip-poor-will can be found in areas with a mix of open and forested areas within open woodlands or openings in more mature, deciduous, coniferous and mixed forests. It forages in these open areas and uses forested areas for roosting (resting and sleeping) and nesting. The property contains some young forested habitat but no nearby pine plantations, coniferous or mixed forest, that is preferred nesting habitat. GHD did not identify this species during surveys.

The loggerhead shrike is listed as an endangered species both provincially and nationally (COSSARO, 2019; COSEWIC, 2018). This species prefers a mixture of grasslands and pastures with low trees and shrubs. The study area contains some grasslands however low trees and shrubs area not found throughout. The property would not support the foraging or breeding habitat for the loggerhead shrike. The shrike range is currently restricted to central Ontario with a few historical records near Smith Falls.

The barn swallow is listed as a threatened species provincially and federally (COSSARO, 2019; COSEWIC, 2018). This species prefers open rural and urban areas where bridges, culverts and

buildings are found near rivers, lakes, marshes or ponds. This species was identified foraging over the property. A barn located outside of the study area to the south contained six nests identified (2 active, 4 inactive) during the August 2020 field surveys for Trails Edge Phase 4. However no nesting habitat was identified in the Trails Edge North study area.

The bobolink is listed as a provincially and federally threatened species (COSSARO, 2019; COSEWIC, 2018). Bobolink were heard in the field in May 2016 as well in August 2020. Two birds were calling in 2016. This field has been plowed and no longer provides habitat for this species.

The eastern meadowlark is listed as a provincially and federally threatened species (COSSARO, 2019; COSEWIC, 2018). This species prefers grassy meadows and pastures; also in some croplands, weedy fields, grassy roadsides and old orchards. The study area contains some old field meadows. Eastern meadowlark was observed as an incidental species during vegetation surveys in community 14, the hydro cut. This is outside of the Trails Edge North development area.

The eastern wood-pewee is listed federally as a threatened species (COSEWIC, 2018) and is listed as a special concern species provincially (COSSARO, 2019). This species breeds in all woodland types in partially cleared shrubby habitats and secondary forests. This species was heard as an incidental in community 6.

The wood thrush is listed as a federally threatened species (COSEWIC, 2018), and is listed as a special concern provincially (COSSARO, 2019). This species breeds in deciduous and mixed forests in areas with large trees, moderate understory abundant in leaf litter and shade present. The wood thrush was heard as an incidental observation from Community 7, the rock barren. The adjacent community 8 has appropriate breeding habitat for this species.

The grasshopper sparrow is listed federally as a special concern species (COSEWIC, 2018), however is not listed provincially (COSSARO, 2019). This species inhabits open grasslands and prairies with patches of bare ground. There is potential for this species to occur within the old field meadows (Community 1) however none were identified by GHD during surveys.

The chimney swift is listed federally and provincially as a threatened species (COSEWIC, 2018; COSSARO, 2019). The chimney swift is usually found within 1 km of a waterbody and, as its name implies, predominantly nests within old chimneys in urban and suburban areas. Prior to European settlement, chimney swifts nested in old growth forests. As an aerial forager, the species feeds on insects in urban areas. There is no suitable breeding habitat present for this species within the structures identified on the subject property.

The bank swallow is listed federally and provincially as a threatened species (COSEWIC, 2016; COSSARO, 2016). This species nests in colonies in streamside banks. An old storage pile of soil in the south portion of Trails Edge Phase 4 did have bank swallow nests and activity during the May 26 2016 site visit. By June the pile was being used by the contractors and no bank swallows were identified in the area. In 2020 bank swallows were not identified on site and no habitat existed since the removal of those piles.

The Canada warbler is listed as a special concern provincially (COSSARO, 2019) and is threatened on a national level (COSEWIC, 2018). The Canada warbler breeds in wet deciduous and coniferous forests with a thick shrub under-story. Nests are usually found on mossy logs or roots, along stream banks or hummocks (OMNR, 2009). There is no suitable habitat for this species on the property.

The short-eared owl is listed as a species of special concern both provincially and nationally (COSSARO, 2019; COSEWIC, 2018) and is found in open areas including grasslands, marshes and tundra. This species is found nesting on the ground and forages over fields. There was suitable foraging and nesting habitat within the open field meadows on the property historically, however none were observed during any GHD field visits. This species has significantly declined in the Ottawa area and was found in only a few isolated locations previously. The current condition of the field, would preclude use by short-eared owls.

4.1.3 Other Wildlife

No other wildlife was identified by GHD that is listed as significant. Potential cavity trees were identified in communities 6 and 13. Overall, outside of the main protected woodland, there are few trees older than 20 years on the site. No physical evidence of bats were identified during surveys.

4.1.4 Significant Wildlife Habitat

The Significant Wildlife Habitat Draft Ecoregional Schedule (MNRF, 2014) was used to screen whether the subject property contained potential Significant Wildlife Habitat (Candidate) using criteria laid out in the manual. Significant Wildlife Habitat which met the Candidate Criteria based on the Draft Significant Wildlife Habitat Ecoregion Criteria Schedule (MNR, 2012) included eight categories (Table 4.3).

Table 4.3 Potential Significant Wildlife Habitat Identified within the Study Area and GHD's Recommendations

Candidate SWH identified based on eco-regional criteria and ELC mapping	Results of Field Observations	Recommendation
Raptor Wintering	Most fields overgrown or in state of succession. Limited open country habitat.	None
Reptile Hibernacula	Habitat within rock barrens (community 7) two or more snake species identified.	Preserve rock barren habitat with a buffer around Innes Park Woods. Construct extension of Frank Bender Street with snake underpasses.
Area Sensitive Bird Breeding Habitat	Habitat identified for the 8 species of area sensitive birds recorded.	Minimum 10 m buffer around Innes Park Woods.
Amphibian Breeding Habitat (woodland)	Potential habitat was identified as wetland features (Community 3, 4, 9, 15) were found within 120m of a woodland (FOD). Breeding in stormwater pond (9) and possible in 3.	Habitat is limited in the study area. If compensation for wetlands is required, create with amphibian breeding pools.
Open Country Bird Breeding Habitat	Potential habitat, cultural meadows amount to >30 ha in size	Potential habitat exists, however target species were not identified within project boundaries.

Table 4.3 Potential Significant Wildlife Habitat Identified within the Study Area and GHD's Recommendations

Candidate SWH identified based on eco-regional criteria and ELC mapping	Results of Field Observations	Recommendation
Bat Maternity colonies	Potential Habitat, deciduous forests within study area (community 6, 8 and 13)	Potential habitat present in communities 6 and 13, which are outside of development envelope. Innes Park Woods protected with buffer.
Special Concern Species	The eastern wood pewee was identified within the study area, specifically in communities 8.	10 m buffer around protected Innes Park Woods

4.1.5 Fish and Aquatic Habitat

During GHD's literature review (NHIC database), no provincially and/or nationally rare species were documented within the study area (COSEWIC, 2017; COSSARO, 2017; SARA, 2017; OMNR, 2012; OMNRF, 2014). No critical habitat for aquatic Species at Risk (DFO, 2017) or sensitive spawning areas (OMNR, 2012) was found to occur within the study area. No aquatic Species at Risk were observed during field surveys.

Two watercourses were found to directly support fish, Watercourse 4 and 9. Fish and fish habitat are protected under the Federal Fisheries Act.

4.2 Natural Features

4.2.1 Wetlands

Three unevaluated wetlands were identified within the study area (communities 4, 9 and 15) The boundary of the wetland was confirmed in the field based on OWES guidelines, using a high accuracy GPS unit (Figure 1.1).

4.2.2 Ditches

One ditch were identified on the subject property. The ditch was located on the west side of the property adjacent to the agricultural fields. These features were dry and likely only conveyed water off the property during rainfall events with drainage into the stormwater ponds in the south. This feature would not be considered a water feature and GHD does not recommend protection for it.

4.2.3 Rock Barrens

Rock barrens were identified at community 8. This feature contained open rock with many deep crevasses. GHD confirmed that the area contains snake hibernacula. This was also observed by MNRF and City of Ottawa ecologists.

5. Impact Assessment and Recommendations

The following section provides a description of the predicted impacts that may result from the proposed development (Table 5.1). It also identifies mitigation measures to be implemented to avoid and/or minimize adverse effects to the natural environment features within or near the project. A full list of mitigation measures has been provided in Section 7 of this report.

5.1 Vegetation

The majority of the development area was former agricultural land, either with pasture or crops. Since that time the majority of the site has regenerated with young trees, small wetlands and overgrown fields. No rare ELC vegetation community types (Bakowsky, 1997) were identified on the study property.

The site is relatively diverse but the dominant successional habitats are dominated by Canada goldenrod with grasses and herbaceous plants. Small patches of regenerating trees have established, but unfortunately as they were mostly green ash, were set back due to Emerald ash borer infestations. Trembling aspen has established in other small patches. As limited mature vegetation occurs on site currently, no negative impacts on the overall diversity of the area are anticipated from the removal of most of the vegetation on this property and development of the mixed uses.

The mature Innes Park Woods is protected and is outside of the development area. A buffer will protect the mature trees, from negative impacts of this development. An open window on street A will provide green space north through the rock barren to the forest edge. Although this area is underlain by limestone, exposed over most of the buffer, there are patches of trees and shrubs throughout. The planting of additional trees and native species is recommended where soil depths allow and within any open space blocks and the buffer.

The six regionally rare species identified on site were now considered common since the rare species lists were generated (2005 and 2001). GHD does not recommend the retention of these species or transplanting.

A landscape plan should be developed to include a variety of native trees, shrubs and seed to be planted and incorporated into the subdivision plan. The landscape plan will improve the biodiversity within the area. Although the development includes industrial park, residential and mixed uses, the planting of a wide variety of native species is encouraged.

5.2 Breeding Birds

One provincially significant bird species was identified during GHD field surveys, least bittern in the temporary stormwater pond.

This species is rare in the Ottawa area and typically inhabits larger cattail marshes. The presence of a bird in this urbanizing area is unusual. As the habitat has not changed since the original surveys the potential for nesting is still possible. Prior to development of that area and moving the stormwater pond, it is recommended that an additional survey be conducted to determine presence/absence using the National Least Bittern Survey protocol (Environment Canada, 2013). As

with other marsh nesting birds, removal of the stormwater pond cannot occur in the peak breeding period of April 15th to September 15th. MECP should be consulted regarding the need for compliance with the Endangered Species Act.

One area sensitive bird species was identified during field surveys in the meadow habitat, savannah sparrow. This species was observed within Community 1. This community will be removed as a result of the proposed development. This species will continue to use the area for foraging and use the neighbouring properties for nesting.

Other area sensitive birds were found in the Innes Park Woods. Their habitat will not be impacted by the proposed development.

The development of the property will not have a significant impact on the bird species present. To protect the breeding birds cutting should be conducted outside of the breeding bird timing window (April 15th- August 15th) as per Environment Canada guidelines.

5.3 Wetlands

No Provincially Significant Wetlands were identified on the property. Three unevaluated wetlands were identified. The current status for this block of land is for mixed use. Due to the low diversity and early successional stages GHD does not recommend their retention. The highly developed area will contain new development on all stages. After build out it is highly unlikely the wetland will contain any significant value and the hydrology of the area will be altered and may even cut water sources to the area. The wetland surrounded by subdivision and directly adjacent to the busy roads would not provide any additional habitat to the area as all the wildlife connections will be altered. GHD recommends discussions with the Conservation Authority to provide compensation or other options for these wetland areas.

5.4 Wildlife Corridors / Connectivity

Limited connectivity across the landscape was identified in the general area. The hydro corridor and the current vegetation does provide habitat and some local connections. As development has proceeded to the south with new residential and roads, and to the east, these connections are being impacted on a regional scale. The surrounding area is developing rapidly, leaving a lack of connection across the landscape the hydro-corridor provides a narrow but continual corridor across the area. The hydro corridor was identified on the northern limits of the property moving north-east to south-west. The development of the property will impact on wildlife corridors but this is cumulative effect as the larger area south of Innes Road is urbanized. This will push wildlife populations south to the Greenbelt and the remaining rural properties..

5.5 Snake Hibernaculum

The presence of a snake hibernaculum and confirmation of 4 species and numerous individuals met the Significant Wildlife Habitat definition.

The hibernaculum's exact location is difficult to determine as numerous crevasses were present in the eastern part of the rock barren. Any one of which may be deep enough for the microclimate needed for snakes to overwinter.

The impact on the snakes in two fold. One a loss of the field habitat which is the main foraging area in the warmer months for the various grassland species present.

Secondly the impact on the rock barren and the snake hibernaculum or possible multiple hibernacula. The impacts can be from direct loss of habitat, impacts to staging areas, mortality as snakes move from the hibernacula in the spring out in the fields and when they return in the fall or from changes due to blasting, excavation or other construction related activities.

Allowing snakes to move from the remaining open space that will be present post build out to the hibernacula is critical to their continued presence and the SWH. Isolating the construction work from the retained open space lands and the rock barren can involve several mitigation measures. The hibernacula cannot be directly impacted during the overwintering period, which is from Oct. 1st to May 15th. The only construction proposed is the extension of Frank Bender Street and some commercial areas. However as snakes emerge in the spring, it is important to prevent mortality in the construction zone. Snake restrictive fencing may be required. This is similar to silt fence but needs to be installed to limit snakes going through, under or over the fencing. A plan should be prepared for the specifications required for a snake restrictive fence. The fencing must not include any kind of plastic netting as the backing, as this is shown to entangle snakes. Timing of the installation should not occur in the late summer when snakes are moving towards the hibernacula.

In addition the road extension is to be designed with several wildlife crossing tunnels designed specifically for passage by snakes.

Monitoring may also be required during site preparation and construction specifically to ensure snakes are not killed by heavy equipment or restricted access at critical periods. In addition mortality surveys and success of the wildlife underpass may also be required to show its effectiveness. Monitoring of the hibernaculum and the area adjacent may also be necessary to show that there are no impacts on the Significant Wildlife Habitat.

The Significant Wildlife Habitat Technical Guide and the SWH Mitigation Support Tool (2015) offer the following:

Urban Development

When hibernation sites are lost in an area, snakes and skinks are forced to select alternate sites. Many such sites will not provide sufficient protection from the extremes of winter weather or there may be no nearby suitable hibernacula. Reptiles which find themselves in marginal sites for the winter are at risk of winter mortality and susceptible to predation. If the majority of quality hibernacula are eliminated there can be serious impacts on reptile populations and their long-term persistence. Most species have little to no flexibility with respect to finding alternate sites. Some snake species, especially the larger ones (most of which are Species at Risk), are extremely faithful to one site, having used the same site for many generations. The loss of one such site could mean local extirpation of a population or sub-population or result in the loss of dozens of older breeding adults.

Development that affects the underground moisture regime has the potential to affect snake and skink hibernacula. Some species are sensitive to humidity levels and reduction in moisture may result in desiccation. Conversely, if the water table is increased, individuals may drown or there may be insufficient area between the water table and the frost line to support them through the winter.

Road Construction

Road construction activities near hibernacula present considerable risk to hibernating snakes and skinks. Excavation can easily destroy quality hibernacula by preventing access to subterranean resting sites. These activities may also permanently remove active sites from the area. Loss of these habitat features usually goes undetected since it is very difficult to recognize hibernacula using ground surface cues and since reptiles themselves tend to be secretive. Blasting road cuts through bedrock and the use of heavy equipment have the potential to affect hibernacula both at the construction site and adjacent to it by destroying underground structures that are important to wintering snakes. Additionally, roads that sever habitat linking summer range and hibernacula will prevent individuals from reaching traditional winter areas.

Roads that affect the underground moisture regime have the potential to affect snake and skink hibernacula. Some species are sensitive to humidity levels and reduction in moisture may result in desiccation. Conversely, if the water table is increased, individuals may drown or there may be insufficient area between the water table and the frost line to support them through the winter. Roads frequently act as a dam to surface water flow and shallow groundwater resulting in higher water levels on one side of the road and lower levels on the other.

The snake hibernacula is most likely located on the eastern part of the rock barren community 17, this is east of Frank Bender Street extension. Protection of the hibernacula and a 30 metre buffer are required to comply with SWH policies. The development plan includes protection of the rock barren and a buffer.

Table 5.1 Impact Assessment and Recommendation Summary

Feature or Function	Impact to Feature or Function	Mitigation	Residual Effect
Vegetation	Removal of sparsely vegetated area in most locations	-landscape plan to be developed to incorporate a diversity of native plant species	None
Species at Risk-least bittern	Removal of habitat	-An Endangered Species Act permit may be required from MECP prior to destruction of habitat	Compensation to be discussed re compliance with the ESA with MECP
Snake hibernaculum	Impact on SWH reptile hibernaculum (terrestrial)	-Design of eco passages under extension of Frank Bender Street. -Protection of rock barren community and buffer -Timing windows for construction. -Restrictive fencing solutions.	Measures to be finalized in consultation with City and MNRF.
Unevaluated Wetlands	No impact anticipated. Significant wetlands are located outside of the proposed development area.	Compensation for wetlands or other options	None

6. Policies and Legislative Compliance

The following section describes how the proposed development will be in conformance with the relevant federal, provincial and other regulatory legislation, policies, official plans and OP amendments that are applicable and relevant to the study area and the immediate vicinity.

6.1.1 Federal Legislation

Migratory Birds Convention Act

The core breeding period in Ontario for migratory birds under the MBCA for Bird Conservation Region 13 (i.e., the one the subject property lies within) extends from April 15th to August 15th (Environment and Climate Change Canada, 2014). As such clearing of trees and other vegetation for the development cannot occur during this timing window.

6.1.2 Provincial Legislation

Endangered Species Act

One provincially threatened bird species were identified on the subject property, least bittern. In order to be in compliance with the ESA, a permit may be required from MECP in order to destroy or

harm habitat for least bittern. Additionally, 2 threatened plant species, the butternut and black ash were identified, however the butternut was identified within an area slated for protection.

Provincial Policy Statement

In this EIS report, Section 5 and 7 of this report contain recommendations that would permit the proposed development to proceed in a manner consistent the applicable sections of the Provincial Policy Statement (PPS).

6.1.3 Local and Other Regulatory Bodies

City of Ottawa Official Plan (2013)

In this EIS report, Section 5 and 7 describe measures that would permit the proposed development application to proceed in a manner consistent the City of Ottawa Official Plan (2013). Provided these measures are followed, there should be no negative impacts on key natural heritage or hydrologic features or their functions. Further, connectivity between key natural heritage and hydrologic features would be maintained.

South Nation Conservation Authority Regulation 170/06

The proposed development will require the removal of the wetland pockets. Discussions with the Conservation Authority will be pursued in order to provide an adequate compensation for the wetland removal, if required.

7. Summary of Recommendations

The following section summarizes GHD's recommendations on how the proposed development can occur in compliance with applicable federal, provincial and other regulatory legislation, policies, official plans (OPs) and OP amendments.

7.1 General Recommendations

1. The construction envelopes must be clearly defined and delineated and a line staked and clearly marked in the field prior to any construction activities occurring on the site.
2. Phasing of the development area is recommended to limit loss of habitat.
3. Conservation Authority be consulted in order to determine the best option for the removal of the wetland on the future mixed use development lands.
4. Prior to any site preparation activities (e.g., grading, placement of fill) erosion and sediment control measures should be installed along all sides of construction envelope to ensure sediment laden runoff does not leave the site and interfere with adjacent natural features. The silt fence should be inspected and maintained throughout the construction phase and remain in place until the soils are stabilized and re-vegetated.
5. Any vegetation clearing required for site access prior to construction shall be completed outside the Breeding Bird timing window of April 15th to August 15th.
6. Obtain relevant permits from Conservation Authority.

7. MECP must be contacted in order to ensure compliance with the Endangered Species Act for the least bittern habitat.
8. A detailed mitigation plan be prepared for the snake hibernaculum and protection of this SWH feature. The plan is to include recommendations regarding monitoring programs.

7.2 Cumulative Impacts

Cumulative effects are changes to the environment that are caused by this project, in combination with other past, present and future initiatives. There is potential for future construction and maintenance works to occur within the same area. Potential adverse environmental effects associated with these types of projects are localized, short term and have a low likelihood of occurring provided mitigation measures are properly implemented. Given that each project is subject to its own specific EIS, and applicable environmental Guidelines, the possibility of cumulative effects is addressed for each respective development.

8. Conclusion

GHD Limited has prepared this Environmental Impact Study to address potential environmental issues associated with an application to develop Trails Edge North mixed use development. The proposed development will not result in negative impacts on the identified natural heritage features or their functions, provided the measures described in Sections 5 and 7 are implemented.

GHD's recommendations have been made to address potential impacts to natural heritage features and/or their functions during site preparation, construction and post-construction periods. Additional dialogue with the MECP and the conservation authority are required.

9. References

Agriculture Canada. 1960. Soil Associations of Southern Ontario.

Bakowsky, W.D. Dec. 1997. Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario.

Bird Studies Canada. 2007. Atlas of the Breeding Birds of Ontario square summary information sheets. Accessed on the World Wide Web at: https:/www.birdsontario.org/atlas/squareinfo.jsp.

Bird Studies Canada (BSC) Ontario Breeding Bird Atlas (2nd) point count methodologies. (2001). OBBA Participants Guide.

Brunton, D.F. March, 2005. Appendix A: Vascular plants of the City of Ottawa (significant species). City of Ottawa Urban Natural Areas Environmental Evaluation Study.

Cadman, M.D., P.F.J. Eagles and F.M. Helleiner. 1987. Atlas of the Breeding Birds of

Ontario. Federation of Ontario Naturalists and Long Point Bird Observatory.

City of Ottawa. 2003. City of Ottawa Official Plan. Accessed on World Wide Web at: http://ottawa.ca/en/city_hall/planningprojectsreports/ottawa2020/official_plan/vol_1/index.html

City of Ottawa. April 2012. Environmental Impact Statement Guidelines 2nd Edition.

City of Ottawa. May 2014. Species at Risk in Ottawa

COSEWIC. 2019. Canadian Species at Risk, April 2019. Committee on the Status of Endangered Wildlife in Canada. Accessed on the World Wide Web at: https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html.

COSSARO. 2018. Species at Risk in Ontario (SARO), 2019. Ontario Ministry of Natural

Cuddy, D.G. 1991. Vascular Plants of Eastern Ontario. Eastern Region, Ontario Ministry of Natural Resources.

Dobbyn, J.S., (1994). Atlas of the Mammals of Ontario. Federation of Ontario Naturalists. Don Mills, Ontario.

Environment Canada's Canadian Wildlife Service (Ontario Region). 1987. The Forest Bird Monitoring Program

Government of Canada. 1994. Migratory Birds Convention Act.

Government of Ontario. 2020. Provincial Policy Statement, 2020. Ministry of Municipal Affairs and Housing. Queen's Printer for Ontario. Accessed on the World Wide Web at: http://www.mah.gov.on.ca/Page215.aspx.

Government of Canada. 1994. Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22). Accessed on the World Wide Web at: http://laws-lois.justice.gc.ca/eng/acts/m-7.01/.

Government of Ontario. 2007. Endangered Species Act.

Lee, H., Bakowsky, W., Riley, J., Bowles, J., Puddister, M., Uhlig, P. and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application.

OMNR, South Central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

MNR. GIS database mapping. 2010.

MNR. February 2012. Draft Significant Wildlife Habitat Criterion Schedule 6E. Accessed on World Wide Web at: http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDgy

MNRF. 2020. Make-a-map-feature. Accessed on World Wide Web at: http://www.giscoeapp.lrc.gov.on.ca/Mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US

Muncaster Environmental Planning Inc. and Brunton Consulting Services. 2005. City of Ottawa: Urban Natural Areas Environmental Evaluation Study. Final Report.

Niblett Environmental Associates Inc. 2009. Trail's edge plan of subdivision east urban community City of Ottawa Environmental Impact Study.

Niblett Environmental Associates Inc. 2016. Trails edge east development City of Ottawa Environmental Impact Study.

Ontario Breeding Bird Atlas (OBBA). 1981-85, 2001-06. Atlas Square Summary. Accessed on the World Wide Web at: http://www.birdsontario.org/atlas/atlasmain.html. BSC.

Ottawa Environmental Management Branch & Ottawa Planning and Economic Development Committee. 1998. Natural and Open Spaces Study (NOSS): Final Report.

Ontario Ministry of Natural Resources and Forestry. January 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp.

Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. 2nd Edition. Toronto: Queen's Printer for Ontario. 248pp.

Ontario Ministry of Natural Resources and Forestry. 2013. Ontario Wetland Evaluation System: Southern Manual. 3rd Edition, Version 3.2. Queen's Printer for Ontario, 284pp.

SARA (Species at Risk Act). June, 2016. Schedule 1 ((Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4. Accessed on the World Wide Web at: http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1.

All of which is Respectfully Submitted,

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about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Appendices

Appendix I-A
Plant Species by Community

APPENDIX I - A Plant Species by Community

Families and genera for the plant species found in this appendix are listed in taxonomic order. The species are listed alphabetically by scientific name within each genus.

Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimburger 1982) and trees (Farrar 1995).

Total: Number of communities where plant species was recorded
X : Plant species recorded

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
STONEWORT FAMILY	*CHARACEAE*																
stonewort	*Chara spp.*	1									X						
HORSETAIL FAMILY	*EQUISETACEAE*																
field horsetail	*Equisetum arvense*	4						X								X	X
meadow horsetail	*Equisetum pratense*	2													X		X
ROYAL FERN FAMILY	*OSMUNDACEAE*																
interrupted fern	*Osmunda claytoniana*	2						X							X		
BRACKEN FERN FAMILY	*DENNSTAEDTIACEAE*																
eastern bracken fern	*Pteridium aquilinum*	2						X							X		
BEECH FERN FAMILY	*THELYPTERIDAE*																
New York fern	*Thelypteris noveboracensis*	1													X		

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WOOD FERN FAMILY	*DRYOPTERIDACEAE*																
spinulose wood-fern	*Dryopteris carthusiana*	2						X							X		
evergreen wood-fern	*Dryopteris intermedia*	2													X		X
marginal wood-fern	*Dryopteris marginalis*	1													X		
ostrich fern	*Matteuccia struthiopteris*	1						X									
sensitive fern	*Onoclea sensibilis*	6						X						X	X		X
PINE FAMILY	*PINACEAE*																
balsam fir	*Abies balsamea*	1						X									
white spruce	*Picea glauca*	2						X							X		
eastern white pine	*Pinus strobus*	4						X	X	X							
eastern hemlock	*Tsuga canadensis*	1													X		
CYPRESS FAMILY	*CUPRESSACEAE*																
common juniper	*Juniperus communis var. depressa*	1															
eastern white cedar	*Thuja occidentalis*	1															X
BUTTERCUP FAMILY	*RANUNCULACEAE*																
white baneberry	*Actaea pachypoda*	1													X		
red baneberry	*Actaea rubra*	1						X									
thimbleweed	*Anemone virginiana*	4		X				X	X								
virgin's bower	*Clematis virginiana*	3						X									X
sharp-lobed hepatica	*Hepatica acutiloba*	1						X									
round-lobed hepatica	*Hepatica americana*	1						X									
small-flowered buttercup	*Ranunculus abortivus*	4						X							X		X
tall buttercup	*Ranunculus acris*	3						X									X
WITCH HAZEL FAMILY	*HAMAMELIDACEAE*																
witch hazel	*Hamamelis virginiana*	1						X									
ELM FAMILY	*ULMACEAE*																
American elm	*Ulmus americana*	12		X	X		X	X	X	X						X	X
NETTLE FAMILY	*URTICACEAE*																
American stinging nettle	*Urtica dioica ssp. Gracilis*	2	X	X													

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WALNUT FAMILY	*JUGLANDACEAE*																
bitternut hickory	*Carya cordiformis*	2						X									
butternut	*Juglans cinerea*	1													X		
BEECH FAMILY	*FAGACEAE*																
American beech	*Fagus grandifolia*	1													X		
red oak	*Quercus rubra*	5						X	X	X					X		
BIRCH FAMILY	*BETULACEAE*																
speckled alder	*Alnus rugosa*	2						X									X
green alder	*Alnus viridis spp. Crispa Turrill*	3						X									
yellow birch	*Betula alleghaniensis Britt.*	1													X		
white birch	*Betula papyrifera*	4						X		X					X		X
beaked hazel	*Corylus cornuta*	1													X		
ironwood	*Ostrya virginiana*	3						X	X								
PINK FAMILY	*CARYOPHYLLACEAE*																
bladder campion	*Silene vulgaris*	1							X								
BUCKWHEAT FAMILY	*POLYGONACEAE*																
lady's thumb	*Polygonum persicaria*	1										X					
sheep sorrel	*Rumex acetosella*	3						X							X		
curled dock	*Rumex crispus*	4		X	X						X					X	
great water dock	*Rumex orbiculatus*	1															X
LINDEN FAMILY	*TILIACEAE*																
American basswood	*Tilia americana*	4						X	X						X		
VIOLET FAMILY	*VIOLACEAE*																
downy yellow violet	*Viola pubescens*	1															
kidney-leaved violet	*Viola renifolia*	3						X							X		
woolly blue violet	*Viola sororia*	2						X									

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WILLOW FAMILY	*SALICACEAE*																
large-toothed aspen	*Populus grandidentata*	1													X		
trembling aspen	*Populus tremuloides*	8						X	X						X	X	X
Bebb's willow	*Salix bebbiana*	1															X
pussy willow	*Salix discolor*	6			X			X	X		X					X	X
crack willow	*Salix fragilis*	1			X												
slender willow	*Salix petiolaris*	7		X	X			X								X	X
MUSTARD FAMILY	*BRASSICACEAE*																
garlic mustard	*Alliaria petiolata*	1															
Pennsylvania bittercress	*Cardamine pensylvanica*	1									X						
wild mustard	*Sinapsis arvensis*	1							X								
HEATH FAMILY	*ERICACEAE*																
lowbush blueberry	*Vaccinium angustifolium*	1								X							
PRIMROSE FAMILY	*PRIMULACEAE*																
fringed loosestrife	*Lysimachia ciliata*	3						X								X	X
starflower	*Trientalis borealis*	1													X		
GOOSEBERRY FAMILY	*GROSSULARIACEAE*																
prickly gooseberry	*Ribes cynosbati*	5						X		X				X			
red currant	*Ribes rubrum*	3						X									
ORPINE FAMILY	*CRASSULACEAE*																
mossy stonecrop	*Sedum acre*	3							X		X		X				
SAXIFRAGE FAMILY	*SAXIFRAGACEAE*																
early saxifrage	*Saxifraga virginiensis*	1							X								

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ROSE FAMILY	*ROSACEAE*																
agrimony	*Agrimonia gryposepela*	2													X		X
downy serviceberry	*Amelanchier arborea*	2						X									X
hawthorn species	*Crataegus spp.*	3		X			X										
common strawberry	*Fragaria virginiana*	11		X				X	X	X				X		X	X
yellow avens	*Geum aleppicum*	7		X	X			X						X			X
apple	*Malus domestica*	2								X							
silverweed	*Potentilla anserina*	1														X	
silvery cinquefoil	*Potentilla argentea*	1							X								
sulfur cinquefoil	*Potentilla recta*	4	X						X							X	
old-field cinquefoil	*Potentilla simplex*	1							X								
Canada plum	*Prunus nigra*	1						X									
pin cherry	*Prunus pensylvanica*	3						X								X	
black cherry	*Prunus serotina*	1													X		
choke cherry	*Prunus virginiana*	4		X				X									
Alleghany blackberry	*Rubus allegheniensis*	2						X									X
northern dewberry	*Rubus flagellaris*	3						X									X
wild red raspberry	*Rubus idaeus*	3							X	X				X			
purple-flowering raspberry	*Rubus odoratus*	2							X								X
dwarf raspberry	*Rubus pubescens*	2						X							X		
narrow-leaved meadowsweet	*Spiraea alba*	8			X			X						X	X	X	X

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PEA FAMILY	*FABACEAE*																
bird's-foot trefoil	*Lotus corniculatus*	3	X	X												X	
black medick	*Medicago lupulina*	3							X			X				X	
white sweet-clover	*Melilotus alba*	1							X								
low hop clover	*Trifolium agrarium*	2							X							X	
red clover	*Trifolium pratense*	9	X	X				X	X			X		X		X	X
white clover	*Trifolium repens*	3							X					X		X	
cow vetch	*Vicia cracca*	8	X					X	X					X			X
slender vetch	*Vicia tetrasperma*	1									X						
LOOSESTRIFE FAMILY	*LYTHRACEAE*																
purple loosestrife	*Lythrum salicaria*	5		X				X			X					X	X
EVENING PRIMROSE FAMILY	*ONAGRACEAE*																
dwarf enchanter's nightshade	*Circaea alpina*	1															X
Canada enchanter's nightshade	*Circaea lutetiana L. ssp.canadensis*	1													X		
common evening primrose	*Oenothera biennis*	2							X							X	
DOGWOOD FAMILY	*CORNACEAE*																
red-osier dogwood	*Cornus stolonifera*	8		X	X			X								X	X
SPURGE FAMILY	*EUPHORBIACEAE*																
leafy spurge	*Euphorbia esula*	1							X								
BUCKTHORN FAMILY	*RHAMNACEAE*																
glossy buckthorn	*Rhamnus frangula*	11	X	X	X			X	X					X	X	X	X
GRAPE FAMILY	*VITACEAE*																
Virginia creeper	*Parthenocissus inserta*	7		X				X	X	X					X		X
wild grape	*Vitis riparia*	3		X					X								

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MAPLE FAMILY	*ACERACEAE*																
amur maple	*Acer ginnala*	1	X														
Manitoba maple	*Acer negundo*	1							X								
Norway maple	*Acer platanoides*	2						X									
red maple	*Acer rubrum*	6						X						X	X		X
sugar maple	*Acer saccharum ssp.saccharum*	5						X	X	X					X		
Freeman's maple	*Acer x freemanii*	1						X									
CASHEW FAMILY	*ANACARDIACEAE*																
western poison-ivy	*Rhus rydbergii*	8		X			X	X	X								X
staghorn sumac	*Rhus typhina*	1							X								
WOOD-SORREL FAMILY	*OXALIDACEAE*																
common yellow wood-sorrel	*Oxalis dillenii*	1															X
European wood-sorrel	*Oxalis stricta*	2		X						X							
GERANIUM FAMILY	*GERANIACEAE*																
Bicknell's crane's-bill	*Geranium bicknellii*	2						X	X								
TOUCH-ME-NOT FAMILY	*BALSAMINACEAE*																
spotted jewelweed	*Impatiens capensis*	1									X						
GINSENG FAMILY	*ARALIACEAE*																
wild sarsaparilla	*Aralia nudicaulis*	1													X		
spikenard	*Aralia racemosa*	1													X		
CARROT FAMILY	*APIACEAE*																
bulbous water-hemlock	*Cicuta bulbifera*	1									X						
Queen-Anne's lace	*Daucus carota*	7	X	X			X	X	X							X	
cow parsnip	*Heracleum lanatum*	3	X				X	X									
wild parsnip	*Pastinaca sativa*	3		X												X	X
DOGBANE FAMILY	*APOCYNACEAE*																
spreading dogbane	*Apocynum androsaemifolium*	2							X								

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MILKWEED FAMILY	*ASCLEPIADACEAE*																
swamp milkweed	*Asclepias incarnata*	1														X	
common milkweed	*Asclepias syriaca*	6	X	X			X		X							X	
swallow-wort	*Cynanchum rossicum*	1														X	
NIGHTSHADE FAMILY	*SOLANACEAE*																
bitter nightshade	*Solanum dulcamara*	3		X					X	X							
BORAGE FAMILY	*BORAGINACEAE*																
Viper's bugloss	*Echium vulgare*	1							X								
common gromwell	*Lithospermum officinale*	1							X								
true forget-me-not	*Myosotis scorpioides*	1													X		
VERVAIN FAMILY	*VERBENACEAE*																
blue vervain	*Verbena hastata*	2														X	
MINT FAMILY	*LAMIACEAE*																
ground ivy	*Glechoma hederacea*	2						X			X						
American water-horehound	*Lycopus americanus*	1			X												
wild mint	*Mentha arvensis*	1		X													
catnip	*Nepeta cataria*	2							X			X					
heal-all	*Prunella vulgaris ssp. Lanceolata*	3	X	X				X									
PLANTAIN FAMILY	*PLANTAGINACEAE*																
broad-leaved plantain	*Plantago major*	5						X	X		X	X					
OLIVE FAMILY	*OLEACEAE*																
white ash	*Fraxinus americana*	4						X		X					X		
black ash	*Fraxinus nigra*	2						X									X
green ash	*Fraxinus pennsylvanica var. subinteg*	8		X	X			X	X					X			X
lilac	*Syringa vulgaris*	1							X								
FIGWORT FAMILY	*SCROPHULARIACEAE*																
slender-leaved agalinis	*Agalinis tenuifolia*	4	X	X	X						X						
butter-and-eggs	*Linaria vulgaris*	4	X						X							X	
common mullein	*Verbascum thapsus*	5						X	X							X	X

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MADDER FAMILY	*RUBIACEAE*																
cleavers	*Galium aparine*	7						X	X							X	X
white bedstraw	*Galium mollugo*	2		X													
HONEYSUCKLE FAMILY	*CAPRIFOLIACEAE*																
tartarian honeysuckle	*Lonicera tatarica*	7						X	X								X
common elderberry	*Sambucus canadensis*	1							X								
red-berried elderberry	*Sambucus racemosa*	2							X								
snowberry	*Symphoricarpos albus*	1							X								
maple-leaved viburnum	*Viburnum acerifolium*	1															
nannyberry	*Viburnum lentago*	4		X			X	X									X
high bush cranberry	*Viburnum trilobium*	1						X									
VALERIAN FAMILY	*VALERIANACEAE*																
common valerian	*Valeriana officinalis*	1	X														

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASTER FAMILY	*ASTERACEAE*																
common yarrow	*Achillea millefolium*	6	X	X				X	X								
common ragweed	*Ambrosia artemisiifolia L.*	4	X	X								X		X			
common burdock	*Arctium minus*	6	X		X				X						X	X	
marsh beggar-ticks	*Bidens frondosa*	1									X						
ox-eye daisy	*Chrysanthemum leucanthemum*	4	X					X	X								
Canada thistle	*Cirsium arvense*	1												X			
bull thistle	*Cirsium vulgare*	2							X							X	
Philadelphia fleabane	*Erigeron philadelphicus ssp. philadel*	2	X													X	
boneset	*Eupatorium perfoliatum*	2	X														X
large-leaved aster	*Eurybia macrophylla*	6						X	X						X		X
grass-leaved goldenrod	*Euthamia graminifolia*	1		X													
orange hawkweed	*Hieracium aurantiacum*	3						X	X								
king devil hawkweed	*Hieracium x florbundum*	1							X								
elecampane	*Inula helenium*	1		X													
wild lettuce	*Lactuca canadensis*	3						X							X		X
scotch thistle	*Onopordum acanthium*	2	X	X													
palmate-leaf sweet-coltsfoot	*Petasites frigidus*	1													X		
tall goldenrod	*Solidago altissima*	5	X	X			X									X	
Canada goldenrod	*Solidago canadensis*	6						X	X					X		X	X
early goldenrod	*Solidago juncea*	2						X									
gray goldenrod	*Solidago nemoralis ssp. Nemoralis*	2	X	X													
upland white aster	*Solidago ptarmicoides*	6		X			X	X		X				X	X		
field sow thistle	*Sonchus arvensis ssp.arvensis*	4		X	X			X									X
spiny-leaved sow thistle	*Sonchus asper*	2	X											X			
heart-leaved aster	*Symphyotrichum cordifolium*	2		X											X		
panicled aster	*Symphyotrichum lanceolatum ssp.he*	3				X		X						X			
calico aster	*Symphyotrichum lateriflorum var.late*	5	X	X			X	X						X			
New England aster	*Symphyotrichum novae- angliae*	8	X	X	X		X	X	X		X					X	

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
purple-stemmed aster	*Symphyotrichum puniceum*	4		X													X
tansy	*Tanacetum vulgare*	4	X	X													
common dandelion	*Taraxacum officinale*	8						X	X			X		X		X	
goat's-beard	*Tragopogon dubius*	1							X								
coltsfoot	*Tussilago farfara*	3									X			X		X	
WATER-PLANTAIN FAMILY	*ALISMATACEAE*																
common waterplantain	*Alisma plantago-aquatica*	2									X		X				
FROG'S-BIT FAMILY	*HYDROCHARITACEAE*																
frog's-bit	*Hydrocharis morsus-ranae*	1									X						
water celery	*Vallisneria americana*	1															
PONDWEED FAMILY	*POTAMOGETONACEAE*																
variable-leaved pondweed	*Potamogeton gramineus*	1									X						
common floating pondweed	*Potamogeton natans*	1															
ARUM FAMILY	*ARACEAE*																
Jack-in-the-pulpit	*Arisaema triphyllum*	2													X		X
DUCKWEED FAMILY	*LEMNACEAE*																
common duckweed	*Lemna minor*	1															
RUSH FAMILY	*JUNCACEAE*																
Canadian rush	*Juncus canadensis*	3	X		X	X											
brown-fruited rush	*Juncus pelocarpus*	1	X														
path rush	*Juncus tenuis*	3	X		X						X						

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SEDGE FAMILY	*CYPERACEAE*																
drooping wood sedge	*Carex arctata Boott*	6						X							X		X
bladder sedge	*Carex intumescens*	4				X		X							X		X
common lake sedge	*Carex lacustris*	1									X						
few-fruited sedge	*Carex oligocarpa*	3						X									X
pennsylvania sedge	*Carex pensylvanica*	2													X		
awl-fruited sedge	*Carex stipata*	4	X			X											X
needle spike-rush	*Eleocharis acicularis*	2				X					X						
wool-grass	*Scirpus cyperinus*	5	X	X	X	X					X						
softstem bulrush	*Scirpus validus*	3		X		X					X						
GRASS FAMILY	*POACEAE*																
redtop	*Agrostis gigantea*	2			X						X						
rough hair grass	*Agrostis scabra*	2	X			X											
poverty grass	*Aristida dichotoma*	1		X													
awnless brome grass	*Bromus inermis ssp.inermis*	5	X	X					X							X	
Canada bluejoint grass	*Calamagrostis canadensis*	5			X											X	X
poverty oatgrass	*Danthonia spicata*	1							X								
common barnyard grass	*Echinochloa crusgalli*	2									X	X					
northern manna grass	*Glyceria borealis*	1									X						
tall manna grass	*Glyceria grandis*	1									X						
rice cut grass	*Leersia oryzoides*	1															X
acuminate panic grass	*Panicum acuminatum var.acuminatu*	1							X								
witch grass	*Panicum capillare*	1									X						
reed canary grass	*Phalaris arundinacea*	7	X	X	X									X		X	X
timothy	*Phleum pratense*	4	X	X					X	X							
false melic grass	*Schizachne purpurascens (Torr.) Sw*	1													X		
foxtail millet	*Setaria italica*	3							X			X	X				
yellow foxtail	*Setaria pumila*	1							X								

Common Name	*Scientific Name*	Total	COMMUNITY NUMBER														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CATTAIL FAMILY	*TYPHACEAE*																
narrow-leaved cattail	*Typha angustifolia*	4		X							X		X				X
common cattail	*Typha latifolia*	8			X	X		X			X		X			X	X
LILY FAMILY	*LILIACEAE*																
bluebead lily	*Clintonia borealis*	1													X		
trout lily	*Erythronium americanum ssp. ameri*	3						X							X		
Canada mayflower	*Maianthemum canadense*	5						X		X					X		X
Indian cucumber-root	*Medeola virginiana*	1													X		
two-flowered Solomon's seal	*Polygonatum biflorum*	2						X									
Hairy Solomon's seal	*Polygonatum pubescens*	1													X		
false Solomon's seal	*Smilacina racemosa*	1						X									
star-flowered Solomon's seal	*Smilacina stellata*	1						X									
rose-twisted stalk	*Streptopus roseus*	2													X		
purple trillium	*Trillium erectum*	1													X		
white trillium	*Trillium grandiflorum*	3						X							X		
IRIS FAMILY	*IRIDACEAE*																
little blue-eyed grass	*Sisyrinchium montanum*	1															X
ORCHID FAMILY	*ORCHIDACEAE*																
helleborine	*Epipactis helleborine*	1								X							
Total Number of Plant Species	234		36	49	22	9	11	92	68	18	30	9	5	22	56	42	60
			Number of Plant Species Per Comm														

APPENDIX I - A Communities 16 - 20

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
STONEWORT FAMILY	*CHARACEAE*						
stonewort	*Chara spp.*	1					
HORSETAIL FAMILY	*EQUISETACEAE*						
field horsetail	*Equisetum arvense*	4					X
meadow horsetail	*Equisetum pratense*	2					
ROYAL FERN FAMILY	*OSMUNDACEAE*						
interrupted fern	*Osmunda claytoniana*	2					
BRACKEN FERN FAMILY	*DENNSTAEDTIACEAE*						
eastern bracken fern	*Pteridium aquilinum*	2					
BEECH FERN FAMILY	*THELYPTERIDAE*						
New York fern	*Thelypteris noveboracensis*	1					
WOOD FERN FAMILY	*DRYOPTERIDACEAE*						
spinulose wood-fern	*Dryopteris carthusiana*	2					
evergreen wood-fern	*Dryopteris intermedia*	2					
marginal wood-fern	*Dryopteris marginalis*	1					
ostrich fern	*Matteuccia struthiopteris*	1					
sensitive fern	*Onoclea sensibilis*	6	X	X			
PINE FAMILY	*PINACEAE*						
balsam fir	*Abies balsamea*	1					
white spruce	*Picea glauca*	2					
eastern white pine	*Pinus strobus*	4				X	
eastern hemlock	*Tsuga canadensis*	1					
CYPRESS FAMILY	*CUPRESSACEAE*						
common juniper	*Juniperus communis var. depressa*	1				X	

Common Name	*Scientific Name*	COMMUNITY NUMBER					
		Total	16	17	18	19	20
eastern white cedar	*Thuja occidentalis*	1					
BUTTERCUP FAMILY	*RANUNCULACEAE*						
white baneberry	*Actaea pachypoda*	1					
red baneberry	*Actaea rubra*	1					
thimbleweed	*Anemone virginiana*	4		X			
virgin's bower	*Clematis virginiana*	3	X				
sharp-lobed hepatica	*Hepatica acutiloba*	1					
round-lobed hepatica	*Hepatica americana*	1					
small-flowered buttercup	*Ranunculus abortivus*	4	X				
tall buttercup	*Ranunculus acris*	3		X			
WITCH HAZEL FAMILY	*HAMAMELIDACEAE*						
witch hazel	*Hamamelis virginiana*	1					
ELM FAMILY	*ULMACEAE*						
American elm	*Ulmus americana*	12	X	X	X	X	
NETTLE FAMILY	*URTICACEAE*						
American stinging nettle	*Urtica dioica ssp. Gracilis*	2					
WALNUT FAMILY	*JUGLANDACEAE*						
bitternut hickory	*Carya cordiformis*	2				X	
butternut	*Juglans cinerea*	1					
BEECH FAMILY	*FAGACEAE*						
American beech	*Fagus grandifolia*	1					
red oak	*Quercus rubra*	5				X	
BIRCH FAMILY	*BETULACEAE*						
speckled alder	*Alnus rugosa*	2					
green alder	*Alnus viridis spp. Crispa Turrill*	3	X		X		
yellow birch	*Betula alleghaniensis Britt.*	1					
white birch	*Betula papyrifera*	4					
beaked hazel	*Corylus cornuta*	1					
ironwood	*Ostrya virginiana*	3				X	

Common Name	*Scientific Name*	COMMUNITY NUMBER Total	16	17	18	19	20
PINK FAMILY	*CARYOPHYLLACEAE*						
bladder campion	*Silene vulgaris*	1					
BUCKWHEAT FAMILY	*POLYGONACEAE*						
lady's thumb	*Polygonum persicaria*	1					
sheep sorrel	*Rumex acetosella*	3				X	
curled dock	*Rumex crispus*	4					
great water dock	*Rumex orbiculatus*	1					
LINDEN FAMILY	*TILIACEAE*						
American basswood	*Tilia americana*	4				X	
VIOLET FAMILY	*VIOLACEAE*						
downy yellow violet	*Viola pubescens*	1				X	
kidney-leaved violet	*Viola renifolia*	3	X				
woolly blue violet	*Viola sororia*	2				X	
WILLOW FAMILY	*SALICACEAE*						
large-toothed aspen	*Populus grandidentata*	1					
trembling aspen	*Populus tremuloides*	8	X	X		X	
Bebb's willow	*Salix bebbiana*	1					
pussy willow	*Salix discolor*	6					
crack willow	*Salix fragilis*	1					
slender willow	*Salix petiolaris*	7		X			X
MUSTARD FAMILY	*BRASSICACEAE*						
garlic mustard	*Alliaria petiolata*	1			X		
Pennsylvania bittercress	*Cardamine pensylvanica*	1					
wild mustard	*Sinapsis arvensis*	1					
HEATH FAMILY	*ERICACEAE*						
lowbush blueberry	*Vaccinium angustifolium*	1					
PRIMROSE FAMILY	*PRIMULACEAE*						
fringed loosestrife	*Lysimachia ciliata*	3					
starflower	*Trientalis borealis*	1					

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
GOOSEBERRY FAMILY	*GROSSULARIACEAE*						
prickly gooseberry	*Ribes cynosbati*	5	X			X	
red currant	*Ribes rubrum*	3	X			X	
ORPINE FAMILY	*CRASSULACEAE*						
mossy stonecrop	*Sedum acre*	3					
SAXIFRAGE FAMILY	*SAXIFRAGACEAE*						
early saxifrage	*Saxifraga virginiensis*	1					
ROSE FAMILY	*ROSACEAE*						
agrimony	*Agrimonia gryposepela*	2					
downy serviceberry	*Amelanchier arborea*	2					
hawthorn species	*Crataegus spp.*	3			X		
common strawberry	*Fragaria virginiana*	11	X	X	X	X	
yellow avens	*Geum aleppicum*	7	X	X			
apple	*Malus domestica*	2	X				
silverweed	*Potentilla anserina*	1					
silvery cinquefoil	*Potentilla argentea*	1					
sulfur cinquefoil	*Potentilla recta*	4				X	
old-field cinquefoil	*Potentilla simplex*	1					
Canada plum	*Prunus nigra*	1					
pin cherry	*Prunus pensylvanica*	3				X	
black cherry	*Prunus serotina*	1					
choke cherry	*Prunus virginiana*	4	X	X			
Alleghany blackberry	*Rubus allegheniensis*	2					
northern dewberry	*Rubus flagellaris*	3				X	
wild red raspberry	*Rubus idaeus*	3					
purple-flowering raspberry	*Rubus odoratus*	2					
dwarf raspberry	*Rubus pubescens*	2					
narrow-leaved meadowsweet	*Spiraea alba*	8	X	X			
PEA FAMILY	*FABACEAE*						

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
bird's-foot trefoil	*Lotus corniculatus*	3					
black medick	*Medicago lupulina*	3					
white sweet-clover	*Melilotus alba*	1					
low hop clover	*Trifolium agrarium*	2					
red clover	*Trifolium pratense*	9		X			
white clover	*Trifolium repens*	3					
cow vetch	*Vicia cracca*	8	X	X	X		
slender vetch	*Vicia tetrasperma*	1					
LOOSESTRIFE FAMILY	*LYTHRACEAE*						
purple loosestrife	*Lythrum salicaria*	5					
EVENING PRIMROSE FAMILY	*ONAGRACEAE*						
dwarf enchanter's nightshade	*Circaea alpina*	1					
Canada enchanter's nightshade	*Circaea lutetiana L. ssp.canadensi*	1					
common evening primrose	*Oenothera biennis*	2					
DOGWOOD FAMILY	*CORNACEAE*						
red-osier dogwood	*Cornus stolonifera*	8	X	X	X		
SPURGE FAMILY	*EUPHORBIACEAE*						
leafy spurge	*Euphorbia esula*	1					
BUCKTHORN FAMILY	*RHAMNACEAE*						
glossy buckthorn	*Rhamnus frangula*	11	X	X			
GRAPE FAMILY	*VITACEAE*						
Virginia creeper	*Parthenocissus inserta*	7			X		
wild grape	*Vitis riparia*	3	X				
MAPLE FAMILY	*ACERACEAE*						
amur maple	*Acer ginnala*	1					
Manitoba maple	*Acer negundo*	1					
Norway maple	*Acer platanoides*	2	X				
red maple	*Acer rubrum*	6	X	X			
sugar maple	*Acer saccharum ssp.saccharum*	5				X	

Common Name	*Scientific Name*	COMMUNITY NUMBER					
		Total	16	17	18	19	20
Freeman's maple	*Acer x freemanii*	1					
CASHEW FAMILY	*ANACARDIACEAE*						
western poison-ivy	*Rhus rydbergii*	8		X	X	X	
staghorn sumac	*Rhus typhina*	1					
WOOD-SORREL FAMILY	*OXALIDACEAE*						
common yellow wood-sorrel	*Oxalis dillenii*	1					
European wood-sorrel	*Oxalis stricta*	2					
GERANIUM FAMILY	*GERANIACEAE*						
Bicknell's crane's-bill	*Geranium bicknellii*	2					
TOUCH-ME-NOT FAMILY	*BALSAMINACEAE*						
spotted jewelweed	*Impatiens capensis*	1					
GINSENG FAMILY	*ARALIACEAE*						
wild sarsaparilla	*Aralia nudicaulis*	1					
spikenard	*Aralia racemosa*	1					
CARROT FAMILY	*APIACEAE*						
bulbous water-hemlock	*Cicuta bulbifera*	1					
Queen-Anne's lace	*Daucus carota*	7			X		
cow parsnip	*Heracleum lanatum*	3					
wild parsnip	*Pastinaca sativa*	3					
DOGBANE FAMILY	*APOCYNACEAE*						
spreading dogbane	*Apocynum androsaemifolium*	2			X		
MILKWEED FAMILY	*ASCLEPIADACEAE*						
swamp milkweed	*Asclepias incarnata*	1					
common milkweed	*Asclepias syriaca*	6			X		
swallow-wort	*Cynanchum rossicum*	1					
NIGHTSHADE FAMILY	*SOLANACEAE*						
bitter nightshade	*Solanum dulcamara*	3					
BORAGE FAMILY	*BORAGINACEAE*						
Viper's bugloss	*Echium vulgare*	1					

Common Name	*Scientific Name*	COMMUNITY NUMBER Total	16	17	18	19	20
common gromwell	*Lithospermum officinale*	1					
true forget-me-not	*Myosotis scorpioides*	1					
VERVAIN FAMILY	*VERBENACEAE*						
blue vervain	*Verbena hastata*	2					X
MINT FAMILY	*LAMIACEAE*						
ground ivy	*Glechoma hederacea*	2					
American water-horehound	*Lycopus americanus*	1					
wild mint	*Mentha arvensis*	1					
catnip	*Nepeta cataria*	2					
heal-all	*Prunella vulgaris ssp. Lanceolata*	3					
PLANTAIN FAMILY	*PLANTAGINACEAE*						
broad-leaved plantain	*Plantago major*	5			X		
OLIVE FAMILY	*OLEACEAE*						
white ash	*Fraxinus americana*	4				X	
black ash	*Fraxinus nigra*	2					
green ash	*Fraxinus pennsylvanica var. subint*	8	X	X			
lilac	*Syringa vulgaris*	1					
FIGWORT FAMILY	*SCROPHULARIACEAE*						
slender-leaved agalinis	*Agalinis tenuifolia*	4					
butter-and-eggs	*Linaria vulgaris*	4			X		
common mullein	*Verbascum thapsus*	5			X		
MADDER FAMILY	*RUBIACEAE*						
cleavers	*Galium aparine*	7	X		X	X	
white bedstraw	*Galium mollugo*	2	X				
HONEYSUCKLE FAMILY	*CAPRIFOLIACEAE*						
tartarian honeysuckle	*Lonicera tatarica*	7	X	X	X	X	
common elderberry	*Sambucus canadensis*	1					
red-berried elderberry	*Sambucus racemosa*	2				X	
snowberry	*Symphoricarpos albus*	1					

Common Name	*Scientific Name*	COMMUNITY NUMBER					
		Total	16	17	18	19	20
maple-leaved viburnum	*Viburnum acerifolium*	1	X				
nannyberry	*Viburnum lentago*	4					
high bush cranberry	*Viburnum trilobium*	1					
VALERIAN FAMILY	*VALERIANACEAE*						
common valerian	*Valeriana officinalis*	1					
ASTER FAMILY	*ASTERACEAE*						
common yarrow	*Achillea millefolium*	6	X	X			
common ragweed	*Ambrosia artemisiifolia L.*	4					
common burdock	*Arctium minus*	6			X		
marsh beggar-ticks	*Bidens frondosa*	1					
ox-eye daisy	*Chrysanthemum leucanthemum*	4		X			
Canada thistle	*Cirsium arvense*	1					
bull thistle	*Cirsium vulgare*	2					
Philadelphia fleabane	*Erigeron philadelphicus ssp. philad*	2					
boneset	*Eupatorium perfoliatum*	2					
large-leaved aster	*Eurybia macrophylla*	6			X	X	
grass-leaved goldenrod	*Euthamia graminifolia*	1					
orange hawkweed	*Hieracium aurantiacum*	3		X			
king devil hawkweed	*Hieracium x florbundum*	1					
elecampane	*Inula helenium*	1					
wild lettuce	*Lactuca canadensis*	3					
scotch thistle	*Onopordum acanthium*	2					
palmate-leaf sweet-coltsfoot	*Petasites frigidus*	1					
tall goldenrod	*Solidago altissima*	5			X		
Canada goldenrod	*Solidago canadensis*	6			X		
early goldenrod	*Solidago juncea*	2			X		
gray goldenrod	*Solidago nemoralis ssp. Nemoralis*	2					
upland white aster	*Solidago ptarmicoides*	6					
field sow thistle	*Sonchus arvensis ssp.arvensis*	4					

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
spiny-leaved sow thistle	*Sonchus asper*	2					
heart-leaved aster	*Symphyotrichum cordifolium*	2					
panicled aster	*Symphyotrichum lanceolatum ssp.*	3					
calico aster	*Symphyotrichum lateriflorum var.la*	5					
New England aster	*Symphyotrichum novae- angliae*	8					
purple-stemmed aster	*Symphyotrichum puniceum*	4		X	X		
tansy	*Tanacetum vulgare*	4	X		X		
common dandelion	*Taraxacum officinale*	8		X	X	X	
goat's-beard	*Tragopogon dubius*	1					
coltsfoot	*Tussilago farfara*	3					
WATER-PLANTAIN FAMILY	*ALISMATACEAE*						
common waterplantain	*Alisma plantago-aquatica*	2					
FROG'S-BIT FAMILY	*HYDROCHARITACEAE*						
frog's-bit	*Hydrocharis morsus-ranae*	1					
water celery	*Vallisneria americana*	1					X
PONDWEED FAMILY	*POTAMOGETONACEAE*						
variable-leaved pondweed	*Potamogeton gramineus*	1					
common floating pondweed	*Potamogeton natans*	1					X
ARUM FAMILY	*ARACEAE*						
Jack-in-the-pulpit	*Arisaema triphyllum*	2					
DUCKWEED FAMILY	*LEMNACEAE*						
common duckweed	*Lemna minor*	1					X
RUSH FAMILY	*JUNCACEAE*						
Canadian rush	*Juncus canadensis*	3					
brown-fruited rush	*Juncus pelocarpus*	1					
path rush	*Juncus tenuis*	3					
SEDGE FAMILY	*CYPERACEAE*						
drooping wood sedge	*Carex arctata Boott*	6	X	X	X		
bladder sedge	*Carex intumescens*	4					

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
common lake sedge	*Carex lacustris*	1					
few-fruited sedge	*Carex oligocarpa*	3		X			
pennsylvania sedge	*Carex pensylvanica*	2				X	
awl-fruited sedge	*Carex stipata*	4	X				
needle spike-rush	*Eleocharis acicularis*	2					
wool-grass	*Scirpus cyperinus*	5					
softstem bulrush	*Scirpus validus*	3					
GRASS FAMILY	*POACEAE*						
redtop	*Agrostis gigantea*	2					
rough hair grass	*Agrostis scabra*	2					
poverty grass	*Aristida dichotoma*	1					
awnless brome grass	*Bromus inermis ssp.inermis*	5			X		
Canada bluejoint grass	*Calamagrostis canadensis*	5	X	X			
poverty oatgrass	*Danthonia spicata*	1					
common barnyard grass	*Echinochloa crusgalli*	2					
northern manna grass	*Glyceria borealis*	1					
tall manna grass	*Glyceria grandis*	1					
rice cut grass	*Leersia oryzoides*	1					
acuminate panic grass	*Panicum acuminatum var.acumina*	1					
witch grass	*Panicum capillare*	1					
reed canary grass	*Phalaris arundinacea*	7	X				
timothy	*Phleum pratense*	4					
false melic grass	*Schizachne purpurascens (Torr.) S*	1					
foxtail millet	*Setaria italica*	3					
yellow foxtail	*Setaria pumila*	1					
CATTAIL FAMILY	*TYPHACEAE*						
narrow-leaved cattail	*Typha angustifolia*	4					
common cattail	*Typha latifolia*	8					X
LILY FAMILY	*LILIACEAE*						

			COMMUNITY NUMBER				
Common Name	*Scientific Name*	Total	16	17	18	19	20
bluebead lily	*Clintonia borealis*	1					
trout lily	*Erythronium americanum ssp. ame*	3				X	
Canada mayflower	*Maianthemum canadense*	5				X	
Indian cucumber-root	*Medeola virginiana*	1					
two-flowered Solomon's seal	*Polygonatum biflorum*	2				X	
Hairy Solomon's seal	*Polygonatum pubescens*	1					
false Solomon's seal	*Smilacina racemosa*	1					
star-flowered Solomon's seal	*Smilacina stellata*	1					
rose-twisted stalk	*Streptopus roseus*	2				X	
purple trillium	*Trillium erectum*	1					
white trillium	*Trillium grandiflorum*	3				X	
IRIS FAMILY	*IRIDACEAE*						
little blue-eyed grass	*Sisyrinchium montanum*	1					
ORCHID FAMILY	*ORCHIDACEAE*						
helleborine	*Epipactis helleborine*	1					
Total Number of Plant Species	234		31	26	27	31	7

Number of Plant Species Per Community

Appendix I-B
List of Significant Plant Species

APPENDIX I - B List of Significant Plant Species

Plant species observed by NEA with significant status on national, provincial and relevant regional lists are listed with status codes and where applicable the most current year of publication. Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimburger 1982) and trees (Farrar 1995).

NATIONAL RANKING **Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Government of Canada**
Species at Risk Act (SARA), SCHEDULE 1 (Subsections 2(1), 42(2) and 68(2)), Government of Can

PROVINCIAL RANKING **Species at Risk in Ontario (COSSARO), Government of Ontario**
Provincial Rank (SRANK), Natural Heritage Information Center, Government of Ont

REGIONAL RANKING
Brunton Ottawa Brunton, 2005, Ottawa
Cuddy, Eastern 4 Region 4 (East), D.G.Cuddy, 1991

STATUS CODES

COSEWIC
COSSARO
SARA
END * - Endangered Species
THR * - Threatened Species
SC * - Species of Concern

SRANK
S1 - Extremely Rare
S2 - Very Rare
S3 - Rare to Uncommon

Regional Lists
R - Rare native species
RS -Regional significant
EXP - Extirpated native species

***Year of Status Publication included in Code**

Other national or provincial codes not listed

Other Regional codes not listed

		NATIONAL RANKINGS		PROVINCIAL RANKINGS		REGIONAL RANKINGS			
Common Name	**Scientific Name**	**COSEWIC**	**SARA**	**COSSARO**	**SRank**	**Brunton Ottawa**	**Cuddy, Eastern**		
witch hazel	Hamamelis virginiana					RS			
butternut	Juglans cinerea	END Apr/14	END Mar/13	END Jun/14	S3?				
kidney-leaved violet	Viola renifolia						R		
red currant	Ribes rubrum					R			

Common Name	Scientific Name	COSEWIC	SARA	COSSARO	SRank	Brunton Ottawa	Cuddy, Eastern			
slender vetch	Vicia tetrasperma					R	R			
leafy spurge	Euphorbia esula					R	R			
cow parsnip	Heracleum lanatum					RS	R			
true forget-me-not	Myosotis scorpioides					R	R			
black ash	Fraxinus nigra	THR Nov/18								
cleavers	Galium aparine						R			
common valerian	Valeriana officinalis					R				
palmate-leaf sweet-coltsfoot	Petasites frigidus						R			
variable-leaved pondweed	Potamogeton gramineus						R			
Canadian rush	Juncus canadensis						R			
drooping wood sedge	Carex arctata Boott						R			
softstem bulrush	Scirpus validus					RS				
foxtail millet	Setaria italica					R				
two-flowered Solomon's seal	Polygonatum biflorum					R				
little blue-eyed grass	Sisyrinchium montanum					RS				
Plants with Ranking	**Total** 19 **Status List Total**	4	2	2		11	10	0	0	0

Appendix II
Project Bird Status Report

APPENDIX II - B Bird Status Report - Comprehensive

Bird species observed by GHD are listed in the order followed the American Ornithologists' Union (AOU) Check-list of North American birds (7th edition, 1999, 47th Supplement). Common and scientific nomenclature are based on those used by AOU. Breeding status and breeding evidence code are listed when observed. Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :		
	END - endangered	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.

*** Other status levels are not displayed**

List Sources:		
	COSEWIC	The Committee on the Status of Endangered Wildlife in Canada, May 2018.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, June 2018.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2018.
	Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000
	Region 6	Southern Ontario Wetland Evaluation Appendix 11B, Version 3.2, March 2013

Breeding Status: (Observed By NEA)

B -species observed in breeding season in suitable habitat with some evidence of breeding (confirmed, probable or possible as per Ontario Breeding Bird Atlas, 2002).
F -species observed in breeding season but no evidence of breeding or suitable nest sites available on the study site (includes flyovers, migrants and foraging colonial breeders).
M -species observed outside of breeding season for that species and in area outside of the known breeding range for that species.

Breeding Evidence Code: (Observed By NEA)

OBSERVED
X -species observed in its breeding season (no evidence of breeding).

POSSIBLE BREEDING
H -species observed in its breeding season in suitable nesting habitat
S -singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat

PROBABLE BREEDING
P -pair observed in their breeding season in suitable nesting habitat
T -permanent territory presumed through registration of territorial song on at least 2days, a week or more apart, at the same place
D -courtship or display between a male and a female or 2 males, including courtship feeding or copulation
V -visiting probable nest site
A -agitated behaviour or anxiety calls of an adult
B -brood patch on adult female or cloacal protuberance on adult male
N -nest-building or excavation of nest hole

CONFIRMED BREEDING
DD -distraction display or injury feigning
NU -used nest or egg shell found (occupied or laid within the period of study)
FY -recently fledged young or downy young, including young incapable of sustained flight
AE -adults leaving or entering nest site in circumstances indicating occupied nest
FS -adult carrying fecal sac
CF -adult carrying food for young
NE -nest containing eggs
NY -nest with young seen or heard

SOURCE: Ontario Breeding Bird Atlas March 2001

AOU Code	Common Name	Scientific Name	Observed Breeding Status	Breed Evidence Code	COSEWIC	COSSARO	SARA	Area Sensitive	Region 6		
CAGO	Canada Goose	*Branta canadensis*	B	None				No			
MALL	Mallard	*Anas platyrhynchos*	B	None				No			
GBHE	Great Blue Heron	*Ardea herodias*	B	None				No			
TUVU	Turkey Vulture	*Cathartes aura*	B	None				No			
RTHA	Red-tailed Hawk	*Buteo jamaicensis*	B	None				No			
KILL	Killdeer	*Charadrius vociferus*	B	None				No			
WISN	Wilson's Snipe	*Gallinago delicata*	B	None				No			
RBGU	Ring-billed Gull	*Larus delawarensis*	B	None				No			
ROPI	Rock Pigeon	*Columbia livia*	B	None				No			
MODO	Mourning Dove	*Zenaida macroura*	B	None				No			
ALFL	Alder Flycatcher	*Empidonax alnorum*	B	None				No			
WIFL	Willow Flycatcher	*Empidonax traillii*	B	None				No			
LEFL	Least Flycatcher	*Empidonax minimus*	B	None				No			
EAKI	Eastern Kingbird	*Tyrannus tyrannus*	B	None				No			
WAVI	Warbling Vireo	*Vireo gilvus*	B	None				No			
BLJA	Blue Jay	*Cyanocitta cristata*	B	None				No			
AMCR	American Crow	*Corvus brachyrhynchos*	B	None				No			
TRES	Tree Swallow	*Tachycineta bicolor*	B	None				No			
BANS	Bank Swallow	*Riparia riparia*	B	None	THR	THR	THR	No			
BARS	Barn Swallow	*Hirundo rustica*	B	None	THR	THR	THR	No			
HOWR	House Wren	*Troglodytes aedon*	B	None				No			
VEER	Veery	*Catharus fuscescens*	B	None				Yes			
AMRO	American Robin	*Turdus migratorius*	B	None				No			
GRCA	Gray Catbird	*Dumetella carolinensis*	B	None				No			
BRTH	Brown Thrasher	*Toxostoma rufum*	B	None				No			
EUST	European Starling	*Sturnus vulgaris*	B	None				No			

CEWX	Cedar Waxwing	*Bombycilla cedrorum*	B	None				No				
YEWA	Yellow Warbler	*Dendroica petechia*	B	None				No				
COYE	Common Yellowthroat	*Geothlypis trichas*	B	None				No				
CHSP	Chipping Sparrow	*Spizella passerina*	B	None				No				
CCSP	Clay-colored Sparrow	*Spizella pallida*	B	None				No				
SASP	Savannah Sparrow	*Passerculus sandwichen*	B	None				No				
SOSP	Song Sparrow	*Melospiza melodia*	B	None				No				
SWSP	Swamp Sparrow	*Melospiza georgiana*	B	None				No				
NOCA	Northern Cardinal	*Cardinalis cardinalis*	B	None				No				
RBGR	Rose-breasted Grosbeak	*Pheucticus ludovicianus*	B	None				No				
BOBO	Bobolink	*Dolichonyx oryzivorus*	B	None	THR	THR	THR	No				
RWBL	Red-winged Blackbird	*Agelaius phoeniceus*	B	None				No				
COGR	Common Grackle	*Quiscalus quiscula*	B	None				No				
BHCO	Brown-headed Cowbird	*Molothrus ater*	B	None				No				
PUFI	Purple Finch	*Carpodacus purpureus*	B	None				No				
AMGO	American Goldfinch	*Carduelis tristis*	B	None				No				
TOTAL SPECIES OBSERVED:	**42**	**BREEDING SPECIES OBSERVED:**	**42**		**3**	**3**	**3**	**1**	**0**	**0**	**0**	

Appendix III
Conceptual Plan

TRAILSEDGE PHASE 5

BLOCK CONCEPT PLAN

LEGEND

- Low Density Residential - Detached Units
- Low Density Residential - Townhome Units
- Low Density Residential - Back-to-back Townhome Units
- Medium Density Residential
- Highest Density Residential
- Future Employment
- Park
- Stormwater Management Facility
- Existing Municipal Snow Disposal Facility
- Rock Barren
- Land Adjacent to Rock Barren
- Subject Lands

0 50 100 200m

No.	REVISION	DATE	BY
4	REVISE BOUNDARY LINE	2021.05.07	RP
3	REVISE BLOCK 73, 74, 75	2020.08.17	EL
2	FOR CLIENT REVIEW	2020.08.13	RP
1	BLOCK PLAN	2020.08.12	RP

CLIENT
RICHCRAFT

RICHCRAFT Group of Companies

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DESIGNED	RP
REVIEWED	RP
DATE	2020.08.10

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