100 Eco Parkway Additional Lands
Wetland Characterization and GRCA Policy Conformity Memorandum
Township of Southgate, Grey County, Ontario

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Acronyms

AA – Aboud & Associates Inc.

CC – Coefficient of Conservatism

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

CW – Coefficient of Wetness

Class EA – Class Environmental Assessment

EIS – Environmental Impact Study

ELC – Ecological Land Classification

ESA – Endangered Species Act

ESC – Erosion and Sediment Control

GGH – Greater Golden Horseshoe

GRCA – Grand River Conservation Authority

MECP – Ontario Ministry of the Environment, Conservation and Parks

MNRF/MNDMNRF – Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry

NHIC – Natural Heritage Information Centre

OMMAH – Ontario Ministry of Municipal Affairs and Housing

O/Reg. / O.Reg. – Ontario Regulation

OWES – Ontario Wetland Evaluation System

PPS – Provincial Policy Statement

PSW – Provincially Significant Wetland

S-Rank – Species Rank

SAR – Species at Risk

SARA – Species at Risk Act (Federal)

SARO – Species at risk Ontario (Provincial)

SWH – Significant Wildlife Habitat

VASCAN – Database of Vascular Plants Canada

1.0 Introduction

1.1 Proposed Work

Envest Corp. is proposing the construction of an anaerobic digester facility at the lands located at 100 Eco Parkway in Dundalk and has obtained a Grand River Conservation Authority (GRCA) work permit for the existing lands. An opportunity for expansion of the proposed facility within additional lands, hereby the subject property (*Figure 1*), occurs adjacent to the southeast of 100 Eco Parkway. Aboud & Associates (AA) has been retained by Envest Corp. to carry out a Wetland Characterization and GRCA Policy Conformity Memorandum to the satisfaction of the GRCA for the subject property, describing the development proposition, determining the extent of impacts to natural features, providing mitigation and compensation recommendations, and discussing development conformity to GRCA policies for wetland features. Loft Planning Inc. was retained by Envest Corp. to work with Aboud & Associates as it relates to the conformance and consistency of the proposed use with the relevant policy documents.

1.2 Existing Conditions

The subject property is entirely comprised of wetland area, identified as a portion of a Grand River Conservation Authority (GRCA) unevaluated wetland and a portion of the Provincially Significant Melancthon Wetland Complex #1. Two watercourses, regulatory floodplain, and existing industrial lands occur adjacent the subject property to the south and west, and north respectively.

Historical aerial imagery indicates that the lands within the study area were utilized for agricultural purposes prior to being acquired by the Township of Southgate.

For the purposes of this memorandum, the study area is classified as the subject property and up to 120m adjacent the subject property, where access is granted. Where access is denied, surveys were carried out from the limits of the accessible lands and public right-of-way.

1.3 Existing Regulations

1.3.1 Provincial Policy Statement

The *Provincial Policy Statement* (OMMAH 2020) (PPS) provides policy direction on matters of provincial interest related to land use planning and development.

The PPS states that:

“Natural features and areas shall be protected for the long term.”

And that:
“The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where

possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features."

"Development and site alteration shall not be permitted in:

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

The PPS also states that:

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

The PPS defines 'Infrastructure' as physical structures (facilities and corridors) that form the foundation for development. Infrastructure includes sewage and water systems, septic treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, transit and transportation corridors and facilities, oil and gas pipelines and associated facilities.

1.3.2 Endangered Species Act, 2007

The provincial Endangered Species Act, 2007 (ESA) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MNRF 2019). The habitat of species at risk is also generally protected under the ESA. Protected habitat is habitat identified as essential for life processes including breeding, rearing, feeding, hibernation, and migration.

The ESA (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,
(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,
(ii) any part of a living or dead member of a species referred to in subclause (i),
(iii) anything derived from a living or dead member of a species referred to in subclause (i); or
(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1) (a) of the ESA states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species."

Clause 16(5) of the ESA states that:

"An agreement entered into under this section may require the authorized party under the agreement to pay a species conservation charge to the Agency in accordance with Section 20.3 if an impacted species under the agreement is also a conservation fund species."

Clause 17(1) of the ESA states:
"The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threated species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10. 2007, c. 6, s. 17(1)".

An authorization or permit between the proponent and the Minister of Natural Resources and Forestry is required to authorize activities that would otherwise be prohibited by subsection 9(1) and 10(1), 16(5) or 17(1) of the ESA.

1.3.3 Grand River Conservation Authority

The GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06) Section 8.4 states that:

"8.4.1 Development/Interference within a wetland or development within an area of interference will not be permitted except in accordance with the policies in Sections 8.4.3-8.4.13."

"8.4.6 Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water supply wells, well houses, and pipelines, within a wetland larger than specified in Sections 8.4.4-8.4.5 may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, provided that it can be demonstrated that:

- *a) an Environmental Assessment or other comprehensive plan supported by the GRCA, demonstrates that all alternatives to avoid wetland loss or interference have been considered and that the proposed alignment minimizes wetland loss or interference to the greatest extent possible, and*
- *b) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions."*

Public Infrastructure is not specifically defined within O/Reg. 150/06 apart from the minor list within section 8.4.6 that does not limit further designations. The proposed facility, on the subject property is the tank farm location for the adjacent permitted anaerobic digestor. The anaerobic digestor utilizes raw materials that will be sourced in part from Ontario municipal waste contracts, including Ontario sourced organic materials to produce biogas and digestate. This process can be defined as a waste disposal system, and a facility supplying other forms of energy to the public, including natural gas.

Additionally, when reviewed with consideration for the definitions of the PPS, the proposed facility meets the definition of infrastructure.

1.3.4 County of Grey Official Plan

The County of Grey Official Plan (2019) Schedule A Map 2 indicates that the study area contains lands designated as Primary Settlement Area and Hazard Lands.

Section 7.2 indicates that the Hazard Lands designation includes floodplains, steep or erosion prone slopes, organic or unstable soils, poorly drained areas, and lands along the Georgian Bay shoreline. Furthermore, the section states the following:

"New development shall generally be directed away from Hazard Lands. The policies of this section of the Plan work together with MNRF Natural Hazards Technical Guidelines, as well as Conservation Authorities regulations, and policies.

… 3. In the Hazard Lands land use type buildings and structures are generally not permitted. Minor extensions or enlargements of existing buildings and structures may be permitted subject to the policies of Section 7. Non-habitable buildings connected with public parks, such as picnic shelters, may be permitted.

4. Development and site alteration is not permitted within the floodway portion of the floodplain or defined portion of the dynamic beach. The floodway is the entire floodplain, unless the Two-Zone Concept is in use.

… 9. In the Hazard Lands land use type development and site alterations will only be considered if all of the following can be satisfied:

- *a) The hazards can be safely addressed and new hazards are not created or existing ones aggravated;*
- *b) No adverse environmental impacts will result. The County, in consultation with the Conservation Authority, may require an environmental impact study to be prepared at the proponent's expense, in accordance with this Plan;*
- *c) Vehicles and people have a way of safely entering and existing at all times;*
- *d) The development does not include;*
    - *a. Institutional uses including hospitals, nursing homes, pre-school, school nurseries, day care and schools, where there is a threat to the safe evacuation of the site, the elderly, persons with disabilities or young during an emergency as a result of flooding, failure of flood proofing measures or protection works, or erosion; or*
    - *b. Emergency services such as that provided by fire, police, and ambulance stations and electrical substations, which would be impaired during an emergency as a result of flooding, the failure of flood proofing measures and/or protection works, and/or erosion; or*
    - *c. Involve hazardous substances, and their disposal, manufacture, treatment or storage of.*
- *e) The advice or approval where required, of the appropriate Conservation Authority shall be obtained. The County and the Conservation Authority will consider the mitigation of*

effects on vegetation, wildlife and fishery resources, and the natural features of the site. There is no feasible location for the development outside of the Hazard Lands land use type."

Based on the policies of the County of grey Official Plan, the proposed use would be considered infrastructure and would therefore conform to the policies of the Official Plan.

1.3.5 Township of Southgate Official Plan

Official Plan (2008 Consolidation)
The Township of Southgate Official Plan (2008 Consolidation) Map 1 Schedule A, Dundalk indicates the study area is situated within the Urban area boundary of Dundalk and the lands are designated Industrial and Hazard Lands.

Section 6.2.2 of the Official Plan outlines Development Policies within lands designated as Hazard Lands and includes the following:
"… 5. Where new development and site alteration is permitted above, it shall only occur if the following can be addressed:

- *i. The hazards can be safely addressed, including access to and from the site, and no new hazards are created or existing hazards aggravated.*
- *ii. No environmental impacts will result. The Township, in consultation with the Conservation Authority, may require an Environmental Impact Study to be prepared at the proponent's expense, in accordance with this Plan.*
- *iii. The development does not include institutional uses or emergency services or involve hazardous substances.*
- *iv. The approval of the County and appropriate Conservation Authority, who will consider the mitigation of effects on vegetation, wildlife and fishery resources, and the natural features of the site.*

6. Development will be setback from the top of bank of all slopes and ravines having a slope of 3:1 or greater, in accordance with the requirements of the appropriate Conservation Authority."

Official Plan (Adopted 2022)
The Council of the Township of Southgate adopted a new Official Plan on May 4, 2022. Schedule 'A' Map 2 indicates the study area is situated within the Urban area Boundary of Dundalk and the lands are designated Hazard Lands.
Section 5.5.2 of the Official Plan outlines Permitted Uses within lands designated as Hazard Lands and includes the following:
"Section 5.5.2.1 Permitted Uses

1) *Permitted uses in the Hazard Lands designation are: forestry and uses connected with the conservation of water, soil, wildlife and other natural resources; agriculture; passive public parks;* ***public utilities****; and, resource-based recreational uses. The aforementioned uses will only be permitted*

where site conditions are suitable and where the relevant hazard impacts have been reviewed and found to be acceptable to the Township in consultation with the Conservation Authority.

2) *Buildings and structures are generally not permitted; however, non-habitable buildings connected with public parks, such as picnic shelters, may be allowed. Minor extensions or enlargements of other types of existing buildings and structures may be permitted provided the appropriate conservation authority supports such extensions or enlargement. A Planning Act application (…) may also be required."*

Public utilities are a permitted use within the Hazard Lands designation. The Official Plan (May 4, 2022), defines utilities as:
"…means physical structures (facilities and corridors) that form the foundation for development. Utilities include, but are not limited to, alternative energy systems, conventional energy systems, electric power generation and transmission (e.g., hydro corridors), communications/telecommunications, sewage and water systems, septage treatment systems, and oil/gas pipelines."

Based on this definition the proposal for tanks related to the adjacent anerobic digestor facility, is considered a permitted use.

1) Section 5.5.2.2 outlines development policies within lands designated as Hazard lands and includes the following: *"Placing, removing or re-grading fill material of any kind, whether originating on the site or elsewhere, is not permitted without written approval of the appropriate Conservation Authority in the 'Hazard Lands' designation."*
4) *"Development and site alterations noted in sections 5.4.2.2 (1) and 5.4.2.2 (3) above will only be considered if all of the following can be satisfied:*
   a) The hazards can be safely addressed and new hazards are not created or existing ones aggravated, and where the effects and risk to public safety are minor and could be mitigated in accordance with provincial standards for floodproofing, protection works, and access.
   b) No adverse environmental impacts will result. The Township, in consultation with the relevant Conservation Authority, may require an Environmental Impact Study, Floodplain Assessment, or other technical studies to be prepared.
   c) Vehicles and people have a way of safely entering and exiting at all times;
   d) The development does not include;
      i) Institutional uses including hospitals, nursing homes, pre-school, school nurseries, child care facilities and schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities or the young during an emergency as a result of flooding, failure of flood proofing measures or protection works, or erosion; or
      ii) Emergency Services such as that provided by fire, police, and ambulance stations and electrical substations, which would be impaired during an

emergency as a result of flooding, the failure of flood proofing measures and/or protection works, and/or erosion; or

iii) Involve hazardous substances, and their disposal, manufacture, treatment or storage of.

e) The advice or approval where required of the appropriate Conservation Authority shall be obtained. The Township and Conservation Authority will consider the mitigation of effects on vegetation, wildlife and fisher resources, and the natural features of the site.

f) There is no feasible location for the development outside of Hazard Lands designation and the development is located where it is least susceptible to damage."

1.3.6 Township of Southgate Zoning By-law 19-2002 (Consolidated 2020)

The Township of Southgate Zoning By-law 19-2002 (Consolidated 2020) zones the subject property as General Industrial (M1) and Environmental Protection (EP). Permitted uses within the General Industrial (M1) zone includes:

(a) Building Supply Outlet
(b) Bulk Sales Establishment
(c) Contractor's Yard
(d) Custom Workshop
(e) Haulage Business
(f) Light or Dry Industry
(g) Manufacturing Plant
(h) Transport Terminal
(i) Storage Industry
(j) Dry Cleaning Establishment
(k) Warehouse
(l) Public Garage
(m) Self-storage/mini-storage
(n) Motor Vehicle Washing Establishment
(p) Animal Hospital
(q) Open Storage accessory to a permitted use
(p) Uses, buildings or structures accessory to a permitted use, including a business office and a retail outlet

The Environmental Protection (EP) zone is located along the south and west boundaries of the site and generally follows the watercourse. The M1 zoning states that although these areas are mapped, these designations are meant to generally identify natural hazards and that features will be more precisely delineated during the development process with assistance from the relevant conservation authority.

1.4 Terms of Reference

Based upon the above regulations, Terms of Reference (ToR) for the Wetland Characterization and GRCA Policy Conformity Memorandum were developed and submitted on August 26th,

2022 to Chris Lorenz, Resource Planner, Grand River Conservation Authority. The GRCA responded on September 2, 2022 stating that the terms are acceptable, and to include GRCA policy for Public Infrastructure, as the proposed works could fall within this category of development for development and site alteration within wetlands of the GRCA jurisdiction. The Terms of Reference, updates and approvals are provided in *Appendix 1.*

2.0 Existing Conditions

2.1 Background Review

A background information review was conducted of both biological and physical features within the vicinity of the study area. The following resources were consulted during this review:

- Atlas of the Breeding Birds of Ontario, 2001-2005,
- Ontario Reptile and Amphibian Atlas Interactive map (Ontario Nature 2019),
- Ontario Mammal Atlas (1994),
- Natural Heritage Information Centre (NHIC) database, (2022),
- Ontario Butterfly Atlas (Toronto Entomologists' Association, 2022),
- Dundalk Industrial Park- Petawawa Biofuel Suitability Assessment (AA, 2022),
- Dundalk Industrial Access Road & Wastewater Treatment Facility Expansion- Natural Heritage Existing Conditions (AA, 2017)

2.2 Wetland Characterization

2.2.1 Wetland Delineation

The study area contains a portion of a GRCA wetland and the Provincially Significant Melancthon Wetland Complex #1. During studies completed as part of the Dundalk Industrial Road EA detailed design, Cheryl-Anne Ross, Certified Ontario Wetland Evaluator, Aboud & Associates (AA), performed an initial survey of the boundary of the wetlands within the study area, on October 4, 2019, which was confirmed by GRCA on the same day. The wetland boundary was established where vegetation was comprised of 50% wetland and 50% upland species, and where soils displayed hydric conditions (e.g., presence of mottles and/or gleys), per the OWES (2013) criteria.

2.2.2 Buffer Recommendations and Setbacks

Recommended buffers and setbacks for the wetland limits were determined through a variety of resources, including the City of London- Guidelines for Determining Setbacks and Ecological Buffers (2004) and the Ecological Buffer Guideline Review (Beacon Environmental, 2012).

2.3 Vegetation

2.3.1 Ecological Land Classification

Ecological Land Classification (ELC) field investigations were completed within the study area, where access was permitted, on July 27, 2022. Detailed survey dates and weather information are provided in *Appendix 2*. Surveys were completed by qualified Ecologist, Jenny Andrews.

Vegetation communities within the study area were characterized and delineated through field investigation, following the Ecological Land Classification system for Southern Ontario 1st approximation; community codes generally follow the 2nd approximation (Lee, et al., 1998, 2008). Boundaries of ELC communities were mapped using aerial imagery and field observations (*Figure 2*). Digitized ELC data sheets are provided in *Appendix 3*.

2.3.2 Botanical Inventory

Concurrent with the ELC evaluation, the study area was inventoried, where access was permitted, to provide a comprehensive one-season botanical inventory. Detailed survey dates and weather information are provided in *Appendix 2*.

Identified vascular plant species were compared to provincial and federal SAR lists (COSSARO, SARA), provincial ranks (NHIC 2015), global ranks, and the Waterloo Region Significant Species list (Region of Waterloo 2007) to assess the federal, provincial, regional, and local conservation status of each species. English colloquial names and scientific binomials of plant species generally follow the Database of Vascular Plants of Canada (VASCAN) (VASCAN 2015).

Identification of environmentally sensitive plant species was completed based on the assignment of a coefficient of conservatism value (CC) for each native species (Oldham, et al., 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to specific natural habitat parameters. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters. These species may be more sensitive to environmental changes (Mortarello et al., 2010).

A list of all identified plant species is provided in *Appendix 4*. The list provides botanical names, common names, provincial rarity rank (S-rank), global rarity rank (G-rank), provincial Species at Risk status (SARO), federal Species at Risk status (SARA), local rarity/significance within Waterloo Region Significant Plant list (1987-2007), coefficient of conservatism (CC) and coefficient of wetness (CW). Plant species that could only be identified to genus were not assigned the above information. Photos of communities are shown in *Appendix 3*.

2.4 Wildlife Habitat

2.4.1 Incidental Wildlife Observations

Incidental observations of insects, mammals, birds, and reptiles were recorded during all field visits.

2.4.2 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 6E (2015), the subject property and immediately adjacent lands (within 120m) were considered for the presence of Significant Wildlife Habitat (e.g., specialized

habitats for wildlife, and habitat for species of conservation concern). An assessment of the study area for all SWH is provided in *Appendix 5.*

2.4.3 Species at Risk Habitat

The subject property and adjacent lands (within 120m) were reviewed for the presence of habitat that may be suitable for Species at Risk (SAR). A review of the property, along with habitat requirements for each species was conducted. A variety of sources, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) documents, were used to determine habitat suitability. The site was then evaluated for potential habitat using Ecological Land Classification, guidance from MNDMNRF documents, and on-site knowledge acquired through a field visit. An assessment of the study area for candidate Species at Risk habitat is provided in *Appendix 6*.

3.0 Existing Conditions

3.1 Ontario Ministry of the Environment, Conservation and Parks

A request for information was sent to the Ministry of the Environment, Conservation and Parks on July 26, 2022, to inquire whether any additional Species at Risk occur within the study area, MECP responded on August 12, 2022. The response indicated that SAR Bats, Red-headed Woodpecker, Black Ash, Henslow's Sparrow, Olive-sided Flycatcher, and West Virginia White have the potential to occur within the vicinity of the subject property. The MECP request for information and response in full is provided in *Appendix 1*. An assessment of the study area for candidate habitat for these Species at Risk is included in *Appendix 6.*

3.2 Background Review

During the Site Suitability Assessment carried out by AA in March 2022, several wildlife atlases were reviewed to determine Species at Risk listed by COSEWIC and under the ESA and/or SARA that may have the potential to occur within the study area. Online reporting systems were reviewed in September 2022 to update the available atlas information and provide data from more localized sources within 1km of the subject property. *Table 1* lists the Species at Risk occurrences noted within 1-10km of the study area, their source, current status and habitat requirements.

Table 1. Species at Risk and Rare Species Records within 1-10km of the Study Area

Scientific Name	Common Name	Source	COSEWIC Status	SARO Status	SARA Status	S-Rank	Habitat Requirements
Myotis lucifugus	Little Brown Myotis	MECP	END	END	END	S3	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).
Myotis septentrionalis	Northern Myotis	MECP	END	END	END	S3	Hibernate in Caves; maternity colonies usually located in trees and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).
Myotis leibii	Eastern Small-footed Myotis	MECP	END	NAR	NAR	S2S3	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).
Perimyotis subflavus	Tri-colored Bat	MECP	END	END	END	S3?	Hibernate in caves, abandoned mines, wells and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over

Table 1. Species at Risk and Rare Species Records within 1-10km of the Study Area

Scientific Name	Common Name	Source	COSEWIC Status	SARO Status	SARA Status	S-Rank	Habitat Requirements
							water in relatively open areas (Environment Canada.2015).
Tringa flavipes	Lesser Yellowlegs	eBird (2021) iNat (2021)	THR	NAR	NAR	S3S4B, S5M	Nests on dry ground near peatlands, marshes, ponds, and other wetlands in the boreal forest and taiga. In winter and during migration, the species frequents coastal salt marshes, estuaries and ponds, as well as lakes, other freshwater wetlands, and anthropogenic wetlands such as flooded rice fields and sewage lagoons. (COSEWIC, 2020)
Chordeiles minor	Common Nighthawk	eBird (2013)	SC	THR	THR	S4B	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).
Euphagus carolinus	Rusty Blackbird	eBird (2016)	SC	SC	SC	S4B, S3N	Nests in wetland habitats that are common and widespread across its breeding range. In the winter it forages in agricultural fields and forests, and roosts in trees, fields and marshes. During migration and on its wintering grounds it forms large flocks, potentially making it vulnerable to human persecution or natural mortality events. (COSEWIC, 2017)
Sturnella magna	Eastern Meadowlark	NHIC (2022) OBBA (2007) eBird (2022)	THR	THR	THR	S4B, S3N	Prefer grassland habitats, including native prairies and savannas, as well as non-native pastures, hayfields, weedy meadows, herbaceous fencerows and airfields (COSEWIC, 2011a).

Table 1. Species at Risk and Rare Species Records within 1-10km of the Study Area

Scientific Name	Common Name	Source	COSEWIC Status	SARO Status	SARA Status	S-Rank	Habitat Requirements
Dolichonyx orizivorus	Bobolink	NHIC (2022) OBBA (2007) eBird (2022)	THR	THR	THR	S4B	Nests in forage crops and various grassland habitats including wet prairie and abandoned field dominated by tall grasses (COSEWIC, 2010a).
Chaetura pelagica	Chimney Swift	OBBA (2007)	THR	THR	THR	S3B	Associated with urban and rural areas where chimneys are available for nesting and roosting (COSEWIC, 2007)
Contopus virens	Eastern Wood-pewee	OBBA (2007) eBird (2012)	SC	SC	SC	S4B	Associated with mid-canopy layer of forest clearings and edges of deciduous and mixed-wood forests. Most abundant in stands with little understorey vegetation (COSEWIC, 2012c)
Riparia riparia	Bank Swallow	OBBA (2007) eBird (2022)	THR	THR	THR	S4B	Utilizes natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts and stock piles of soil (COSEWIC, 2013)
Hirundo rustica	Barn Swallow	OBBA (2007) eBird (2022)	THR	THR	THR	S4B	Forages in open habitats, including grassy fields, pastures and agricultural crops and nests in and on artificial structures including barns, and other outbuildings (COSEWIC, 2011b)
Hylocichla mustelina	Wood Thrush	OBBA (2007)	THR	SC	THR	S4B	Occurs primarily in second-growth and mature deciduous and mixed forests, with saplings and well-developed understorey layers (COSEWIC, 2012a)
Oxyura jamaicensis	Ruddy Duck	NHIC (2022)	NAR	NAR	NAR	S3B, S4N	Utilize a variety of habitats including large, permanent wetlands, large marshes, stock ponds, reservoirs and deep natural basins (The Cornell Lab of Ornithology, 2022).

Table 1. Species at Risk and Rare Species Records within 1-10km of the Study Area

Scientific Name	Common Name	Source	COSEWIC Status	SARO Status	SARA Status	S-Rank	Habitat Requirements
Contopus cooperi	Olive-sided Flycatcher	MECP	SC	SC	THR	S4B	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).
Melanerpes erythrocephalus	Red-headed Woodpecker	MECP	END	END	THR	S3	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).
Chelydra serpentina	Snapping Turtle	NHIC (2022) ORAA (2017)	SC	SC	SC	S4	Slow-moving water with a soft mud bottom and dense aquatic vegetation. Often located in ponds, sloughs, shallow bays or river edges and slow streams (COSEWIC, 2008a).
Thamnophis sauritus	Eastern Ribbonsnake	ORAA (2013)	SC	SC	SC	S4	Occurs in a variety of wetland habitats with both flowing and standing water including marshes, bogs, fens, ponds, lake shorelines and wet meadows (COSEWIC, 2012b)
Pseudacris triseriata	Western Chorus Frog	ORAA (2007)	THR	NAR	THR	S4	Breeds in small or shallow aquatic habitats, mainly temporary ponds and wetlands that become dry in the summer and hibernates in terrestrial habitats (COSEWIC, 2008b)
Danaus plexippus	Monarch	OBA (2021)	END	SC	SC	S2N, S4B	Breeding habitat is confined to sites containing Milkweed species, the sole food of the Monarch caterpillar. Milkweed species grow in a variety of environments. (COSEWIC, 2010b)

Table 1. Species at Risk and Rare Species Records within 1-10km of the Study Area

Scientific Name	Common Name	Source	COSEWIC Status	SARO Status	SARA Status	S-Rank	Habitat Requirements
Fraxinus nigra	Black Ash	MECP	THR	END	NAR	S4	Black Ash is predominantly a wetland species of swamps, floodplains and fens. It has an intermediate light requirement and a tendency toward greater abundance in more alkaline sites. Most sites in which it is dominant are flood prone, where its high tolerance of seasonal flooding appears to offer a competitive advantage. Black Ash also occurs widely in moist upland forests, but generally at lower densities than in wet areas. (COSEWIC, 2018). the prohibitions in subsections 9 (1) and 10 (1) of the Species at Risk Act do not apply with respect to black ash for the period that begins on January 26, 2022, and ends on January 25, 2024.

3.2 Wetland Characterization

3.2.1 Boundary Survey

Per the Dundalk Industrial Access Road & Wastewater Treatment Facility Expansion Existing Conditions Report (AA, 2017), the wetland within the study area consists of five wetland ELC communities including Poplar Mineral Deciduous Swamp, Mixed Graminoid Mineral Meadow Marsh, Broad-leaved Sedge Mineral Shallow Marsh, Red-osier Dogwood Deciduous Thicket Swamp and Green Ash Mineral Deciduous Swamp. The subject property investigated for this assessment consists primarily of Red-osier Dogwood Deciduous Thicket Swamp, Poplar deciduous treed swamp and Meadow Marsh.

3.2.2 Wetland Characteristics and History

The boundary between the Melancthon PSW Complex #1 and the unevaluated GRCA wetland within the study area does not presently follow any existing ELC community boundary. GRCA aerial imagery from 2000, around the time the PSW boundary was delineated by the MNRF, shows the PSW generally following a northern wooded and thicket swamp area adjacent to an active agricultural area, the wetland limit was likely delineated using aerial imagery at the time of the PSW designation and review by the MNRF. The agricultural use appears to have been operational as recently as 2006, likely for livestock grazing purposes, and is now designated as GRCA unevaluated wetland. Google Earth imagery from 2009 shows Eco Parkway constructed to within approximately 80m of the Foley Drain, and GRCA imagery shows the remaining road portion having been completed in 2010.

Several previous ecological studies have been completed within ECO parkway during the creation of the Eco-Parkway industrial area. This includes an EIS completed by ESG International in December 2002 which was completed to identify environmental impacts that could result from the industrial development of the lands. The study identified that the majority of the future industrial lands was Cultural Meadow, including the parcel in question, with Red-osier Swamp Thicket to the east and Deciduous Swamp to the north. These communities generally follow the existing PSW boundary, and it is our understanding that the zoning of the industrial park was determined based in part on this study and the limits of the PSW at this time.

In 2011, Stantec completed an update to the 2002 EIS, to review the possibility of an industrial access road. By this time, the parcel had begun to naturalize, and wetland communities were present within the parcel.

Between 2006 and 2022, it is estimated that the subject property was left without use or management, over time generating the resulting unevaluated wetland feature identified on site during the EIS and the Class EA for the industrial Access Road. Based on the above, the wetland feature has been present on site for approximately 15 years, due to a reduction in farming practices following the purchase of the property by the Township.

3.2.3 Unevaluated Wetland Assessment

The GRCA unevaluated wetland occurs directly adjacent southwest of the PSW, occupying the entirety of the subject property and most of the existing property at 100 Eco Parkway. This wetland traverses the Foley Drain to the south of the property, as well as partially opposite Eco Parkway. The unevaluated wetland totals approximately 6.5ha of unbroken area and is hydrologically connected to the PSW. As this wetland is directly adjacent the PSW, it meets the criteria to be complexed within the larger Provincially Significant Wetland complex as outlined in the Ontario Wetland Evaluation System (2013).

However, the ecological community, determined to be majority Red-osier Dogwood Thicket Swamp, is not considered to be a rare community, and does not contain any rare or unusual plant species. This community is also present in several areas within the PSW and other unevaluated wetlands within the area. Additionally, no regionally or provincially significant plant or animal species were observed.

Given the recent history of the community, its relatively young age, and the rapid expansion of industrial uses within the Eco-Parkway area, it is not expected that this specific wetland area would provide a valuable linkage to other natural areas or additional ecological benefit to the overall PSW, beyond its hydrological functions.

3.3 Vegetation

3.3.1 Ecological Land Classification

The community polygons identified during the ELC survey are summarized in *Table 2* below and are shown on *Figure 2*. Field forms and a comprehensive vascular plant list for the entire study area are presented in *Appendices 3* & *4,* respectively.

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
Meadow Marsh (MAM)		
MAMM1-3 (Polygon 8)	Reed-canary Grass Graminoid Mineral Meadow Marsh	This is an open community with little tree cover. The moisture regime within this community varied, resulting in complexes of Reed Canary Grass Graminoid Meadow Type and Reed-canary Grass Graminoid Mineral Meadow Marsh Type communities. The community is dominated by Reed-Canary Grass, often to the exclusion of other species. Associates included Dark Green Bulrush, Goldenrod species, Wild Cucumber (*Echinocystis lobata*), Spotted Joe-pye-weed (*Eutrochium maculatum*), and Nodding Beggars Tick.

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
MAMM1-16	Mixed Graminoid Mineral Meadow Marsh	This is an open Meadow Marsh community with obvious evidence of past and/or ongoing disturbance from agriculture and other activities. Communities were previously cleared and may still undergo periodic cutting. Standing surface water was present in parts of the community during spring and early summer. The community is dominated by graminoid species such as Dark Green Bulrush, Fox Sedge, Path Rush (*Juncus tenuis*), Lake-bank Sedge, Awl-fruited Sedge, and Reed Canary Grass. A variety of native and non-native forbs such as Grass Leaved Goldenrod (*Euthamia graminifolia*), Calico Aster (*Symphyotrichum lateriflorum*), Canada Anemone, White Turtlehead (*Chelone glabra*), Purple-stem Aster (*Symphyotrichum puniceum*), Blue Flag Iris, Purple Avens, Tall Butter-cup (*Ranunculus acris*), Hairy Willow Herb (*Epilobium hirsutum*) and Bedstraw species were also present, and less dominant than the graminoid species. Some woody species such as Red-osier Dogwood, Willows and Balsam Poplar were minor occurrences.
MAMM2-4	Mixed Forb Mineral Meadow Marsh	Common species in this community include Canada Goldenrod, Canada Anemone, Lance-leaf Goldenrod, Joe-pye-weed, and Boneset (*Eutrochium perfoliatum*). Dark Green Bullrush (*scirpus atrovirens*) and Hybrid Cattail (*Typha angustifolia X Typha latifolia*) occur in the wettest areas. Occurrences of small Willow shrubs and Red-osier Dogwood were also present. Standing water and/or saturated soils were present throughout most of the growing season.
Swamp Thicket (SWT)		
SWTM2-1	Red-osier Dogwood Deciduous Thicket Swamp	This community has poorly defined boundaries and often transitions seamlessly into the adjacent communities. Red-osier Dogwood is the dominant species, with some occurrences of shrub Willow and Poplar. Reed Canary Grass is the dominant herbaceous species, with frequent occurrences of Asters, Goldenrods and Dark Green Bullrush. The soil was saturated with small areas of pooling water.
Deciduous Swamp (SWD)		

Table 2. Ecological Land Classification

ELC Code	Vegetation Type	Community Description
SWDM2-2	Green Ash Mineral Deciduous Swamp	Canopy cover in this community is between 40 %- 60% with Green Ash as the dominant canopy species. Other common canopy species include Balsam Poplar, Trembling Aspen and Tamarack and few occurrences of White Spruce and White Birch. Sub-canopy and understory included canopy species as well as mixed Willow species, American Elm, Choke Cherry and Red Maple. A wide variety of herbaceous species is present, including Reed Canary Grass, Goldenrod species, Various Asters, Canada Anemone, Sensitive Fern, Lake Bank Sedge (*Carex lacustris*), Bladder Sedge, Blue Flag Iris (*Iris versicolor*), Jack-in-the-Pulpit (*Arisaema triphyllum*), Nodding Beggar-ticks (*Bidens cernua*), Redtop (*Agrostis gigantea*), and Fowl Mana Grass (*Glyceria striata*). Soil and wetness characteristics varied within the community from mesic to standing water of more than 20 cm.
SWDM4-5	Poplar Mineral Deciduous Swamp	This community is dominated by Balsam Poplar and Trembling Aspen. Sub-canopy and understory species composition was similar to the canopy, but with occurrences of Red-osier Dogwood, Willow species, Red Raspberry, Narrow-leaved Meadow-sweet (*Spiraea alba*) and European Highbush Cranberry (*Viburnum opulus*). Herbaceous species include Bladder Sedge, Purple Avens (*Geum rivale*), Fox Sedge, Marsh Bedstraw (*Galium palustre*), Tall Meadow Rue (*Thalictrum pubescens*), and Northern Lady Fern (*Athyrium filix-femina var. angustum*).
Mixed Meadow (MEM)		
MEMM4	Fresh-moist Mixed Meadow	This community type is a Mixed Meadow with varying degrees of succession, with a variety of native species and exotic species. Common species in the community include Canada Goldenrod (*Solidago canadensis*), Tall Goldenrod (*Solidago altissima*), Canada Anemone (*Anemone canadensis*), Field Horsetail (*Equisetum arvense*). Some areas of meadow include complexes of wetland species, indicating previous wetland conditions. Common wetland species in wet areas include Red-osier Dogwood (*Cornus stolonifera*), Dark-Green Bulrush (*Scirpus atrovirens*), Retrorse Sedge (*Carex retrorsa*), Fox Sedge (*Carex vulpinoidea*) and Reed Canary Grass (*Phalaris arundinacea*).

3.3.2 Botanical Inventory

An update to the summer botanical inventory of the study area was completed where access was permitted. Where access was restricted, the inventory was completed from the roadside or property boundary. A total of 41 species were identified to species within the proposed development study area, with one further identified to genus. All identified plant species are listed in *Appendix 4.*

Of the 41 species identified, 30 (73%) are native and 11 (27%) are exotic or cultivars.

3.3.2.1 Species at Risk, Regional and Local Significance

No vegetation communities listed in *Table 2* are considered rare in the province.

Most of the native species are ranked S5 (Secure in Ontario) or SNA (S-Rank not applicable) with two species, Virginia Creeper (*Parthenocissus quinquefolia*) and Purple Meadow-rue (*Thalictrum dasycarpum*) ranked S4?, indicating uncertainty in their ranking, and one species, White Ash (*Fraxinus americana*) ranked S4. No S1-S3 species were observed in the study area.

No nationally or provincially rare, threatened, or endangered species were found.

3.4 Wildlife

3.4.1 Incidental Wildlife Observations

All incidental wildlife observations made during the site visit are presented in *Table 3*. All observations were of single individuals unless otherwise stated.

Table 4. Incidental Species Observations

Common name	Scientific name	Taxa	Date -observation	Significance
Spotted Sandpiper	*Actitis macularius*	Bird	August 30- heard in upland deciduous forest community.	None
Song Sparrow	*Melospiza melodia*	Bird	July 27- observed during ELC	None
American Goldfinch	*Carduelis tristis*	Bird	July 27- observed during ELC	None
Mourning Dove	*Zenaida macroura*	Bird	July 27- observed during ELC	None
American Robin	*Turdus migratorius*	Bird	July 27- observed during ELC	None
Common Grackle	*Quiscalus quiscula*	Bird	July 27- observed during ELC	None
Yellow Warbler	*Dendroica petechia*	Bird	July 27- observed during ELC	None
Common Yellowthroat	*Geothlypis trichas*	Bird	July 27- observed during ELC	None
Eastern Kingbird	*Tyrannus tyrannus*	Bird	July 27- observed during ELC	None
Warbling Vireo	*Vireo gilvus*	Bird	July 27- observed during ELC	None
House Wren	*Troglodytes aedon*	Bird	July 27- observed during ELC	None
Baltimore Oriole	*Icterus galbula*	Bird	July 27- observed during ELC	None

Table 4. Incidental Species Observations

Common name	Scientific name	Taxa	Date -observation	Significance
American Crow	*Corvus brachyrhynchos*	Bird	July 27- observed during ELC	None
Cooper's Hawk	*Accipiter cooperii*	Bird	July 27- observed during ELC	None
Alder Flycatcher	*Empidonax alnorum*	Bird	July 27- observed during ELC	None
American Kestrel	*Falco sparverius*	Bird	July 27- observed during ELC	None
Swamp Sparrow	*Melospiza georgiana*	Bird	July 27- observed during ELC	None
Red-winged Blackbird	*Agelaius phoeniceus*	Bird	July 27- observed during ELC	None
Green Frog	*Lithobates clamitans*	Amphibian	July 27- observed during ELC	None

3.4.2 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 6E (2015), we have determined that candidate Significant Wildlife Habitat (SWH) in the form of Special Concern & Rare Wildlife Species, is present within the study area.

Two drains, identified as watercourses by GRCA mapping, occur outside the proposed development footprint, while wetlands occur throughout the study area. Candidate habitat for Reptile Special Concern Species, Eastern Ribbonsnake, is present within the study area along the edges of the present watercourses, as the species prefers dense, low-vegetation edges of open water areas including (COSEWIC, 2002). However, eastern Ribbonsnake has never been observed in the vicinity of the study area in over 20 years of repeated studies within the Eco-Parkway lands and is not expected to occur in the study area. It is recommended that an Erosion and Sediment Control (ESC) plan and mitigation measures be utilized to control the quantity and quality of stormwater runoff and clean discharge during operation into the watercourse, as well as to mitigate for wandering wildlife within the proposed development footprint.

Special Concern reptile species Milksnake candidate habitat is also identified within the study area as the species prefers a range of habitats including meadow areas found close to water sources (COSEWIC, 2014) present within the Fresh- Moist Mixed Meadow communities. These communities will remain outside of the proposed development footprint and are not anticipated to incur negative impact. Eastern Milksnake has also never been observed by AA or online reporting systems in the vicinity of the study area, and is not expected to occur in the study area.

Insect Special Concern species Monarch, West Virginia White (*Pieris virginenisis*), and Yellow-banded Bumble Bee (*Bombus terricola*) candidate habitat has been identified within the study area. Monarch species require Milkweed for larval feeding and can be found in abandoned farmland. Milkweed was identified within the Fresh- Moist Mixed Meadow community within the study area. These communities will remain outside of the proposed development footprint and are not anticipated to incur negative impact.

West Virginia White prefers rich deciduous mixed forests and swamps. This candidate habitat occurs within the Green Ash Mineral Deciduous Swamp, Poplar Mineral Deciduous Swamp and Birch – Poplar Mineral Mixed Swamp communities within the study area. Apart from a very small portion of the Green Ash Swamp, none of these communities occur within the boundaries of the subject property. The proposed development will as well occur outside of the Green Ash Swamp. An ESC plan and mitigation measures must be utilized to control the quantity and quality of stormwater runoff into these adjacent swamp areas.

Lastly, Yellow-banded Bumble Bee candidate habitat occurs within the grassland meadow areas within the study area as the species prefers a wide range of habitat including these community types (COSEWIC, 2015). No development is proposed to occur within these communities within the study area.

3.4.3 Species at Risk Habitat

Candidate habitat for species at risk was identified within the study area for bird species, Bobolink and Eastern Meadowlark. All candidate SAR habitat is located within the ELC community defined as Fresh- Moist Mixed Meadow (*Figure 2)*.

Bobolink and Eastern Meadowlark prefer grassland habitats including meadows (COSEWIC), which occur within the Fresh- Moist Mixed Meadow communities within the study area. The proposed development footprint does not occur within these communities; it is therefore anticipated that there will be no negative impacts to this candidate habitat area.

4.0 Impact Analysis

The proposed development will result in impacts to the existing natural features, through the implementation of the proposed mitigation described in *Table 5*; the impact will be minor to none.

4.1 Impact Assessment and Mitigation

An assessment of the impacts (potential and actual) and mitigation measures are provided in *Table 5*. A Glossary of Terms and Impact Ratings is found in *Appendix 7*.

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing	Vegetation Removal – clearing & grubbing *upland areas*	▪ Loss of vegetation and wildlife habitat	LT	P	SA	O	PD	H	Y	Moderate	▪ Design to avoid or minimize loss of vegetation and edge habitat ▪ Revegetate areas with native species after site preparation	Minor	
		▪ Loss of successional habitat	LT	P	SA	O	PD	H	Y	Minor	▪ Implement Edge management plan to restore high edge to interior ratio for surrounding natural areas	None	

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Vegetation Removal – clearing & grubbing *upland areas (cont.)*	▪ Disturbance of wildlife species	ST	R	SA	O	PD	M	N	Minor	▪ Time activities to avoid wildlife disturbance during important life stages	None	
		▪ Impacts to Nesting Birds Protected under the Migratory Bird Convention Act	ST	P	SA	O	PD	H	N	Severe	▪ Complete all vegetation removal outside the Environment Canada breeding bird nesting window (April 1-August 31) ▪ Conduct a bird nest survey to determine locations of active nests prior to construction works including installation of Erosion Sediment Control (ESC) fence and any site clearing. ▪ Create nest protection zones where active bird nests are found and monitor (as needed, e.g. weekly) until inactive.	None	

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Grading	▪ Increased erosion, sedimentation and turbidity	ST	R	AA	S	PD	M	Y	Minor	▪ Maintain or restore vegetative buffers ▪ Develop & implement ESC plan as per GGH erosion and sediment guidelines	None	▪ Monitor ESC fence weekly, and after a major storm event for any breaks, and repair
		▪ Increase nutrient inputs and contaminants to waterbodies and wetlands	ST	P	AA	S	PD	M	Y	Minor	▪ Develop & implement ESC plan as per GGH erosion and sediment guidelines ▪ Designate areas for equipment storage	None	▪ Monitor ESC fence weekly, and after a major storm event for any breaks, and repair
		▪ Increased soil compaction	ST	R	SA	S	PD	M	N	Minor	▪ Control access and movement of equipment and people	None	
		▪ Changes to drainage ▪ Changes to surface runoff	ST	P	SA	O	PD	H	Y	Minor	▪ Schedule grading to avoid high runoff volumes ▪ Minimize changes to land contours and natural drainage ▪ Maintain streams and timing, quantity of flows	None	
		▪ Changes in soil moisture, tree cover and vegetation	ST	R	SA	O	PD	H	N	Minor	▪ Minimize the area and duration of soil exposure	None	

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)	Grading (cont.)	▪ Disturbance to wildlife ▪ Alteration or destruction of wildlife Habitat	ST	R	SA	S	PD	H	Y	Moderate	▪ Time activities to avoid sensitive periods (Breeding birds) ▪ Conduct work outside timing windows of sensitive species	Minor	
		▪ Wildlife Entering Construction Areas	ST	R	SA	S	PD	L	N	Minor	▪ Develop & implement ESC plan to exclude wildlife	None	▪ Monitor ESC fence weekly, and after a major storm event for any breaks, and repair
Construction	Building Construction (including Accessory uses and amenities)	▪ Increased erosion, sedimentation and turbidity	ST	R	SA	O	D	M	Y	Minor	▪ Maintain vegetated buffers ▪ Develop and implement ESC Plan as per GGH erosion and sediment guidelines	Minor-None	▪ Monitor ESC fence weekly, and after a major storm event for any breaks, and repair
		▪ Wildlife entering construction areas	ST	R	SA	S	D	L	N	Minor	▪ Develop & implement ESC plan to exclude wildlife	None	

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Construction (cont.)	Building Construction (including Accessory uses and amenities) (cont.)	▪ Water contamination by oils, gasoline, grease, and other materials	ST	P	AA	S	D	M	Y	Moderate	▪ Control water contamination through good housekeeping practices ▪ Ensure all vehicle refueling occurs a minimum of 30m from the wetland edge.	Minor	
		▪ Increased impervious surfaces causing, Increased runoff, reduced infiltration, and groundwater discharge	LT	P	SA	C	D	H	Y	Moderate	▪ Maintain or provide vegetative buffers ▪ Implement infiltration techniques ▪ Control quantity and quality of stormwater discharge	Minor-None	
		▪ Barriers to animal and plant movement	ST	R	SA	O	D	M	N	Minor	▪ Ensure wildlife corridors are maintained	None	
		▪ Vegetation and soil compaction	LT	R	AA	S	D	M	N	Minor	▪ Minimize erosion by using gravel, stones or wood on paths	None	

Table 5. Impact Assessment, Mitigation and Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING[1]	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL [2] IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		▪ Noise and light pollution from industrial use ▪ Non-native species introductions, increased competition, predators and parasites ▪ increased erosion and sedimentation from dumping of debris and compost in natural areas	LT	P	AA	S	D	M	N	Moderate	▪ Provide manual to promote stewardship and discourage ill practices ▪ Install lighting to direct away from sensitive habitats	Minor	
		▪ Tree and vegetation removals, changes to vegetation structure and composition	LT	R	SA	S	D	L	Y	Minor	▪ Maintain or provide vegetative buffers	Minor-None	

4.2 Wetlands

Approximately 0.82ha of the unevaluated GRCA wetland area will be removed for the proposed tank farm development. The removal area is entirely comprised of Red-osier Dogwood Deciduous Thicket Swamp and does not provide candidate habitat for Species at Risk. The PSW to the north and east of the site will remain outside of the development boundary, with a minimum buffer of 15 metres to the development limits.

4.3 Floodplain

Approximately 0.1ha of GRCA floodplain is proposed for removal for site grading on the subject property, diminishing the areas capability to disperse flood events. An area to the south of the proposed development has been designated for additional floodplain volume, accounting for the proposed fill within the floodplain setback area. This area should be dug out and allowed to operate as a dry pond similarly to the one proposed for the existing development lands. All stormwater runoff from the site should flow/be pumped to the dry pond location prior to being released into the Foley Drain to allow for the control of stormwater influx.

4.4 Stormwater and Discharge

The proposed development includes a dry pond on the existing lands at 100 Eco Parkway, to provide stormwater storage from the increase in runoff from impervious surfaces. This dry pond will drain into the Foley Drain, directly adjacent to the south of the subject property.

To protect concrete or steel in the facility tanks, waterproof additives or coatings will be utilized conforming to best engineering practices. As the facility will utilize deleterious materials, secondary containment for the below grade tank containment area will comply with O.Reg 267/03, requiring secondary containment equal to 110% of the volume of the above ground portions of the tanks. Secondary containment for these tanks will be installed in the form of an impermeable membrane that runs beneath the tanks and up into the surrounding berm. Tanks are equipped with sensors to monitor the level in the tanks.

A monitoring well will be located in the secondary containment area to monitor runoff water quality and determine if there is a leak within any of the facility tanks or reception pits. Runoff in the monitoring well that moves water away from the footings of the building and tanks will be visually inspected on a daily basis to determine if there is an odour or change in appearance signaling a leak of deleterious substance. If a leak is detected, immediate action will be taken to ensure protection of water quality and to determine and fix the source of the leak. All leaks should they occur will be reported to the MECP immediately, and all actions taken will be recorded and kept on-site.

AA recommends that although stormwater quality controls are designed for the development, pumped water from the surrounding tanks areas should be directed to a dry pond within the

"marked for additional floodplain volume" area to allow further controls to quality and quantity of runoff.

4.3 Edge Management and Compensation

As 0.82ha GRCA wetland area is proposed for removal, it is recommended that a high level of edge management and compensation plantings occur on the subject property to produce and maintain vegetated buffers and provide compensatory plantings for potential wildlife habitat loss. Buffers are proposed from the development limits to the edge of the PSW, and throughout the subject property and existing property to the north, open areas may provide opportunities for landscape plantings. It is recommended that native tree and shrub species plantings and spreading native seed mix through these buffer and setback areas are implemented to restore feature edges and provide vegetated buffer areas to reduce erosion and provide a living fence to reduce any access to natural areas.

5.0 Site Municipal Policy Conformity

5.1 County of Grey Official Plan

The Grey County Official Plan (2019) Schedule A Map 2 and the Grey County Online Mapping application indicates that the subject property and portion of the lands immediately south-east are designated Primary Settlement Area, with the remainder of the study area being designated as Hazard Lands. The proposed development is permitted within the Primary Settlement Area and complies with the Grey County Official Plan.

5.2 Township of Southgate Official Plan

Official Plan (2008 Consolidation)
The Township of Southgate Official Plan (2008) Map 1 to Schedule A Dundalk indicates that the subject property and portion of the lands immediately south-east are designated as Industrial with the remainder of the study area being designated as Hazard Lands. The proposed development is permitted within the Industrial designation of the Township of Southgate Official Plan.

Official Plan (Adopted 2022)
The Township of Southgate Official Plan (Adopted 2022) Schedule 'A' Map 2, Dundalk designates the subject property as Hazard Lands. The proposed development is permitted under the permitted uses of the Hazard Lands designation and conforms to the development policies of the Hazard Lands designation in the Township of Southgate Official Plan.

5.3 Township of Southgate Zoning Bylaw 19-2002 (Consolidated 2020)

The Township of Southgate Zoning By-law 19-2002 (Consoidated 2020) Schedule 17 identifies the subject property as being General Industrial (M1) and Environmental Protection (EP) zones. The proposed development is permitted within the General Industrial (M1) zone and a Planning Act, RSO 1990, c P.13 is not required.

6.0 Policy Compliance

6.1 Provincial Policy Statement

The PPS provides policy direction on matters of provincial interest related to land use planning and development. Section 2.1.5 states that "*Development and site alteration shall not be permitted in: Significant Wetlands… unless it has been demonstrated that there will be no negative impact on the natural features or their ecological function.".*

The proposed development and potential area for expansion do not encroach within the existing Provincially Significant Melancthon Wetland Complex #1 and will not result in any removal of the feature. The proposed development will provide a buffer with a minimum width of 15m to ensure there will be no negative impact on the wetland feature or its ecological function. Therefore, it is the opinion of AA that, provided an adequate buffer, as noted in Section 3.2.3, is implemented in conjunction with the mitigation and protection measures detailed in Section 5.3, the proposed development and expansion into the area detailed as suitable on *Figure 1* will not negatively impact the Provincially Significant Melancthon Wetland Complex #1 or its ecological functions.

6.2 GRCA Policies

Per the GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06) Section 8.4.1 states that *"Development/Interference within a wetland or development within an area of interference will not be permitted except in accordance with the policies in Sections 8.4.3-8.4.13."*

Section 8.4.6 states that Public Infrastructure development within a wetland area greater than 2ha may be permitted if: "*where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions."*

It is the opinion of AA that the proposed development meets the definition of Public Infrastructure as the facility will handle natural waste products and produce energy for public use. Mitigation measures outlined in sections 4 and 7 will minimally intrude on natural and hydrologic features, and management practices will allow the facility to operate within a sensitive area with no negative impacts to the surrounding features. The development proposal has also gone through several iterations to minimize impacts and provide a minimum 15m buffer to the PSW boundary.

7.0 Summary and Conclusions

It is the opinion of AA that the proposed anaerobic digestor development may be permitted as our memorandum has identified that the proposed facility will comply with section 8.4.6 of the GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation.

7.1 Biological Constraints

1. The study area contains a portion of the Provincially Significant Melancthon Wetland Complex #1, as well as a GRCA unevaluated wetland.

2. The study area contains Hazard Lands as designated by the Township of Southgate Official Plan (2008) and Grey County Official Plan (2019)

3. The study area contains a portion of the Regulatory Floodplain surrounding the Foley Drain west of the subject property.

4. Candidate Special Concern & Rare Wildlife Species habitat was identified within the study area.

5. Candidate habitat for Monarch, West Virginia White, Yellow-banded Bumble Bee, Bobolink, Eastern Meadowlark, Eastern Ribbonsnake and Milksnake was identified as occurring within the study area.

7.2 Impact Assessment

1. Impacts primarily involve vegetation and wetland removal, erosion, sedimentation and contamination to the wetland and Foley Drain, and wildlife disturbance.

2. There are opportunities in the study area for restoration through the implementation of a restoration planting plan, which would involve planting native tree and shrub species and spreading native seed mix through the buffer adjacent the PSW and other landscaped site areas, to restore the area between the PSW and proposed development.

7.3 Mitigation or Protection Measures

1. Ensure an appropriate buffer, as described in Section 4, to the existing Provincially Significant Wetland is implemented.

2. Propose re-vegetation of any disturbed areas with site appropriate indigenous plant species where opportunities exist.

3. Install a dry pond where the Additional Floodplain Volume area exists within the site plan and direct stormwater to the dry pond prior to entering the Foley Drain.

4. Prepare and implement an Erosion and Sediment Control Plan (ESC), per GGH Erosion and Sediment Guidelines, as part of detailed design, for protection of the Melancthon PSW.

5. Install and monitor a silt and sediment control barrier.
    a. Silt fencing to be inspected weekly during construction and following a storm event of 15mm within 24 hours.

6. ESC measures to be kept in place until all works are completed, and disturbed soils have been vegetated.

7. Accumulated sediment and debris to be removed prior to the removal of the silt fence.

8. Ensure area of construction disturbance is kept to a minimum.

9. Control the access and movement of equipment and people;
    a. Implement appropriate protocols outlined in the Clean Equipment Protocol for Industry (Halloran et al., 2013).

10. Minimize the use of heavy equipment within close proximity to the Melancthon PSW.

11. Designate an equipment storage area that is as far as possible from the limit of the Melancthon PSW.

12. Time activities to avoid wildlife disturbance during critical life stages;
    a. Avoid removal of trees and vegetation during the generalized breeding bird nesting period from April 1 to August 31. If removal of vegetation is to occur during the general nesting period, a nest search should be completed by a skilled and experienced biologist.

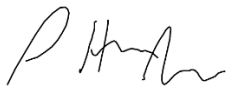
13. Select designs and materials that will minimize impacts.

14. Utilize site management practices outlined in Section 4 to limit ongoing impacts to surrounding features during facility operation.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.



Isaac Hewitt-Smith, B. Geo/GS, PGC Env. Planning
Planning Ecologist

And:

Cheryl-Anne Ross, B. Sc.
Ecology Lead & Wildlife Ecologist
MNRF Certified Ecological Land Classification System
MNRF Certified Ontario Wetland Evaluation System Evaluator
ISA Certified Arborist ON-2017A

References

COSEWIC. 2007. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 49 pp.

COSEWIC. 2008a. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC. 2008b. COSEWIC assessment and update status report on the Western Chorus Frog *Pseudacris triseriata* Carolinian population and Great Lakes/St. Lawrence-Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.

COSEWIC. 2010a. COSEWIC assessment and status report on the Bobolink *Dolichonyx orizivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.

COSEWIC. 2010b. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.

COSEWIC. 2011a. COSEWIC assessment and status report on the Eastern Meadowlark *Sturnella magna* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.

COSEWIC. 2011b. COSEWIC assessment and status report on the Barn Swallow *hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

COSEWIC. 2012a. COSEWIC assessment and status report on the Wood Thrush Hylocichla mustelina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.

COSEWIC. 2012b. COSEWIC assessment and status report on the Eastern Ribbonsnake *Thamnophis sauritis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 39 pp.

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GRCA. 2015. Grand River Conservation Authority. Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation. October 23, 2015.

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NHIC. 2022. Natural Heritage Information Centre. NHIC online database and mapping. Ontario Ministry of Natural Resources. Available at: https://www.ontario.ca/environment-and-energy/natural-heritage-information-centre

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Ontario Nature. 2019. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario. Available: https://www.ontarioinsects.org/herp/index.html ; Accessed February 28, 2022.

Township of Southgate. 2008. Township of Southgate Official Plan. June 10, 2008.

FIGURES

LEGEND

- EXPANSION LANDS
- RETAINED PROPERTY
- TANK FARM GRADING LIMIT
- FLOOD COMPENSATION GRADING LIMIT
- STUDY AREA
- PSW 15 M BUFFER
- PROVINCIALLY SIGNIFICANT WETLAND (PSW)
- GRCA WETLAND
- GRCA REGULATION LIMIT
- WATERCOURSE

Information Sources:

1. Orthophotography provided by Google Earths Accessed September 2022.
2. Woodlands, Wetlands and Watercourses provided by Land Information Ontario

Title:

SUBJECT PROPERTY & EXISTING CONDITIONS

Project:

100 ECO PARKWAY
ADDITIONAL LANDS
DUNDALK, ON

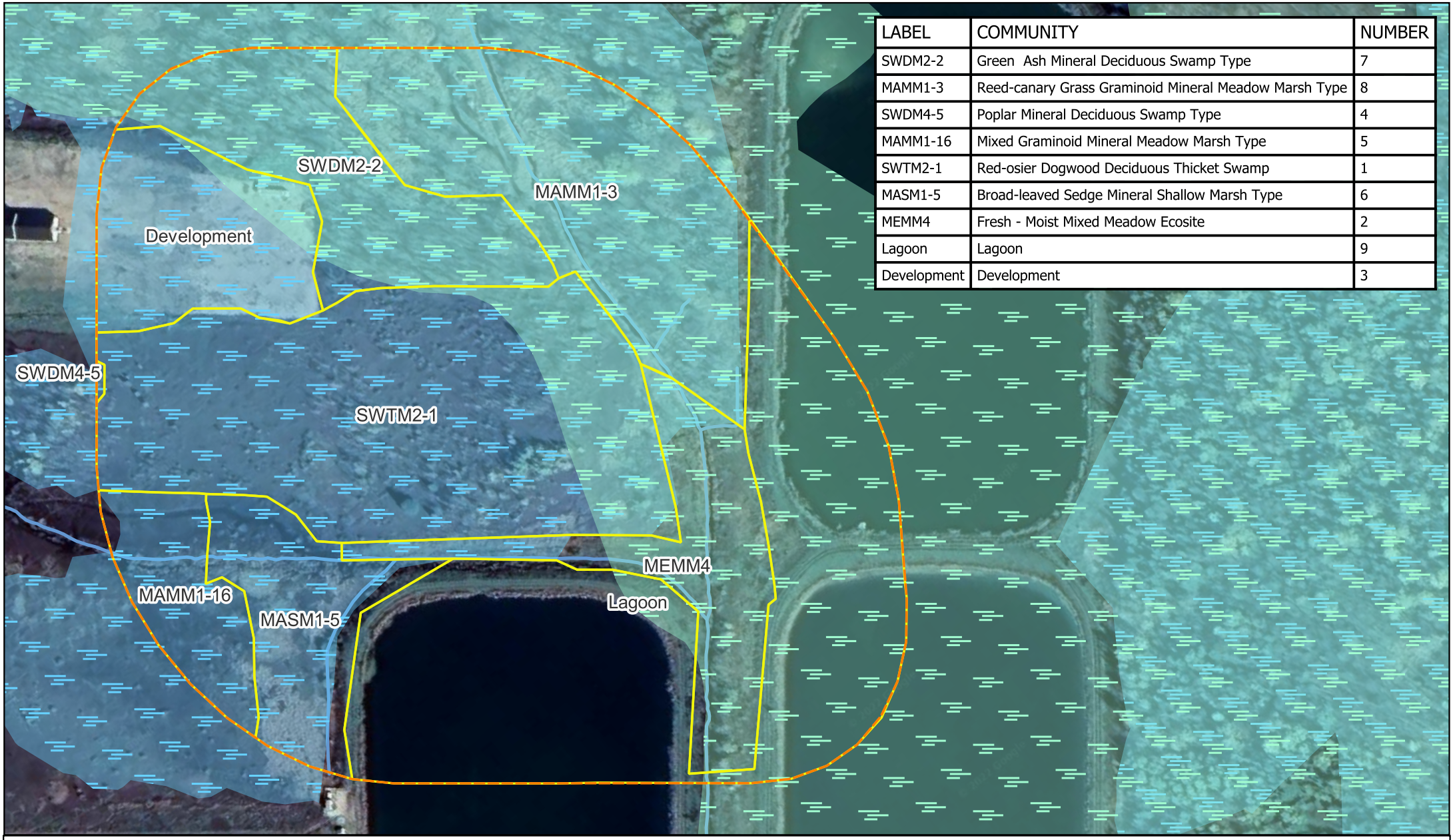
Date: SEPTEMBER 2022

Project: AA22-041B

Scale: 1 : 2500

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects
3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8 . 519.822.6839 . www.aboudtng.com

Figure No: 1



LABEL	COMMUNITY	NUMBER
SWDM2-2	Green Ash Mineral Deciduous Swamp Type	7
MAMM1-3	Reed-canary Grass Graminoid Mineral Meadow Marsh Type	8
SWDM4-5	Poplar Mineral Deciduous Swamp Type	4
MAMM1-16	Mixed Graminoid Mineral Meadow Marsh Type	5
SWTM2-1	Red-osier Dogwood Deciduous Thicket Swamp	1
MASM1-5	Broad-leaved Sedge Mineral Shallow Marsh Type	6
MEMM4	Fresh - Moist Mixed Meadow Ecosite	2
Lagoon	Lagoon	9
Development	Development	3

LEGEND

- STUDY AREA
- 2022 ECOLOGICAL LAND CLASSIFICATION
- PROVINCIALLY SIGNIFICANT WETLAND (PSW)
- GRCA WETLAND
- WATERCOURSE

Information Sources:
1. Orthophotography provided by Google Earths Accessed September 2022.
2. Woodlands, Wetlands and Watercourses provided by Land Information Ontario

Title:
ECOLOGICAL LAND CLASSIFICATION

Project:
100 ECO PARKWAY
ADDITIONAL LANDS
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Figure No: 2

Appendix 1
Terms of Reference and Agency Communication

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects

3-5 Edinburgh Road South
Guelph . Ontario
N1H 5N8

T: 519.822.6839
F: 519.822.4052
info@aboudtng.com
www.aboudtng.com

August 25, 2022

Our Project No.: AA22-041B
Sent By Email: clorenz@grandriver.ca

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

Re: Eco Parkway, Dundalk, Township of Southgate
Terms of Reference
Wetland Characterization and GRCA Policy Conformity

Dear Mr. Lorenz,

This document outlines the Terms of Reference (ToR) of the Wetland Characterization and GRCA Policy Conformity memorandum for a proposed development on a portion of lands known as PROTON CON 2 SWTSR PT LOTS;235 TO 240 AND RP 17R1515; PARTS 1 TO 4 RP 17R3300 PART;3 RP 16R9654 PARTS 4 9 11 TO;13 RP 16R9784 PT PART 1 RP (located adjacent to the existing permitted site at 100 Eco Parkway as identified on Figure 1). Please review the terms and circulate to Grand River Conservation Authority (GRCA) staff for discussion and approval.

BACKGROUND

A proposed development of an Anerobic Digester has received a permit from the GRCA for the lands located at 100 Eco Parkway (“Original Property”) (Permit No 602/19 and also is holding a MOECP ECA permit Environmental Compliance Approval Number 1984-BD9NBD issued by Mohsen Keyvani, P.Eng., Director on November 28, 2019). The proponent is seeking an additional permit for the lands titled “Expansion Lands” (*Figure 1*) to expand the proposed development further southeast. The Proposed Property Acquisition lands are under a Purchase and Sale Agreement with the Township of Southgate as seller and Southgate Renewables Holdings Corp. as purchaser. The Proposed Property Acquisition lands are identified as an unevaluated wetland and a Provincially Significant Wetland (PSW) feature, part of the Melancthon Wetland Complex.

The GRCA has granted the Retained Property (*Figure 1*) permission to develop, and the Township of Southgate Official Plan designates the Original Property and the Proposed Expansion lands as Industrial. The Industrial designation permits an Anerobic Digester as a permitted use. The lands are located within the Dundalk Industrial Eco-Park. The proponent requires a Wetland Characterization and GRCA Policy Conformity memorandum to characterize the wetlands present in the development limits, describe the development proposition, determine the extent of impacts to natural features, provide mitigation and compensation recommendations, and discuss development conformity to GRCA policies for wetland features, with regard to the history and complexity of the site.

In preparing the Terms of Reference, the following sources were reviewed for background information:

- Aerial historical photography of the subject site, Google Earth,
- Draft Site Plan, Walter Fedy, July 19, 2022,
- GRCA regulation mapping (accessed August 12, 2022) of natural heritage features (e.g., regulation limit, GRCA and MNDMNRF wetlands, ANSI's, and MNDMNRF Woodlands),
- Natural Heritage Information Center, Make-a-Map, accessed August 11, 2022,

STUDY AREA

The study area is the Proposed expansion lands and up to 120m beyond the Proposed expansion lands boundary where permission to access property is granted (*Figure 1*, attached). Where access is restricted, surveys will be conducted from the edge of accessible lands and the available right-of-way.

As needed, the lands adjacent the study area may require further access to assist with understanding the features and functions of natural heritage features.

PLANNING CONTEXT

Grand River Conservation Authority

The study area contains a portion of an unevaluated wetland and Provincially Significant Melancthon Wetland Complex. Section 8.4 of the GRCA's *Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 150/06, 2015) identifies the area of interference of both a non-Provincially Significant Wetland greater than 2 hectares and of a Provincially Significant Wetland as 120m.

Section 8.4.1 states: "*Development/Interference within a wetland or development within an area of interference will not be permitted except in accordance with the policies in Sections 8.4.3-8.4.13."*

While sections 8.4.3 - 8.4.13 state:

"8.4.3 Subdivision or Condominium Development within a wetland or an area of interference previously approved by a municipality under the Planning Act with GRCA support may be permitted provided that:

a) the proposed development met the GRCA policies in effect at the time of draft plan approval and,

b) the proposed development is modified in accordance with the policies in Section 8 – Policies for Wetlands and Areas of Interference, wherever possible."

"8.4.6 Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water supply wells, well houses, and pipelines, within a wetland larger than specified in Sections 8.4.4-8.4.5 may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, provided that it can be demonstrated that:

a) an Environmental Assessment or other comprehensive plan supported by the GRCA, demonstrates that all alternatives to avoid wetland loss or interference have been considered and that the proposed alignment minimizes wetland loss or interference to the greatest extent possible, and

b) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions."

"8.4.9 Development within an area of interference less than or equal to 30 metres (100 feet) from a wetland may be permitted in accordance with the policies in Sections 7.1.207.1.3- General Policies, and where an Environmental Impact Study demonstrates that:

a) There are no negative or adverse hydrological or ecological impacts on the wetland,

b) All development is located outside of the wetland and maintains as much setback as feasible,

c) Development is located above the water table, except as specified in Section 8.4.11, and

d) Septic systems are located a minimum of 15 metres (50 feet) from the wetland and 0.9 metres (3 feet) above the annual maximum water table."

"8.4.10 Development within an area of interference between 30 metres (100 feet) and 120 metres (394 feet) from a wetland, which in the opinion of the GRCA may result in hydrologic impact, may be permitted where an Environmental Impact Study demonstrates that policies in Sections 7.1.2- 7.1.3 – General Policies are met."

PROPOSED TERMS OF REFERENCE

To fulfill the requirements of this study, Aboud & Associates ("AA") will complete the following:

A. Terms of Reference

1. Review background information (e.g., proposed activity, relevant sections of Natural Heritage System components of GRCA policies, previously completed studies of the industrial park and industrial access road)
2. Prepare a Terms of Reference and provide to the GRCA for approval.

B. Field assessment

To fulfill the requirements of the approved Terms of Reference, AA will:

3. Complete an MECP Request for information to acquire any updated information pertaining to species at Risk in the vicinity of the study area. (*complete*).
4. Complete one site visit to review the wetland limits and consult with GRCA on site (*complete*).
5. Conduct one site visit to characterize vegetation communities using the ELC system (MNRF) and complete a one-season (Summer) botanical inventory of the Study Area (*complete*).
6. Investigate the study area for the presence of significant wildlife habitat (*complete*).
7. Investigate the study area for presence of species at risk and species at risk habitat (*complete*).
8. Record observations of incidental wildlife during site visits (*complete*).

C. Prepare Memorandum Report

9. Analyze findings and prepare a map that shows:
    a. Identified natural heritage features, and functions and landscape level features (e.g., linkages).
    b. The proposed site plan (location of building, amenities)
    c. Wetland boundaries and any proposed buffers
    d. Other noteworthy features as needed
    e. Locations of other natural heritage features from background literature searches (e.g., mammal atlas, herpetofaunal atlas, County's OP, Town Zoning Bylaw.
10. Describe the proposed development and provide recommendations and justification for the size (i.e., width) of buffers to natural features.
11. Characterize the wetland present within the proposed development limits, determine the significance of the wetland, and identify any significant features or functions of the wetland.
12. Review the history of the site and proposed work, prior agreements, and zoning, and provide a summary in the context of the proposed site plan.
13. Conduct an impact assessment by reviewing the proposed development's direct, indirect, and induced (i.e., residual, ongoing) impacts on the natural features. Provide an opinion about the location of the components of the general concept plan to reduce/avoid impacts to natural heritage features.
14. Show the configuration of the proposed development on the property and assess for minimizing impacts to ecological features and functions. This will involve discussions with the proponent, project surveyors and AA.

15. Provide GRCA policy rationale discussion for expected impacts to natural heritage features and whether the proposed plan can conform to GRCA policies.
16. Edge Management Guidelines and Compensation: Provide general recommendations of where and why naturalization treatments may be needed to protect vegetation features (e.g., wetlands) adjacent to the development activity. Provide rationale and recommendations for wetland compensation (e.g., where, why and how much).
17. Prepare a letter report that includes background information, methods, existing conditions, proposed development, impact assessment and mitigation measures, and appendices of field studies (e.g., ELC and bird data sheets).
18. Submit letter report to GRCA.

I look forward to your response regarding these proposed terms of reference. If you require clarification, please do not hesitate to contact me.

Yours truly,

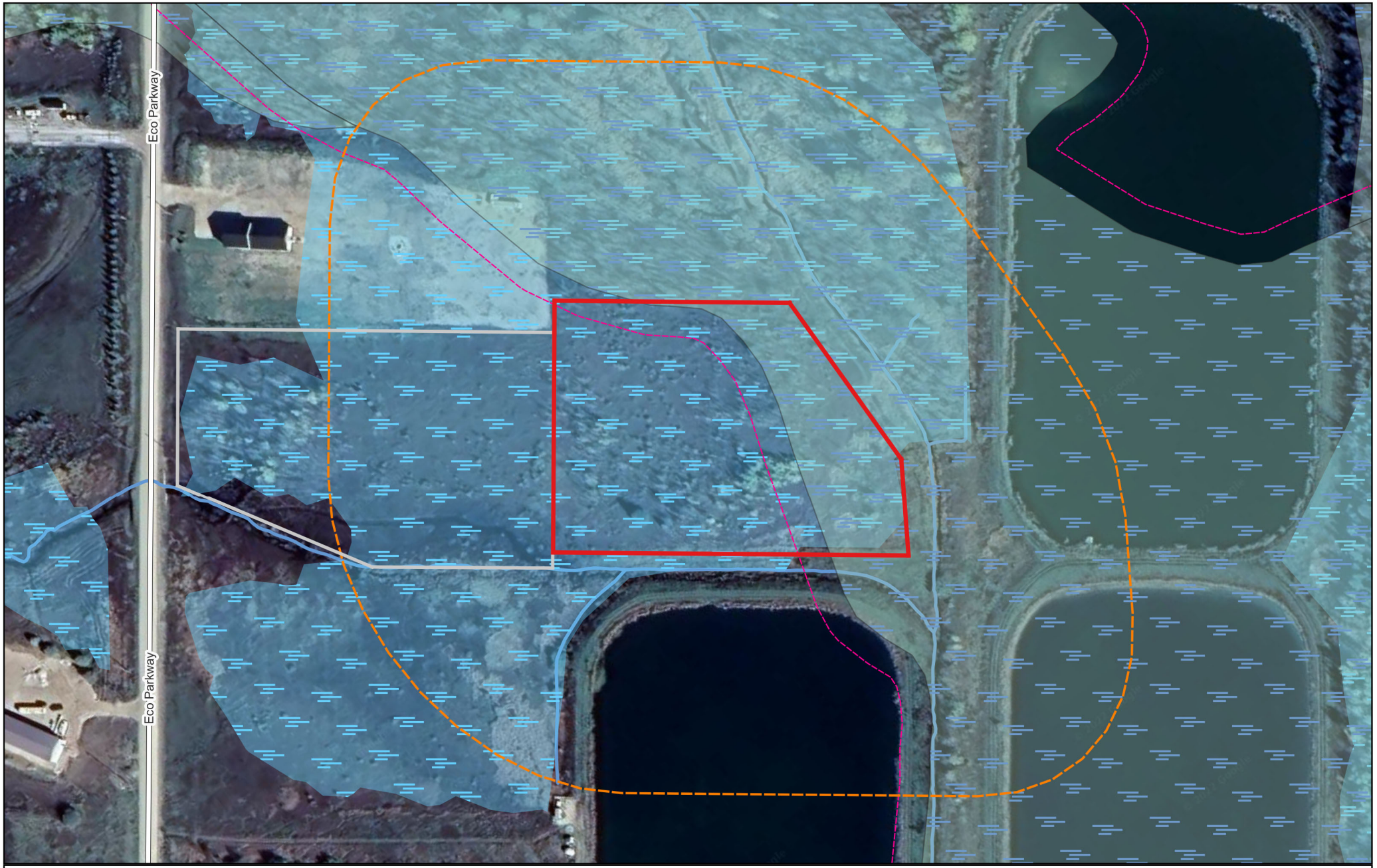
ABOUD & ASSOCIATES INC.

Isaac Hewitt-Smith, B. Geo/GS, PGC Env. Planning
Planning Ecologist
isaac@aboudtng.com

&

Cheryl-Anne Ross, B.Sc. F.W.T.
Ecology Lead and Wildlife Ecologist
cheryl@aboudtng.com

Cc: Mark Bell, Southgate Renewables Holding Corp.
Kristine Loft, Loft Planning Inc.



LEGEND

- EXPANSION LANDS
- RETAINED PROPERTY
- STUDY AREA
- GRCA WETLAND
- PSW 15 M BUFFER
- PROVINCIALLY SIGNIFICANT WETLAND (PSW)

Information Sources:

1. Orthophotography provided by Google Imagery. Accessed July, 2022.
2. GRCA Wetland, Watercourse and Regulation Limit provided by GRCA. Accessed July, 2022.
3. MNRF Wetland provided by Land Information Ontario. Accessed July, 2022
4. Subject Lands provided by WalterFedy via email August, 2022

Title:
STUDY AREA

Project:
PETAWAWA BIOFUEL LP
ECO PARK WAY
TOWNSHIP OF SOUTHGATE

Date: AUGUST 2022
Project: AA22-041B
Scale: 1 : 3500

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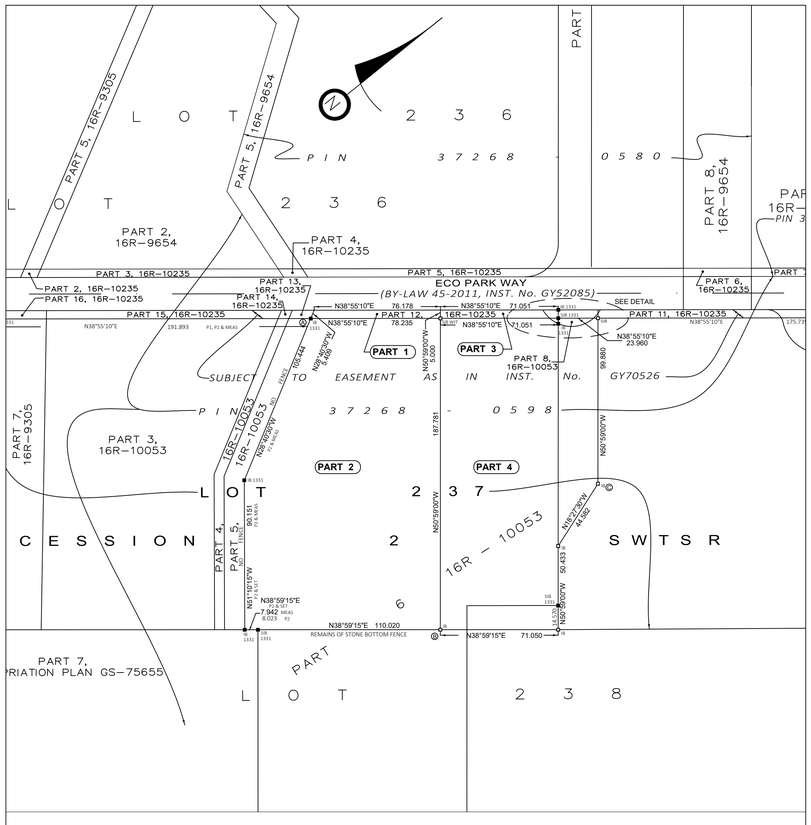
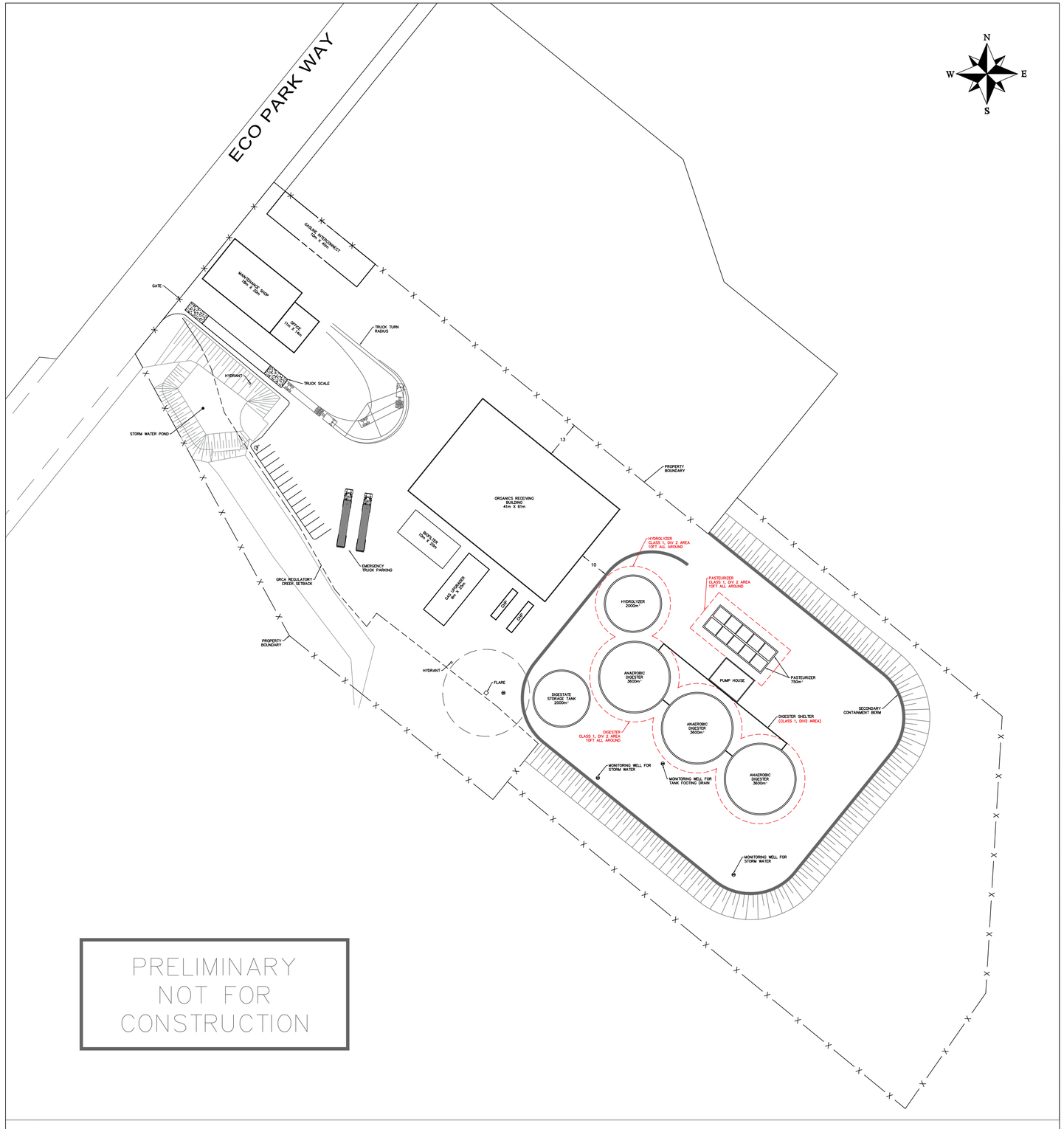
Figure No: 1

1 **LOCATION PLAN**
SP1



2 **SITE SURVEY**
SP1



PRELIMINARY
NOT FOR
CONSTRUCTION

3 **SITE PLAN**
SP1

NO.	DATE DD/MM/YYYY	REVISION	AUTHOR

DOCUMENT STATUS:

STATUS	DATE DD/MM/YYYY	AUTHOR

PROJECT:
SOUTHGATE RENEWABLES LP
SOUTHGATE RENEWABLES
DUNDALK, ON

CHFOUR BIOGAS
Your Organic Energy Potential Realized.
TEL: 1-866-730-6500
www.CHFOURBIOGAS.com

DRAWING TITLE: SITE PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:	DATE:
D.L.	J.C.	J.K.B.	As Shown	8-Jun-22

DRAWING NUMBER: SP1

JOB NUMBER: 22C04

From: Chris Lorenz
To: Cheryl-Anne Ross
Cc: Mark Bell; kristine@loftplanning.com
Subject: RE: Dundalk proposed biofuel facility terms of reference for wetland characterization & GRCA policy conformity
Date: Friday, September 2, 2022 1:14:10 PM

Hi Cheryl-Anne,

Apologies for the delayed response, I was on vacation last week. This looks good to me. My only comments pertain to the planning context. As this development is proposed within a wetland and not simply in the area of interference, I suggest removing sections 8.4.9 and 8.4.10 as these are not relevant.

In the report, please ensure to outline how this proposal could be considered Public Infrastructure.

Thanks Cheryl-Anne. Hope you have a nice weekend.

Chris

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority
519-621-2763 ext. 2236

From: Cheryl-Anne Ross <Cheryl@aboudtng.com>
Sent: August 26, 2022 1:28 PM
To: Chris Lorenz <clorenz@grandriver.ca>
Cc: Mark Bell <mb@envestcorp.com>; kristine@loftplanning.com
Subject: Dundalk proposed biofuel facility terms of reference for wetland characterization & GRCA policy conformity

Hello Chris,

Please see the attached Terms of reference for a wetland characterization and policy conformity report for the proposed biofuel facility located in the Dundalk Ecoparkway industrial lands for your review an consideration.

If you have any questions regarding the proposed terms of reference, please do not hesitate to contact me.

Thank you,

Cheryl-Anne Ross B.Sc. F.W.T. (she/her/hers)
Ecology Lead. Wildlife Ecologist
MNRF Certified Ecological Land Classification
MNRF Certified Ontario Wetland Evaluation System

ABOUD & ASSOCIATES INC. 3-5 Edinburgh Road South . Guelph . Ontario . N1H 5N8
T : 519-822-6839 x 321 C : 226.789.9294 . www.aboudtng.com .cheryl@aboudtng.com

We've moved! Effective May 2, 2022 our office is located at 3-5 Edinburgh Road South, Guelph N1H 5N8. Our team phone numbers and email addresses will remain the same. We look forward to working with our partners and clients from our new location.

Aboud & Associates Inc. is located within the Between the Lakes Purchase (Treaty 3); the treaty lands and territory of the Mississaugas of the Credit.

Appendix 2
Field Survey Dates

SURVEY	TIME	DATE	STAFF	TEMP.	WIND (beaufort)	CLOUD COVER (%)	PRECIP.	PAST PRECIP.
ELC Update	8:45	10:45	J. Andrews	18	3	80	No	No
SWH Investigation	8:45	10:45	J. Andrews	18	3	80	No	No
SAR Investigation	8:45	10:45	J. Andrews	18	3	80	No	No

Appendix 3
Ecological Land Classification Forms

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	**PROJ. NO./NAME**: Additional Lands, 100 Eco Parkway		**POLYGON: 1**
	SURVEYOR(S): J Andrews	**DATE: 2022-07-27**	
	START: 8:45	**END: 10:45**	**COORDINATES: 44.159373, -80.383087**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	■ NATURAL	☐ PLANKTON	☐ LAKE
■ WETLAND	■ MINERAL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	■ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		☐ TABLELAND		☐ LICHEN	■ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ BASIC BEDRK.	☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		■ MIXED	☐ MEADOW
	☐ CARB BEDRK.	☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	☐ OPEN
■ SHALLOW WATER	■ SHRUB
☐ SURFICIAL DEP.	☐ TREED
☐ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	**CANOPY**	2	1	Populus tremuloides
2	**SUBCANOPY**	3	1	Populus tremuloides>Populus balsamifera>Betula papyrifera> Picea Glauca
3	**UNDERSTOREY**	4	3	Populus tremuloides>Cornus sericea>salix sp.>Betula papyrifera
4	**GRD. LAYER**	7	4	Trifolium pratense>Scirpus atrovirens>Euthamia graminofolia>Leucanthemum vulgare

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	A	<10	r	10-24	n	25-50	n	>50
STANDING SNAGS:	r	<10	n	10-24	n	25-50	n	>50
DEADFALL/LOGS:	o	<10	n	10-24	n	25-50	n	>50
COMM. AGE.	pioneer							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS:

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g= 5cm**	**G= N/A**
MOISTURE:	**DEPTH OF ORGANICS:**		
HOMOGENOUS/VARIABLE:	**DEPTH TO BEDROCK**		

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Swamp	**CODE: SW**
COMMUNITY SERIES: Thicket Swamp	**CODE: SWT**
ECOSITE: Mineral Deciduous Swamp	**CODE: SWTM2**
VEGETATION TYPE: Dogwood Mineral Deciduous Thicket Swamp	**CODE: SWTM2-1**
INCLUSION	**CODE:**
COMPLEX	**CODE:**

NOTES:

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Populus tremuloides	D	DA	DA	
Populus balsamifera		A		
Betula papyrifera		O	AO	
Picea glauca		OR		
Fraxinus americana		R	OR	
Larix decidua		R		
Cornus sericea			A	
Salix sp.			A	
Vicia cracca			AO	
Solidago canadensis			O	
Spiraea alba			OR	
Valeriana officinalis			R	
Erigeron hyssopifolius			R	

SPECIES	LAYER			
	C	SC	U	GL
Trifolium pratense				A
Scirpus atrovirens				O
Leucanthemum vulgare				O
Euthamia graminifolia				O
Anemonastrum canadense				OR
Symphyotrichum ericoides				OR
Solidago rugosa				OR
Lotus corniculatus				OR
Juncus dudleyi				OR
Carex cristatella				OR
Carex vulpinoidea				OR
Daucus carota				OR
Achillea millefolium				OR
Thuja occidentalis				R
Rudbeckia hirta				R
Iris versicolor				R

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	**PROJ. NO./NAME**: Additional Lands, 100 Eco Parkway		**POLYGON: 2**
	SURVEYOR(S): J Andrews	**DATE: 2022-07-27**	
	START: 8:45	**END: 10:45**	**COORDINATES: 44.159373, -80.383087**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	■ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	■ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ BASIC BEDRK.	☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
		☐ CREVICE/CAVE		☐ MIXED	■ MEADOW
	☐ CARB BEDRK.	☐ ALVAR			☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

SITE	COVER
☐ OPEN WATER	■ OPEN
☐ SHALLOW WATER	☐ SHRUB
☐ SURFICIAL DEP.	☐ TREED
■ BEDROCK	

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	**CANOPY**		0	
2	**SUBCANOPY**		0	
3	**UNDERSTOREY**	4	2	Solidago canadenseis> cornus sericea>salix sp.>spirea alba
4	**GRD. LAYER**	5-7	4	Phalaris arundinacea> Anemonastrum canadense= Persicaria lapathifolia> Asclepias syriaca

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	n	<10	n	10-24	n	25-50	n	>50
STANDING SNAGS:	n	<10	n	10-24	n	25-50	n	>50
DEADFALL/LOGS:	n	<10	n	10-24	n	25-50	n	>50
COMM. AGE.	young							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS: none taken

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g= N/A**	**G= N/A**
MOISTURE:	**DEPTH OF ORGANICS:**		
HOMOGENOUS/VARIABLE:	**DEPTH TO BEDROCK**		

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Meadow		**CODE: ME**
COMMUNITY SERIES: Mixed Meadow		**CODE: MEM**
ECOSITE: Fresh- Moist Mixed Meadow		**CODE: MEMM4**
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Solidago canadensis			DA	
Cornus sericea			O	
Salix sp.			O	
Spiraea alba			O	
Viburnum acerifolium			R	
Phalaris arundinacea				D
Anemonastrum canadense				AO
Persicaria lapathifolia				AO
Asclepias syriaca				O
Vicia cracca				O

SPECIES	LAYER			
	C	SC	U	GL

NOTES:

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	**PROJ. NO./NAME**: Additional Lands, 100 Eco Parkway		**POLYGON: 4**
	SURVEYOR(S): J Andrews	**DATE: 2022-07-27**	
	START: 8:45	**END: 10:45**	**COORDINATES: 44.159373, -80.383087**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
■ WETLAND	■ MINERAL	☐ RIVERINE	■ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	■ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
		☐ VALLEYSLOPE		☐ FORB	☐ MARSH
		☐ TABLELAND		☐ LICHEN	■ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
	☐ ACIDIC BEDRK.	☐ CLIFF		■ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE/CAVE	COVER	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
■ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☐ SURFICIAL DEP.		☐ BEACH/BAR	■ TREED		☐ SAVANNAH
	☐ CARB BEDRK.	☐ SAND DUNE			☐ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	**CANOPY**	3	3	Populus balsamifera>Populus tremuloides>>Betula papyrifera
2	**SUBCANOPY**	4	1	Populus balsamifera>Populus tremuloides>Betula papyrifera
3	**UNDERSTOREY**	5	3	Cornus sericea>Spirea alba=Salix sp.>Fraxinus Americana
4	**GRD. LAYER**	6-7	4	Clinopodium vulgare>impatiens capensis>solidago canadensis> Eutrochium maculatum

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	a	<10	r	10-24	n	25-50	n	>50
STANDING SNAGS:	r	<10	r	10-24	n	25-50	n	>50
DEADFALL/LOGS:	o	<10	r	10-24	n	25-50	n	>50
COMM. AGE.	Mid-age							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS: none taken

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g= 5cm**	**G= N/A**
MOISTURE:	**DEPTH OF ORGANICS:**		
HOMOGENOUS/VARIABLE:	**DEPTH TO BEDROCK**		

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Swamp	**CODE: SW**
COMMUNITY SERIES: Deciduous Swamp	**CODE: SWD**
ECOSITE: Mineral Deciduous Swamp	**CODE: SWDM4**
VEGETATION TYPE: Poplar Mineral Deciduous Swamp	**CODE:SWDM4-5**
INCLUSION	**CODE:**
COMPLEX	**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SPECIES	LAYER			
	C	SC	U	GL
Populus balsamifera	D	D		
Populus tremuloides	AO	A		
Betula papyrifera	R	O		

SPECIES	LAYER			
	C	SC	U	GL
Cornus sericea			D	
Impatiens capensis				O
Spiraea alba			O	
Salix sp.			O	
Solidago canadensis				OR
Eutrochium maculatum				OR
Fraxinus americana			OR	
Solidago rugosa				OR
Scirpus atrovirens				R
Picea glauca			R	
Clinopodium vulgare				A

NOTES:

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	**PROJ. NO./NAME**: Additional Lands, 100 Eco Parkway		**POLYGON: 5**
	SURVEYOR(S): J Andrews	**DATE: 2022-07-27**	
	START: 8:45	**END: 10:45**	**COORDINATES: 44.159373, -80.383087**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	■ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	■ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		■ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	■ MARSH
SITE		☐ TABLELAND		☐ LICHEN	☐ SWAMP
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
■ SHALLOW WATER		☐ CLIFF	COVER	☐ DECIDUOUS	☐ BOG
☐ SURFICIAL DEP.	☐ CARB BEDRK.	☐ TALUS	■ OPEN	☐ CONIFEROUS	☐ BARREN
☐ BEDROCK		☐ CREVICE/CAVE	☐ SHRUB	☐ MIXED	☐ MEADOW
		☐ ALVAR	☐ TREED		☐ PRAIRIE
		☐ ROCKLAND			☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	**CANOPY**		0	
2	**SUBCANOPY**	3	1	Salix sp.
3	**UNDERSTOREY**	4	2	Scirpus atrovirens > cornus sericea=valeriana officinalis=euthrochium maculatum
4	**GRD. LAYER**	5-7	4	Carex vulpinoidea> Anemonastrum canadense=Euthamia graminofoila=Dactylis glomerata

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	r	<10	n	10-24	n	25-50	n	>50
STANDING SNAGS:	n	<10	N	10-24	n	25-50	n	>50
DEADFALL/LOGS:	r	<10	n	10-24	n	25-50	n	>50
COMM. AGE.	pioneer							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS: none taken

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g= N/A**	**G= N/A**
MOISTURE:	**DEPTH OF ORGANICS:**		
HOMOGENOUS/VARIABLE:	**DEPTH TO BEDROCK**		

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Marsh		**CODE: MA**
COMMUNITY SERIES: Meadow Marsh		**CODE: MAM**
ECOSITE: Graminoid Mineral Meadow Marsh		**CODE: MAMM1**
VEGETATION TYPE: Mixed Graminoid Mineral Meadow Marsh		**CODE: MAMM1-16**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Salix sp.		OR		
Scirpus atrovirens			O	
Cornus sericea			OR	
Eutrochium maculatum			OR	
Valeriana officinalis			OR	

SPECIES	LAYER			
	C	SC	U	GL
Carex vulpinoidea				A
Anemonastrum canadense				AO
Persicaria lapathifolia				AO
Euthamia graminifolia				AO
Dactylis glomerata				AO
Symphyotrichum ericoides				O
Rumex crispus				OR
Iris versicolor				OR
Ranunculus acris				OR
Chelone glabra				OR

NOTES:

Representative Photographs of Vegetation Community:

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	**PROJ. NO./NAME**: Additional Lands, 100 Eco Parkway		**POLYGON: 6**
	SURVEYOR(S): J Andrews	**DATE: 2022-07-27**	
	START: 8:45	**END: 10:45**	**COORDINATES: 44.159373, -80.383087**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
■ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	■ MINERAL	☐ RIVERINE	■ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	■ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ ACIDIC BEDRK.	☐ VALLEYSLOPE		☐ FORB	■ MARSH
SITE		☐ TABLELAND		☐ LICHEN	☐ SWAMP
☐ OPEN WATER	☐ BASIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
☐ SHALLOW WATER		☐ CLIFF		■ DECIDUOUS	☐ BOG
☐ SURFICIAL DEP.	☐ CARB BEDRK.	☐ TALUS	COVER	☐ CONIFEROUS	☐ BARREN
■ BEDROCK		☐ CREVICE/CAVE	☐ OPEN	☐ MIXED	☐ MEADOW
		☐ ALVAR	■ SHRUB		☐ PRAIRIE
		☐ ROCKLAND	☐ TREED		☐ THICKET
		☐ BEACH/BAR			☐ SAVANNAH
		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>> MUCH GREATER THAN; > GREATER THAN; = ABOUT EQUAL TO)
1	**CANOPY**		0	
2	**SUBCANOPY**	4	1	Salix sp.
3	**UNDERSTOREY**	4	4	Euthrochium maculatum>cornus sericea>scirpus atrovirens> spirea alba
4	**GRD. LAYER**	7	4	Solidago Canadensis > Anemonastrum canadense> Thalictrum dasycarpum>Juncus dudlevi

HT CODES: 1= >25m 2= 10<HT≤25m 3= 2<HT≤10m 4= 1<HT≤2m 5= 0.5<HT≤1m 6= 0.2<HT≤0.5m 7= HT≤0.2m
CVR CODES: 0= NONE, 1= 0%<CVR≤10% 2= 10%<CVR≤25% 3= 25%<CVR≤60% 4= CVR>60%

STAND COMPOSITION							BA:	
SIZE CLASS ANALYSIS:	A	<10	n	10-24	n	25-50	n	>50
STANDING SNAGS:	n	<10	n	10-24	n	25-50	n	>50
DEADFALL/LOGS:	o	<10	n	10-24	n	25-50	n	>50
COMM. AGE.	pioneer							

ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT

SOIL ANALYSIS: none taken

TEXTURE:	**DEPTH TO MOTTLES/GLEY**	**g= N/A**	**G= N/A**
MOISTURE:	**DEPTH OF ORGANICS:**		
HOMOGENOUS/VARIABLE:	**DEPTH TO BEDROCK**		

COMMUNITY CLASSIFICATION

COMMUNITY CLASS: Marsh		**CODE: MA**
COMMUNITY SERIES: meadow marsh		**CODE: MAM**
ECOSITE: Forb mineral meadow marsh		**CODE: MAMM2**
VEGETATION TYPE: Mixed forb Mineral Meadow Marsh		**CODE: MAMM2-4**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

NOTES:

LAYERS: C = CANOPY SC = SUBCANOPY U = UNDERSTOREY GL = GRD LAYER
ABUNDANCE CODES: N= NONE R= RARE O= OCCASIONAL A= ABUNDANT D= DOMINANT

SPECIES	LAYER			
	C	SC	U	GL
Salix sp.		DA		
Eutrochium maculatum			A	
Cornus sericea			AO	
Scirpus atrovirens			AO	
Spiraea alba			O	
Scirpus microcarpus			OR	
Chelone glabra			OR	

SPECIES	LAYER			
	C	SC	U	GL
Solidago canadensis				A
Anemonastrum canadense				AO
Thalictrum dasycarpum				O
Juncus dudleyi				O
Iris versicolor				OR
Carex vulpinoidea				OR
Ranunculus acris				OR

NOTES:

Representative Photographs of Vegetation Community:

Appendix 4
Botanical Inventory

Plant Type [1]	Scientific Name	Common Name	CC [2]	CW [3]	SARO Status [4]	SARA Status [5]	Global Rank [6]	Prov. Rank [7]
FO	Achillea millefolium	Common Yarrow	0	3			G5	SNA
FO	Anemone canadensis	Canada Anemone	3	-3			G5	S5
FO	Asclepias syriaca	Common Milkweed	0	5			G5	S5
TR	Betula papyrifera	Paper Birch	2	3			G5	S5
SE	Carex cristatella	Crested Sedge	3	-3			G5	S5
SE	Carex vulpinoidea	Fox Sedge	3	-5			G5	S5
FO	Chelone glabra	White Turtlehead	7	-5			G5	S5
FO	Clinopodium vulgare	Field Basil	4	5			G5	S5
SH	Cornus sericea	Red-osier Dogwood	2	-3			G5	S5
GR	Dactylis glomerata	Orchard Grass	*	3			GNR	SNA
FO	Daucus carota	Wild Carrot	*	5			GNR	SNA
FO	Erigeron hyssopifolius	Daisy Fleabane	10	-3			G5	S5
FO	Euthamia graminifolia	Grass-leaved Goldenrod	2	0			G5	S5
FO	Eutrochium maculatum var. bruneri	Brunner's Spotted Joe Pye Wee	3	-5			G5T5	S4?
TR	Fraxinus americana	White Ash	4	3			G5	S4
FO	Impatiens capensis	Spotted Jewelweed	4	-3			G5	S5
FO	Iris versicolor	Harlequin Blue Flag	5	-5			G5	S5
FO	Juncus dudleyi	Dudley's Rush	1	-3			G5	S5
TR	Larix decidua	European Larch	*	5			G5	SNA
FO	Leucanthemum vulgare	Oxeye Daisy		5			GNR	SNA
FO	Lotus corniculatus	Garden Bird's-foot Trefoil	*	3			GNR	SNA
FO	Persicaria lapathifolia	Pale Smartweed	2	-3			G5	S5
GR	Phalaris arundinacea	Reed Canary Grass	0	-3			G5	S5
TR	Picea glauca	White Spruce	6	3			G5	S5

TR	Populus balsamifera	Balsam Poplar	4	-3			G5	S5
TR	Populus tremuloides	Trembling Aspen	2	0			G5	S5
FO	Ranunculus acris	Tall Buttercup	*	0			G5	SNA
FO	Rudbeckia hirta var. hirta	Black-eyed Susan	0	3			G5	S5
FO	Rumex crispus	Curly Dock	*	0			GNR	SNA
SE	Scirpus atrovirens	Dark-green Bulrush	3	-5			G5	S5
SE	Scirpus microcarpus	Red-tinged Bulrush	4	-5			G5	S5
FO	Solidago canadensis var. canadensis	Canada Goldenrod	1	3			G5T5	S5
FO	Solidago rugosa var. rugosa	Northern Rough-leaved Goldenr	4	0			G5T5	S5
SH	Spiraea alba	White Meadowsweet	3	-3			G5	S5
FO	Symphyotrichum ericoides var. ericoides	White Heath Aster	4	3			G5T5	S5
FO	Thalictrum dasycarpum	Purple Meadow-rue	5	-3			G5	S4?
TR	Thuja occidentalis	Eastern White Cedar	4	-3			G5	S5
FO	Trifolium pratense	Red Clover	*	3			GNR	SNA
FO	Valeriana officinalis	Common Valerian	*	3			GNR	SNA
SH	Viburnum acerifolium	Maple-leaf Viburnum	6	5			G5	S5
FO	Vicia cracca	Tufted Vetch	*	5			GNR	SNA
VI	Solanum dulcamara	Bittersweet Nightshade	*	0			GNR	SNA
FO	Taraxacum officinale	Common Dandelion	*	3			G5	SNA
TR	Thuja occidentalis	Eastern White Cedar	4	-3			G5	S5
TR	Tilia americana	American Basswood	4	3			G5	S5
FO	Tragopogon dubius	Yellow Goat's-beard	*	5			GNR	SNA
FO	Verbascum thapsus	Common Mullein	*	5			GNR	SNA
FO	Vicia cracca	Tufted Vetch	*	5			GNR	SNA

1. Plant Types: AL = Algae; FE = Fern; FO = Forb; GR = Grass; LC = Lichen;
2. CC: Coefficient of Conservatism reflects a species' fidelity to a specific
3. CW: Coefficient of Wetness reflects a
4. SARO: Status under the Provincial Endangered Species Act, listed on the

5.	SARA: Status under the National Species at Risk Act (SARA), assessed
6.	Global rarity rank. Range from G1 to G5; G1 = Extremely rare, G5 = Very
7.	Provincial rarity rank. Range from S1 to S5; S1 = Extremely rare, S5 = Very
8.	Cecile Environmental Research. 2009. List of Significant Wildlife in Wellington

Appendix 5
Significant Wildlife Habitat Assessment

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
SEASONAL CONCENTRATION AREAS OF ANIMALS								
1	Waterfowl stopover and Staging Areas (terrestrial)	- Fields with Sheet water in spring (incl. agricultural)	- Mixed species aggregations of 100 or more individuals confirms SWH	flooded field ecosite and 100-300m radius is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
2	Waterfowl Stopover and Staging (Aquatic)	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (ie. >700 waterfowl use days) confirms SWH	Aquatic ecosite and 100m radius is the SWH	Although sewage treatment ponds south of site may provide this type of habitat, they are not considered SWH.	No	None required.	No
3	Shorebird Migratory stopover	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	Shoreline ecosite and 100m radius is the SWH	No Habitat matching Criteria identified in Study Area, >5km from any Lake Ontario	No	Fall migration survey completed.	No
4	Raptor Wintering Area	- Combination of upland field and woodland habitat >20ha total (includes,>15ha upland field) - least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Ecosite communities (field and woodland) is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	- Caves, mine shafts, underground foundations, karsts - buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	Ecosite and 200m radius is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
6	Bat Maternity Colony	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - buildings are not SWH	- >10 Big Brown Bats, >20 Little Brown Myotis, >5 adult female Silver-haired Bats confirms SWH	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No Habitat matching Criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No Habitat matching Criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
RARE VEGETATION COMMUNITIES								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No Habitat matching Criteria identified in Study Area	No	None required.	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	- Ground cover dominated by prairie grasses with <25% tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more prairie indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
22	Other Rare Vegetation Communities	- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)	- Field Studies Confirming ELC vegetation type is a rare vegetation community	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required.	No
SPECIALIZED HABITAT FOR WILDLIFE								
23	Waterfowl Nesting Areas	- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM) - Extends 120m from a wetland (>0.5ha) and any small wetlands (<0.5ha) within a cluster of at least 3 - Upland area at least 120m wide	- Presence of 3 or more nesting pairs of listed species excluding Mallards - Presence of 10 or more nesting pairs including mallards - Any active Black Duck nesting site	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No Habitat matching Criteria identified in Study Area	No	None required.	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	- Forest communities, adjacent to riparian areas - Osprey nests usually at top of tree - Bald Eagle nest usually in super canopy tree in a notch within canopy	- Studies confirm one or more active Bald Eagle or Osprey nest - Alternate nests included in SWH - Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No Habitat matching Criteria identified in Study Area	No	None required.	No
25	Woodland Raptor Nesting Habitat	- Forested communities, forested swamp communities and cultural Plantations - Natural Forested/conifer plantations >30ha with >10ha interior habitat (200m buffer)	- One or more active nest of listed species	Nest protection radius: - Red-Shouldered Hawk, Northern Goshawk 400m - Barred Owl 200m - Broad-winged Hawk, Coopers Hawk 100m - Sharp-shinned Hawk 50	No Habitat matching Criteria identified in Study Area	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	- Exposed Mineral soil (sand or gravel) adjacent (<100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities - Located in open sunny areas, away from roads and less prone to predation - Municipal and provincial road shoulders are not SWH.	- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No Habitat matching Criteria identified in Study Area	No	None required.	No
27	Seeps and Springs	- Areas where ground water comes to the surface - Any forested area within the headwaters of a stream or river system	- Confirm site with 2 or more seeps/springs. -	Area of ELC forest ecosite containing seep/spring is the SWH	No Habitat matching Criteria identified in Study Area	No	ELC Complete.	No
28	Amphibian Breeding Habitat (woodland)	- Breeding pools within woodlands - Wetland, pond or pool >500m^2 within or adjacent (<120m) to a woodland. - Woodlands with permanent ponds, or those with water until mid-July more likely to be used.	- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3. - Wetland adjacent to woodlands includes travel corridor connecting features as SWH.	Wetland area, plus 230m radius of woodland is the SWH.	No Habitat matching Criteria identified in Study Area	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities. - Typically isolated from woodlands (>120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands. - Wetlands >500m2 - Presence of shrubs & logs - Bullfrogs require permanent water bodies and abundant emergent vegetation.	- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3 - Or any wetland with confirmed breeding Bullfrog.	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No Habitat matching Criteria identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	- Habitats where interior breeding birds are breeding - Large mature(>60 years) forest stands or woodlots >30ha - Forest and swamp ELC communities - Interior habitat at least 200m from edge	- Presence of nesting or breeding pairs of 3 or more of the listed species - Any site with Cerulean Warbler or Canada Warbler is SWH -	ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics) - Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation - Green heron at edge of water sheltered by shrubs and trees.	- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species - Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail	ELC ecosite is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	- Grassland area >30ha (natural & cultural fields and meadows) - Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing) - Mature hayfields or pasture at least 5 years old	- Nesting or breeding of 2 or more of the listed species - Field with 1 or more Short-eared Owls	Contiguous ELC ecosite is the SWH	Grassland areas not class 1 or class 2 agriculture were identified within the study area within the Mixed Meadow communities.	No, dry areas are too small to support habitat and wetland areas do not constitute candidate habitat.	None required.	No.
33	Shrub/Early Successional Bird Breeding Habitat	- Cultural thickets, savannah and woodland habitat - Large field area succeeding to shrub and thicket habitat >10ha in size - Patches of shrub ecosite may be complexed into larger old field ecosites for some species	- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species - Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH	SWH is contiguous ELC ecosite field/thicket area	Field succeeding to shrub/thicket habitat > 10ha present, however, they are wetland communities and of low suitability.	No	None required.	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities - Cultural meadow with inclusions of meadow marsh may be used - Wet edges of marshes and wet meadows should be surveyed for crayfish	- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No Habitat matching Criteria identified in Study Area	No	None required.	No
35	Special Concern & Rare Wildlife Species	- All Special concern and Provincially Rare plant and animal species - Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites	- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable - Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)	SWH is the finest ELC scale that protects the form and function of the habitat	Two recorded element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area for Eastern wood-pewee and Rusty Blackbird. Background Atlas review identified 4 Special concern species within 10km of the Study Area - Eastern Ribbonsnake (ORAA) - Snapping Turtle (NHIC, ORAA) - Eastern Wood-pewee (OBBA, eBird) - Rusty Blackbird (eBird)	Yes- Areas along watercourses may provide habitat for Eastern Ribbonsnake	ELC and Summer Botanical complete.	No, eastern Ribbonsnake have not been observed within the study area at any time within the last decade of studies within the Eco park.
ANIMAL MOVEMENT CORRIDORS								

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	- Corridors may occur in all ecosites associated with water - Presence of significant amphibian breeding indicates the requirement for identifying corridors - Movement corridors between breeding habitat and summer habitat	- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant - At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of <20m - Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat	Corridor is the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	- May occur in all forested ecosites - Determined when deer wintering habitat is confirmed as SWH	- Corridors at least 200m wide with gaps <20m leading to wintering habitat - Unbroken by roads and residential areas - Shorter corridors are more significant	Corridor is the SWH	No Habitat matching Criteria identified in Study Area	No	None required	No

Appendix 6
Species at Risk Habitat Assessment

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Amphibians										
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	*Pseudacris triseriata pop. 2*	NAR	THR	S4	MNDMNRF Species Occurrence Mapping	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog Pseudacris triseriata Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
Butterflies, Bees, Damselflies, Dragonflies & Insects										
Monarch	*Danaus plexippus*	SC	SC	S2N, S4B	MNDMNRF Species Occurrence Mapping, OBA, iNat	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch Danaus plexippus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
West Virginia White	*Pieris virginenisis*	SC	NAR	S3	MNDMNRF Species Occurrence Mapping	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort (*Cardamine diphylla*) and cut-leaved toothwort (Burke 2013).	Yes, candidate habitat identified within the deciduous swamp communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White (Pieris virginiensis) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
Yellow-banded Bumble Bee	*Bombus terricola*	SC	SC	S3S5	MNDMNRF Species Occurrence Mapping	Occur in a diverse range of habitat, including mixed woodlands, farmlands, urban areas, montane meadows, prairie grasslands and boreal habitats. Queens overwinter underground and in decomposing organic material such as rotting lots (COSEWIC 2015)	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	COSEWIC. 2015. COSEWIC assessment and status report on the Yellow-banded Bumble Bee *Bombus terricola* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 60 pp. *rank considered out of date
Birds										
Bald Eagle	*Haliaeetus leucocephalus*	SC	NAR	S2N, S4B	MNDMNRF Species Occurrence Mapping	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle (Haliaeetus leucocephalus) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Bank Swallow	*Riparia riparia*	THR	THR	S4B	MNDMNRF Species Occurrence Mapping, OBBA, eBird	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow Riparia riparia in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	*Hirundo rustica*	THR	THR	S5B	MNDMNRF Species Occurrence Mapping, OBBA, eBird	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4B	MNDMNRF Species Occurrence Mapping, NHIC, OBBA, eBird	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink (Dolichonyx oryzivorus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: http://bna.birds.cornell.edu/bna/species/176
Canada Warbler	*Wilsonia canadensis*	SC	THR	S4B	MNDMNRF Species Occurrence Mapping	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler Wilsonia Canadensis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Common Nighthawk	*Chordeiles minor*	SC	THR	S4B	MNDMNRF Species Occurrence Mapping, eBird	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4B	MNDMNRF Species Occurrence Mapping, OBBA, eBird	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	Jaster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark (*Sturnella magna*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/easmea
Eastern Wood-pewee	*Contopus virens*	SC	SC	S4B	MNDMNRF Species Occurrence Mapping, OBBA, eBird	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple (Acer), Elm (Ulmus) or Oak (Quercus), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee Contopus virens in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	S4B	MNDMNRF Species Occurrence Mapping	Breeding habitat includes open, mature mixedwood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant (COSEWIC 2016)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Evening Grosbeak *Coccothraustes vespertinus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp.
Grasshopper Sparrow	*Ammodramus savannarum*	SC	SC	S4B	MNDMNRF Species Occurrence Mapping	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Vickery, Peter D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/239\
Henslow's Sparrow	*Ammodramus henslowii*	END	END	SHB	MNDMNRF Species Occurrence Mapping	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow *Ammodramus henslowii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 37 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Least Bittern	*Ixobrychus exilis*	THR	THR	S4B	MNDMNRF Species Occurrence Mapping	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern Ixobrychus exilis in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	*Lanius ludovicianus*	END	END	S2B	MNDMNRF Species Occurrence Mapping	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies (Lanius ludovicianus migrans), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	*Seirus motacilla*	SC	THR	S3B	MNDMNRF Species Occurrence Mapping	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush Seiurus motacilla in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Olive-sided Flycatcher	*Contupus cooperi*	SC	THR	S4B	MNDMNRF Species Occurrence Mapping	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher Contopus cooperi in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Peregrine Falcon	*Falco peregrinus*	SC	SC	S3B	MNDMNRF Species Occurrence Mapping	Nests on cliff-ledges (50-200m preferred) near foraging areas. Also nests on anthropomorphic structures, such as tall building ledges, bridges, quarries, mines and cuts for road beds (COSEWIC, 2007a).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Peregrine Falcon *Falco peregrinus* (*pealei* subspecies - *Falco peregrinus* and *pealei anatum/tundrius* -*Falco peregrinus anatum/tundrius*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 45 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Red-headed Woodpecker	*Melanerpes erythrocephalus*	END	THR	S4B	MNDMNRF Species Occurrence Mapping	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Wood Thrush	*Hylocichla mustelina*	SC	THR	S4B	MNDMNRF Species Occurrence Mapping, OBBA	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush Hylocichla mustelina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Fish										
Northern Sunfish (Great Lakes- Upper St. Lawrence Population)	*Lepomis peltastes*	SC	SC	S3	MNDMNRF Species Occurrence Mapping	Prefers shallow, vegetated areas of warm lakes, ponds, and slowly flowing watercourses. Usually occurs in clear waters and is considered intolerant of siltation. Substrate usually consists of sand and gravel, as in the Thames River (COSEWIC 2016)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2016. COSEWIC assessment and status report on the Northern Sunfish *Lepomis peltastes*, Saskatchewan- Nelson River populations and the Great Lakes- Upper St. Lawrence populations, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv + 51 pp.
Redside Dace	*Clinostomus elongatus*	END	END	S1	MNDMNRF Species Occurrence Mapping	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace clinostomus elongatus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Upper Great Lakes Kiyi	*Coregonus kiyi kiyi*	SC	SC	S3	MNDMNRF Species Occurrence Mapping	Prefers the deepest parts of lakes in which it is found. Rarely collected in waters less than 108m deep, and has been reported at depths ranging from 35-200m (COSEWIC 2005).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2005. COSEWIC assessment and update status report on the Lake Ontario kiyi *Coregonus kiyi orientalis* and Upper Great Lakes kiyi *Coregonus kiyi kiyi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 17 pp.
Molluscs										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Rainbow	*Villosa iris*	SC	SC	S2S3	MNDMNRF Species Occurrence Mapping	Most abundant in small to medium-sized rivers, but can also be found in inland lakes. Usually found in or near riffles and along the edges of emergent vegetation in moderate to strong current. Occupies substrate mixtures of cobble, gravel, sandy and occasionally mud or boulder (COSEWIC 2015)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2015. COSEWIC assessment and status report on the Rainbow *Villosa iris* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 82 pp.
Mammals										
American Badger	*Taxidea taxus*	END	END	S1	MNDMNRF Species Occurrence Mapping	Associated with open habitat, including agricultural hedgerows, grasslands, fallow habitat and open linear corridors in forests. Soil composition must be coherent to maintain structure for digging and tunneling, usually coarse silts to fine sands, in Ontario usually found in areas of sandy and loam soils. Prey availability is also important for site suitability (COSEWIC, 2012c).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2012. COSEWIC assessment and status report on the American Badger Taxidea taxus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 63 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Eastern Small-footed Myotis	*Myotis leibii*	END	NA	S2S3	MNDMNRF Species Occurrence Mapping	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located n cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Little Brown Myotis	*Myotis lucifugus*	END	END	S3	MNDMNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
Northern Myotis	*Myotis septentrionalis*	END	END	S3	MNDMNRF Species Occurrence Mapping	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Tri-colored Bat	*Perimyotis subflavus*	END	END	S3?	MNDMNRF Species Occurrence Mapping	Hibernate in caves, abandoned mines, wells and tunnels. Summer roosts include clumps of dead foliage and lichens, typically found in forested habitat close to water sources. May also use anthropogenic structures such as barns for maternity roosts. Foraging habitat includes forested riparian areas over water in relatively open areas (Environment Canada.2015).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (Myotis lucifugus), Northern Myotis (Myotis septentrionalis), and Tri-colored Bat (Perimyotis subflavus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp
Reptiles										
Blanding's Turtle	*Emydoidea blandingii*	THR	THR	S3	MNDMNRF Species Occurrence Mapping	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle Emydoidea blandingii in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Snapping Turtle	*Chelydra serpentina*	SC	SC	S4	MNDMNRF Species Occurrence Mapping, NHIC, ORAA	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle Chelydra serpentina in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
Spotted Turtle	*Clemmys guttata*	END	END	S2	MNDMNRF Species Occurrence Mapping	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle Clemmys guttata in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Wood Turtle	*Glyptemys insculpta*	END	THR	S2	MNDMNRF Species Occurrence Mapping	Generally found in forested landscapes, associated with clear freshwater streams and associated floodplains. Preferential to streams with year-round current, with sandy or gravelly-sandy bottoms. Streams used are typically meandering with frequent oxbows. Overwintering associated with stable, high concentration dissolved oxygen in pools, under mud or under overhanging banks. Nesting occurs in open areas with high sun exposure, typically within 10 to 50m of aquatic habitat. Home ranges are typically linear, following streams (Environment Canada, 2016).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment Canada. 2016. Recovery Strategy for the Wood Turtle (Glyptemys insculpta) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. v + 48 pp.
Eastern Ribbonsnake	*Thamnophis sauritus*	SC	SC	S4	MNDMNRF Species Occurrence Mapping, ORAA	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake Thamnophis sauritus. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Milksnake	*Lampropeltis triangulum*	SC	SC	S4	MNDMNRF Species Occurrence Mapping	Habitat generalists often associated with edge habitat, meadows, prairies, pastures, rocky outcrops and human disturbances such as hydro corridors and railway embankments. Habitat is usually close to a water source. Hibernation occurs in a variety of natural and man-made features, including rotting logs, old foundations, basements and burrows (COSEWIC 2014).	Yes, candidate habitat identified within the meadow communities within the study area.	Candidate habitat identified during ELC survey; no further studies required.	None Observed.	COSEWIC. 2014. COSEWIC assessment and status report on the Eastern Milksnake Lampropeltis triangulum in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 61 pp.
Massassauga Rattlesnake	*Sistrurus catenatus*	SC	THR	S3	MNDMNRF Species Occurrence Mapping	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga Sistrurus catenatus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
American Ginseng	*Panax quinquefolius*	END	END	S2	MNDMNRF Species Occurrence Mapping	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng Panax quinquefolius in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
American Hart's Tongue Fern	*Asplenium scolopendrium*	SC	SC	S3	MNDMNRF Species Occurrence Mapping	Grows on rocks or rocky substrates and requires calcareous soils, preferential to sites with dolomitic limestone, in Ontario found in upper talus and mid-slopes of the Niagara Escarpment (Environment Canada 2013).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment Canada. 2013. Management Plan for the Hart's-tongue Fern (Asplenium scolopendrium) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa. iii + 16 pp
Broad Beech Fern	*Phegopteris hexagonoptera*	SC	SC	S3	MNDMNRF Species Occurrence Mapping	Prefers rich, undisturbed deciduous forest, particularly mature Beech-maple forests. Typically occurs in moister areas such as lower valley slopes, bottomlands and even swamps. Primarily a shade-tolerant species and is unlikely to withstand major opening of the forest canopy (van Overbeeke et. al., 2013)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	van Overbeeke, J.C., J.V. Jalava and R.H. Donley. 2013. Management Plan for the Broad Beech Fern (*Phegopteris hexagonoptera*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. V + 25 pp.
Butternut	*Juglans cinerea*	END	END	S2?	MNDMNRF Species Occurrence Mapping	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut Juglans cinerea in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. (www.sararegistry.gc.ca/status/status_e.cfm)
Eastern Prairie-fringed Orchid	*Platanthera leucophaea*	END	END	S2	MNDMNRF Species Occurrence Mapping	Habitat includes fens, wet tallgrass prairie and moist old fields with open growing conditions. Species does not flower annually (Environment Canada 2012).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment Canada. 2012. Recovery Strategy for the Eastern Prairie Fringed-orchid (Platanthera leucophaea) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ii + 11 pp. + Appendices.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Gattinger's Agalinis	*Agalinis gattingeri*	END	END	S2S3	MNDMNRF Species Occurrence Mapping	Native to both alvar and tallgrass prairie habitat and requires open unshaded conditions for growth (Environment and Climate Change Canada 2019)	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	Environment and Climate Change Canada. 2019. Recovery Strategy for the Gattinger's Agalinis (*Agalinis gattingeri*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. 3 parts, 44 pp. + vi + 33 pp. + 7 pp.
Hill's Pondweed	*Potamogeton hillii*	SC	SC	S2S3	MNDMNRF Species Occurrence Mapping	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed Potamogeton hillii in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.
Tuberous Indian Plantain	*Arnoglossum plantagineum*	SC	SC	S2	MNDMNRF Species Occurrence Mapping	Habitat includes open, sunny areas in wet calcareous soils, including wet meadows and shoreline fens (COSEWIC 2002).	No Habitat matching Criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC 2002. COSEWIC assessment and update status report on the tuberous Indian-plantain Arnoglossum plantagineum in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 11 pp.

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Appendix 7
Glossary of Terms and Impact Ratings

APPENDIX 12. Glossary of terms and Impact Ratings

Duration of Impact
ST – Short-term (define based on project)
LT- Long-term (define based on project)

Reversibility
R- Reversible
P – Permanent

Geographic Extent of Influence
SA– Subject Area (physical disturbance area)
AA- Assessment Area (120m zone of influence)
LA – Landscape Area (Area outside AA that may be affected)

Frequency of Disturbance
O - Occurs once.
S - Occurs sporadically at irregular intervals.
R - Occurs on a regular basis and at regular intervals.
C – Continuous, ongoing and all the time.

Existing Ecological Site Context
U - Undisturbed: Area relatively or not adversely affected by human activity.
PD – Past Disturbance: Area Adversely affected by human activity in recent past, but regeneration has occurred.
D -Disturbed: Area has been substantially previously disturbed by human development or human development is still present.

Likelihood of impact occurring
If the Proposed activity occurs, the likelihood of the impact occurring is:
L: Low probability of occurrence.
M: Medium probability of occurrence.
H: High probability of occurrence.

Cumulative Environmental Effects
Will the proposed activity interact with other impacts?
Y: Potential for environmental effect to interact with the environmental effects of other past, present or foreseeable future activities

N: Environmental effect will not or is not likely to interact with the environmental effects of other past, present or foreseeable future activities.

Impact Rating

None: An event that, if it occurs, will cause no foreseeable impact.

Minor: An event that, if it occurs, will cause small, reversible and geographically localized impact that can be easily mitigated.

Moderate: Significant but reversible, OR irreversible and geographically localized, impact that requires significant mitigation.

Severe: Significant AND irreversible impact on the environment, impacts cannot be fully mitigated.

Potential vs. Actual impact

[1] *Potential Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures.

[2] *Actual Impact* is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

Appendix 8
Proposed Site Plan (Walter Fedy, 2022)

ROOF RUNOFF TO FLOW DIRECTLY TO POND

MATCH TO EXISTING GRADE AT PROPERTY LINE (3:1 MAX SLOPE)

PROPOSED DRY POND
REQUIRED VOLUME = 550 m^3 (APPROXIMATE)
PROVIDED VOLUME = 600 m^3
BOTTOM OF POND ELEVATION = 506.50
TOP OF POND ELEVATION = 507.40

GRAVEL / ASPHALT AREA TO BE PRE-TREATED WITH OGS UNIT PRIOR TO REACHING POND

ROOF RUNOFF TO BYPASS OGS UNIT AND FLOW DIRECTLY TO POND

30m GRCA SETBACK

RIP RAP SPILLWAY

AREA TO BE REWORKED TO ALLOW FOR ADDITIONAL FLOODPLAIN VOLUME. (TO ACCOUNT FOR THE PROPOSED FILL WITHIN THE SETBACK). OVERALL FILL WITHIN THE GRCA SETBACK IS APPROXIMATELY 1034 m^3. THIS REWORKED SPILLWAY RESULTS IN A CUT OF APPROXIMATELY 454 m^3. OVERALL FILL WITHIN SETBACK IS 580 m^3.

TOP OF SECONDARY CONTAINMENT ELEVATION = 508.25

30m GRCA SETBACK

TOP OF SECONDARY CONTAINMENT ELEVATION = 508.20 (EMERGENCY SPILL LOCATION)

CLEAN RUNOFF FROM CONTAINMENT AREA TO BE RELEASED TO CREEK (CONTROLLED VIA VALVE)

MONITORING WELL FOR STORWMATER

MATCH TO EXISTING GRADE AT PROPERTY LINE (3:1 MAX SLOPE)

SECONDARY CONTAINMENT:
REQUIRED VOLUME = 4795 m^3
PROVIDED VOLUME = 4900 m^3
LOWEST BOTTOM ELEVATION (AT CBs) = 507.15

TOP OF SECONDARY CONTAINMENT ELEVATION = 508.25

AREA TO BE REWORKED TO ALLOW FOR ADDITIONAL FLOODPLAIN VOLUME. (TO ACCOUNT FOR THE PROPOSED FILL WITHIN THE SETBACK). THIS SUNKEN AREA ALLOWS FOR AN ADDITIONAL 650 m^3 OF FLOODPLAIN STORAGE

TOP OF SECONDARY CONTAINMENT ELEVATION = 508.25

MNRF PROVINCIALLY SIGNIFICANT WETLAND AREA

MNRF WETLAND 15m BUFFER

TOTAL SITE AREA: 4.04 ha
NORTHERN PARCEL AREA: 2.06 ha
SOUTHERN PARCEL AREA: 1.98 ha

SOUTHERN PARCEL DEVELOPED AREA: 1.07 ha

PROVINCIALLY SIGNIFICANT WETLAND (INCLUDING 15m SETBACK) AREA - UNDEVELOPED: 0.91 ha

KEY PLAN

DATE	ISSUANCE	NO.
YYYY.MM.DD	ISSUED FOR...	

CLIENT
Customer Name Line 1
Customer Name Line 2
Customer Address

PROJECT
Project Name
Project Phase
Project Location

TITLE

WALTERFEDY
KITCHENER | HAMILTON | TORONTO
800.685.1378 walterfedy.com

SCALE:	1:750
DATE:	2022-07-28
PROJECT NO.:	2021-0000-00
DRAWN BY:	XXX
CHECKED BY:	XX

SHEET NO.:

Appendix 9
Secondary Containment Detail (CHFOUR Biogas, 2022)

PRELIMINARY
NOT FOR
CONSTRUCTION

DIGESTER WALL

Maximum Liquid Level

SECONDARY
CONAINMENT BERM

FINISHED
GRADE

IMPERMEABLE
GEOMEMBRANE

BACKFILL

TANK FOOTING
DRAIN TO MONITORING
WELL

IMPERMEABLE
GEOMEMBRANE

NATIVE SOIL

NO.	DATE dd/MM/yyyy	REVISION	AUTHOR

DOCUMENT STATUS:	STATUS	DATE dd/MM/yyyy	AUTHOR

PROJECT:
SOUTHGATE RENEWABLES LP
SOUTHGATE RENEWABLES
DUNDALK, ON

CH FOUR BIOGAS
Your Organic Energy Potential Realized
TEL: 1-866-730-6500
www.CHFOURBIOGAS.com

DRAWING TITLE: SECONDARY CONTAINMENT SECTION VIEW

DESIGNED BY:	DRAWN BY:	DATE:
D.L.	J.K.B.	13-Sep-22

JOB NUMBER:	CHECKED BY:	SCALE:
17C14	J.C.	As Shown

DRAWING NUMBER: SC2

- Urban Forestry
- Ecological Restoration
- Landscape Architecture
- Environmental Studies
- Expert Opinion

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