REPORT

C10 BRANTFORD EXPANSION LANDS, BRANTFORD, ON

SCOPED ENVIRONMENTAL IMPACT STUDY

Submitted to:

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Submitted by:

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CA0007600

22 January 2024

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Table of Contents

TABLES

FIGURES

APPENDICES

APPENDIX A
Meeting Minutes – Six Nations of the Grand River

APPENDIX B
Terms of Reference

APPENDIX C
Field Survey Chronology

APPENDIX D
Vegetation and Flora

APPENDIX E
Breeding Bird Survey Results

APPENDIX F
Species At Risk Screening Table

APPENDIX G
Butternut Health Assessment Report

1.0 INTRODUCTION

1.1 Site and Study Overview

WSP Canada Inc. (WSP) has been retained by Welton & Innes GP Inc. to complete a Scoped Environmental Impact Study (EIS) in support of a Block Plan and proposed development on the Subject Property, a 77.7 hectare (ha) area located northeast of Lynden Road in Brantford, Ontario (the Subject Property; shown on Figure 1).

The proposed development area that is subject to Block Plan approval includes the Subject Property and a single private residential property. The Subject Property comprises approximately 76.4 ha of the 77.7 ha of land associated with the Block Plan. This 76.4 ha compromises 31.3 ha primarily for residential use, 3.9 ha for neighbourhood parks, 22.1 ha for natural heritage systems, 12.3 ha for roadways and 6.8 ha for stormwater management (SWM) facilities.

This Scoped EIS is intended to satisfy the Natural Heritage System requirements of the City's Official Plan in accordance with the C10 Block Terms of Reference prepared by Welton & Innes GP Inc. It also supports a Block Servicing Strategy in accordance with the Comprehensive Block Plan Terms of Reference (City of Brantford 2021), including documentation of existing natural heritage features and functions on and adjacent to the Subject Property, which have the potential to be impacted by the proposed development. The report also includes recommended measures for impact mitigation, stewardship and restoration, and future work.

The Subject Property is bounded by urban residential development to the west, a Tributary of Fairchild Creek, including valley lands to the north, Canada National Railway (CN) right-of-way and undeveloped lands to the east, and the Garden Avenue and Lynden Road intersection to the south. The broader landscape is urban to the south and west, and rural / agricultural to the north and east.

The southern portion of the Subject Property is comprised of primarily agricultural fields (row crops). Intermixed with the agricultural fields are areas of cultural meadows, thickets and cultural woodlands. There are also residential / farmstead buildings associated with an occupied farmstead and a former farmstead fronting on Lynden Road. These areas have a mix of planted / landscape vegetation and naturalized vegetation.

The northern portion of the Subject Property consists of natural / semi-natural features associated with the valleylands of a Tributary of Fairchild Creek (running east-west), in addition to isolated wetlands, hedgerows and ephemeral / intermittent drainage features which extend through the agricultural fields. The Tributary of Fairchild Creek meanders within a relatively wide floodplain bounded by well-defined valley slopes, before connecting to the main branch of the Fairchild Creek outside of the Subject Property boundary.

The wetland features / adjacent areas (on and adjacent to the Subject Property) are regulated by the Grand River Conservation Authority (GRCA) under Ontario Regulation 150/06. A portion of the site is within the regulatory floodplain, associated with Fairchild Creek.

This report is an update to the previous EIS (dated November 2022) based on modifications to the development proposal and updates to technical information since that submission. Revisions in the current report are limited to the following:

- Mapping revisions to reflect changes to the proposed development as presented in the November 2022 report.

- Discussion of comments received on the November 2022 report, specifically comments received during a meeting between representatives from the City of Brantford, WSP, Welton & Innes GP Inc. and Six Nations of the Grand River (SNGR) on July 4, 2023.
    - Additionally, discussion of updated fieldwork as discussed during the July 4, 2023 meeting has been included in Section 3.7.
- Review and integration of relevant information as required based on updated technical information prepared for the current submission.

1.2 Study Team

The primary study team includes:

- Macaulay Shiomi Howson Ltd.: Planning;
- Terrapex Environmental Ltd.: Hydrogeological and Geotechnical;
- Urbantech Consulting: Engineering; and
- WSP Canada Inc.: Natural Heritage.

1.3 Proposed Development

The proposed development consists of residential units including single detached and townhouse homes, parklands, internal roadways, SWM facilities, and municipal services (sanitary, water). The proposed development is primarily restricted to portions of the Subject Property currently under agricultural land use, as shown on the Detailed Concept Plan (August 2023), included as Figure 5. The lands within and adjacent to the north / northeast portion of Subject Property contain significant natural heritage features that will be protected with setbacks recommended herein. Vegetation communities on the Subject Property (deciduous forest, cultural woodland and thicket, marsh and hedgerows) have been assessed and evaluated to determine their significance and sensitivity, leading to management recommendations.

The intent of this Scoped EIS is to evaluate the sensitivity and significance of the natural features that could be impacted by the proposed development. Natural heritage work and project team review has been undertaken to identify ecological constraint limits, appropriate setbacks, and environmental enhancement opportunities where appropriate. The plan has been guided by this iterative process. This Scoped EIS and other technical studies have been prepared in support of the Detailed Concept Plan (August 2023), as shown on Figure 5 and discussed in Section 4. It is important to note that the technical supporting studies will be updated and refined as part of a future Draft Plan Application, as will the current Scoped EIS.

1.4 First Nations Consultations

As part of the development application process, staff from WSP, the City of Brantford and Welton & Innes GP Inc. met with representatives of the SNGR on July 4, 2023. The purpose of the meeting was to inform SNGR representatives about the proposed development and discuss SNGR's interest in the development moving forward. In particular, various technical studies were discussed including previous archaeological assessments, the Master Environmental Servicing Plan (MESP) and the November 2022 Scoped EIS. Of relevance to the Scoped EIS, SNGR representatives expressed interest in multiple aspects of that study, including botanical surveys, wildlife surveys, wetlands, Species at Risk and setbacks from natural features. The discussion in this

meeting was used to inform updated field surveys completed in October 2023 and forthcoming surveys in early 2024. Meeting minutes have been included in Appendix A.

2.0 STUDY APPROACH

2.1 Background Information

Natural environment features and functions on and adjacent to the Subject Property have been characterized and evaluated using a combination of background information and field surveys, as discussed below. Background information sources were reviewed to assess potential for Species at Risk (SAR) that may occur within or in the vicinity of the Subject Property. The review of secondary source background information included the following:

- GRCA – online resource mapping;
- Land Information Ontario (LIO) database information;
- Species at Risk range maps and habitat descriptions;
- Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) database and mapping;
- Topographic mapping (Ontario Basic Mapping, National Topographic System) and current aerial photography;
- Satellite imagery (Google Earth 2023);
- eBird and Ontario Breeding Bird Atlas (OBBA);
- Ontario Reptile and Amphibian Atlas (ORAA);
- Relevant municipal and provincial policy documents and legislation; and
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk mapping.

For the purposes of this report, the term *Species of Conservation Concern* (SCC) includes SAR (SAR) (provincially and federally listed species), provincially rare species (S-Rank of S1 - S3) and regionally / locally significant plant and bird species (per references described in Sections 3.6 and 3.7) and plant species with a high *Coefficient of Conservatism* (CC) value (refer to Section 3.6).

2.1.1 Previous Studies

One relevant previous study was reviewed as part of the current EIS:

Wescorp Consultants Inc. and Watershed Management Ecology. 2008. Innes Welton Residential Development: Environmental Assessment. Prepared for: First Urban (April 17, 2008).

2.2 Policy Framework

The natural heritage policy framework, including designations, guidelines and recommendations at the federal, provincial, regional and municipal level, has informed this study. Key documents include the Provincial Policy Statement (PPS) (2020) and its guidance documents, and Official Plans for the County and City. A detailed discussion of relevant natural heritage policies and compliance is included in Section 5.

2.3 Terms of Reference

A Terms of Reference (TOR) was developed for the overall Block Plan (dated February 1, 2022) by Welton & Innes GP Inc., based on the Comprehensive Block Plan Terms of Reference (City of Brantford 2021). The TOR was submitted to relevant review agencies. This TOR included details on the scope for the EIS as detailed herein. The TOR has been included in Appendix B. Note that a revised TOR has been included as part of the current submission.

3.0 EXISTING CONDITIONS

3.1 Past and Present Land Use

The Subject Property is a mix of agricultural farmland, cultural thicket, hedgerows, small marsh features and forested riparian areas (associated with Tributary of Fairchild Creek in the north). It is bounded by urban residential development to the west, natural areas to the north / northeast, the rail corridor to the east and Garden Avenue / Lynden Road to the south. The broader landscape is characterized as urban to the west and south, and agricultural to the north and east.

A residential property with a barn building is present in the south along Lynden Road, which is part of the Block Plan, but will not be part of the future development application. An abandoned farm storage building with surrounding cultural woodland and meadow is also present within the southeast portion of the Subject Property. The Subject Property includes significant natural heritage features in the northeast portion, as detailed in Section 3.3.

3.2 Physiography Drainage, Hydrogeology and Soils

A hydrogeological study was completed by Terrapex in 2022 and revised in 2023 for the Subject Property (Terrapex 2022; rev. 2023). The results of this study indicate that, the site stratigraphy consists of low permeability clay and silt deposits, over a limestone bedrock. The native soil deposit also included intermittent wet, silt / sand seams at varying depths.

The site consists of undulating lands, comprising relatively flatter areas close to Lynden Road and the existing residential subdivision to the west. The north and northeasterly portions of the Subject Property include sloping ground with relatively high and steep slopes (as high as 16 m), particularly along the creek. Several swales were observed on the Subject Property which convey surface water runoff. The surface water drainage within the Subject Property follows two typical paths. In the north of the site, it generally drains towards the Tributary of Fairchild Creek, and to the south, towards the drainage ditches on Lynden Road. The tributary flows to the east towards Fairchild Creek.

There are 32 properties within 1 kilometre (km) of the proposed development which remain serviced by water wells. The available information suggests that the local wells are typically shallow, dug wells. Several residences identified problems with water quality and yield.

3.3 Environmental Designations

The Subject Property has the following designations / classifications:

- GRCA - The following *Regulated* features are identified on GRCA online mapping and have been included in Figure 4:

- *Regulated Watercourse* and *Floodplain*: associated with the Tributary of Fairchild Creek / valleyland at the north end of the Subject Property;
- *Slope valley* / *steep slopes*: associated with the valley of the Tributary of Fairchild Creek at the north end of the Subject Property and a second watercourse (not identified as Regulated) in the northeast portion of the Subject Property; and
- *Wetland*: on the floodplain of the Regulated watercourse and two isolated features in northwest and southeast areas of the Subject Property.

- City of Brantford Official Plan. Envisioning Our City: 2051 (August 2021) (as amended by OPA 5):
  - *Core Natural Areas Designation* associated with the woodland / Tributary of Fairchild Creek valleyland in the north portion of the Subject Property, including extensions (hedgerows) and vegetated areas off the Subject Property – per Schedule 6, included in Figure 4.
- A Place to Grow. Growth Plan for the Greater Golden Horseshoe (August 2020), Natural Heritage System mapping (2018):
  - *Natural Heritage System*, primarily associated with the valleylands at the north end of the Subject Property, but also including extensions (hedgerows) and vegetated areas off the Subject Property, included in Figure 4.

We are aware of no other natural heritage designations such as *Provincially Significant Wetland* (PSW) or *Areas of Natural and Scientific Interest* (ANSI) within or directly adjacent to the Subject Property.

3.4 Aquatic Resources

The Subject Property is located within the Fairchild Creek Subwatershed, which drains to the Grand River located approximately 10 km to the southeast. Tributaries to Fairchild Creek and Headwater Drainage Features (HDFs) are located within areas of the Subject Property. The Subject Property is located within Fisheries Management Zone 16, within the Guelph District MNRF.

3.4.1 Aquatic Habitat Assessment and Headwater Drainage Feature Approach and Methods

To assess the sensitivity of aquatic habitat on the Subject Property, an aquatic habitat assessment was undertaken in the Tributaries of Fairchild Creek on August 30, 2018, March 21 2019, and July 5, 2019. Refer to Figure 2 for the location of assessed reaches.

The aquatic habitat assessment involved collecting general notes on the following:

- Flow conditions, clarity, gradient and velocities;
- Channel dimensions and general character;
- Morphology (e.g., riffles, pools) and substrate type;
- Cover opportunities (i.e., woody debris, undercut banks, boulders, aquatic vegetation);
- Bank height, character and stability / evidence of erosion;
- Riparian vegetation;

- Physical barriers to fish movement;
- Potential specialized and important habitat areas, including potential spawning habitat, good nursery cover, holding habitat (deeper refuge pools);
- Evidence of groundwater discharge; and
- Disturbances, habitat limitations and potential habitat enhancement opportunities.

HDFs were assessed across the Subject Property. The assessment of these features was completed in accordance with the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (CVC & TRCA 2014). A total of 13 HDFs were assessed throughout the Subject Property during the March 2019 investigations.

3.4.2 Results

Within the Subject Property there is a primary Tributary of Fairchild Creek which runs in an east-west direction through the northern portion of the Subject Property (Tributary of Fairchild Creek on Figure 2), as well as a secondary tributary on the eastern edge of the Subject Property limits located 350 m south of the primary tributary (Feature A on Figure 2). In addition to the tributaries, there are a series of HDFs located throughout the Subject Property that convey flows to Fairchild Creek and drainage culverts along Lynden Road. The primary Tributary of Fairchild Creek was assessed on August 30, 2018 and was found to have a permanent flow regime and supports direct fish habitat. The tributary had extensive erosion along the banks, with a steep drop from the top of bank to the channel bed.

Data from LIO supports the designation of direct fish habitat through the presence of Blacknose Dace (*Rhinichthys atratulus*), and Creek Chub (*Semotilus atromaculatus*) in the upstream portion of the primary Tributary of Fairchild Creek (approximately 400 m west of the Subject Property) (LIO, 2021).

The secondary tributary along the eastern Subject Property limit was assessed on July 5, 2019 and determined to be an ephemeral stream with indirect fish habitat, originating from HDF's within the agricultural fields. During field investigations the watercourse was found to be dry with standing pools of water 0.01 to 0.02 m in depth. The channel was poorly defined in sections, but identifiable by minor erosion and pooling water located in a well-defined valley. Located south of this tributary is another drainage feature which also conveys flow from the Subject Property to the Tributary to Fairchild Creek (Feature B on Figure 2). At the time of assessment, this feature had no flow or defined channel. This feature was also assessed during the HDF assessment in March 2019.

3.5 Headwater Drainage Features

3.5.1 Approach

Reconnaissance level field investigations on the Subject Property were completed on August 30, 2018 in order to identify potential HDFs for further investigation during the appropriate time of year. During the spring freshet in 2019, a HDF assessment was conducted on March 21, 2019. During the field investigations, WSP staff considered the following:

- Regulated watercourses on GRCA mapping;
- Land topography;

- Flowing / Standing water;
- Potential flow path as indicated by moist / wet soils; and
- HDF feature definition and/or evidence of erosion.

Potential locations of HDFs were noted during the site reconnaissance in the summer of 2018 for assessment during the spring and verified through 2019 fieldwork.

3.5.2 Survey Methodology

3.5.2.1 Part 1: Evaluation

Based on a field reconnaissance in August 2018, it was concluded that the HDFs within the agricultural fields on the Subject Property were '*low sensitivity sites*' (i.e., features that are ill-defined, contain only ephemeral flow and are unlikely to contain sensitive species and/or habitat) and as such, a *Rapid Survey Technique* was used for assessment, as outlined in the HDF Guidelines. Using this evaluation method, components of the headwater sampling protocol (Ontario Stream Assessment Protocol [OSAP] Section 4 Module 10 March 2013) were applied, documenting HDF form and flow conditions, riparian vegetation and site features that are important components of habitat.

This module is best applied in the short period of time following a major freshet event, which in southern Ontario generally occurs during late winter and spring, and before new vegetative growth covers and disrupts any newly deposited sediment. After this time, vegetation growth and/or agricultural crops may obscure some HDFs that would otherwise be visible in the spring. However, the module may be applied at other times of the year as well, meaning sampling should occur between March and the middle of June in southern Ontario (OSAP Section 4 Module 10). An HDF assessment was completed on March 21, 2019, during a freshet event, before crop planting.

Information collected during the field survey encompassed the following general parameters, where relevant:

- Feature Type (e.g., defined natural channel, channelized, not defined, etc.);
- Riparian Conditions (e.g., none, cropped land, forest, etc.);
- Flow Conditions (e.g., no water, standing water, interstitial flow, minimal or substantial flow);
- Feature Vegetation;
- Feature / Bankfull Widths / Depths;
- Sediment Deposition / Transport;
- Flow Measures;
- Longitudinal Gradient;
- Site Features (e.g., roughness); and
- Channel Connectivity.

The HDFs assessed within the Subject Property were mapped on an air photo base, which is presented in Figure 3.

3.5.2.2 Part 2: Classification

The data collected during the HDF evaluation phase (Part 1: Evaluation) was used to apply appropriate classifications to the HDFs being assessed, identifying the functions of each HDF that were considered during Part 3: Management Recommendations. Following *the Guidelines*, a classification was applied to each of the following four categories: Hydrology; Riparian; Fish and Fish Habitat; and Terrestrial Habitat (see Table 1).

3.5.2.3 Part 3: Management Recommendations

The classification categories identified in Part 2 provide the basis of the management recommendations provided below. A flow chart in *the Guidelines* provides guidance through the process of translating the classification results to management recommendations.

3.5.3 Results

The classification and management recommendation for each HDF feature segment resulting from the field evaluation of each feature is provided in Table 1. Management recommendations in accordance with *the Guidelines* are provided below.

Table 1. HDF Classification and Management Recommendations

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation
	Hydrology*	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
HDF 002	FC – 1 (No surface water) FT – 4 (No defined feature) **Limited or Recharge**	Crop Planting Tile drain	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**No Management Required**
HDF 003	FC – 4 (Minimal surface flow) FT – 1 (Defined natural channel) **Valued or Contributing**	Tile Drain upstream	Forest **Important Functions**	Allochthonous transport only **Contributing Functions**	Terrestrial habitat present **Contributing Functions**	**Conservation**
HDF 004	FC – 1 (No surface water) FT – 4 (No defined feature) **Limited or recharge**	Crop Planting Tile drain	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**No Management Required**
HDF 005	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**Mitigation**

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation
	Hydrology*	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
HDF 006	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**Mitigation**
HDF 007	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**Mitigation**
HDF 008	FC – 4 (Minimal surface flow) FT – 1 (Defined natural channel) **Valued or Contributing**	Crop Planting	Scrubland (CUT) **Important Functions**	Allochthonous transport only **Contributing Functions**	Terrestrial habitat present – wetland, no breeding amphibians **Valued Functions**	**Conservation**
HDF 009	FC – 2 (Standing water only) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**No Management Required**
HDF 010	FC – 2 (Standing water only) FT – 4 (No defined feature) Valued or Contributing	Crop Planting	Crops Limited Functions	Allochthonous transport only Contributing Functions	No terrestrial habitat present Limited Functions	No Management Required
HDF 011	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**Mitigation**
HDF 012	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Wetland to west **Important Functions**	Allochthonous transport only **Contributing Functions**	Terrestrial habitat present **Contributing Functions**	**Mitigation**
HDF 013	FC – 4 (Minimal surface flow) FT – 4 (No defined feature) **Valued or Contributing**	Crop Planting	Crops **Limited Functions**	Allochthonous transport only **Contributing Functions**	No terrestrial habitat present **Limited Functions**	**Mitigation**

Key attributes for assessed HDFs are as follows:

- HDF 002: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). No flow was evident during the HDF assessment in March 2019.
- HDF 003: Defined natural feature through woodland and terrestrial habitat. Conveys flow during rain events / spring freshet. A tile drain is present at the upstream end. Does not provide habitat for direct fish use (contributing functions only).
- HDF 004: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). No flow was evident during the HDF assessment in March 2019.
- HDF 005: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into the Tributary of Fairchild Creek northeast of the Subject Property.
- HDF 006: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into the Tributary of Fairchild Creek northeast of the Subject Property.
- HDF 007: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into the Tributary of Fairchild Creek north of the Subject Property.
- HDF 008: Defined natural feature through wetland and terrestrial habitat, within a small but distinct valley. Conveys flow during rain events / spring freshet. Was actively flowing at the time of assessment. Does not provide habitat for direct fish use (contributing functions only). Conveys flow into the Tributary of Fairchild Creek northeast of the Subject Property.
- HDF 009: Undefined feature in active cropland; standing water only; no native vegetation / terrestrial habitat and no direct fish use. This feature may provide contributing functions to downstream habitats, but only standing water present during the HDF assessment in March 2019.
- HDF 010: Undefined feature in active cropland; standing water only; no native vegetation / terrestrial habitat and no direct fish use. This feature may provide contributing functions to downstream habitats, but only standing water present during the HDF assessment in March 2019.
- HDF 011: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into Fairchild Creek east of the Subject Property.
- HDF 012: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into storm sewer along Lynden Road.
- HDF 13: Undefined feature through active cropland on the Subject Property; no native vegetation / terrestrial habitat and no direct fish use (contributing functions only). Was actively flowing at the time of assessment. Conveys flow into storm sewer along Lynden Road.

3.5.4 Management Recommendations

The features assessed using the HDF guidelines in the spring of 2019 and described herein were those that were identified as having attributes and/or functions that may be associated with HDFs, as evaluated by a desktop pre-screening and site reconnaissance investigations in the summer of 2018.

All assessed features except for HDF 002, HDF 004, HDF 009 and HDF 010 were flowing at the time of assessment. However, all features except for HDF 003 and HDF 008 were in actively cropped areas and had undefined channels with no vegetation that are not evident after crop planting (per multi-season field observations).

The management recommendation for features within actively cropped areas that were conveying flows at the time of survey (HDF 005, HDF 006, HDF 007, HDF 011, HDF 012 and HDF 013) is **Mitigation**. For the remaining features within actively cropped areas (HDF 002, HDF 004, HDF 009 and HDF 010) which were not flowing or only had standing water and have been assessed as **No Management Required**. HDF 003 is a defined feature through part of a woodland and supports terrestrial habitat, and HDF 008 supports wetland riparian habitat and therefore, each of these receives a management recommendation of **Conservation**. There are no HDF segments on the Subject Property that have received a management recommendation of **Protection**. The assessed HDF's and their associated management recommendations are shown on Figure 3.

These management recommendations, as outlined in the Guidelines, are defined as follows:

Conservation – Valued Functions

- Maintain, relocate, and/or enhance drainage feature and its riparian zone corridor.
- If catchment drainage has been previously removed or will be removed due to the diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage), as feasible.
- Maintain or replace on-site flows using mitigation measures and/or wetland creation, if necessary.
- Maintain or replace external flows.
- Use natural channel design techniques to maintain or enhance the overall productivity of the reach.
- Drainage feature must connect to downstream.

Mitigation – Contributing Functions

- Replicate or enhance functions through enhanced lot level conveyance measures, such as well-vegetated swales (e.g., herbaceous, shrub and tree material) to mimic online wet vegetation pockets or replicate through constructed wetland features connected to downstream.
- Replicate on-site flow and outlet flows at the top end of the system to maintain feature functions with vegetated swales, bioswales, etc. If catchment drainage has been previously removed due to the diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage).
- Replicate functions by lot level conveyance measures (e.g., vegetated swales) connected to the natural heritage system, as feasible and/or Low Impact Development (LID) stormwater options (refer to Conservation Authority Water Management Guidelines for details).

No Management Required – Limited Functions

- The feature that was identified during desktop pre-screening has been field verified to confirm that no feature and/or functions associated with headwater drainage features are present on the ground and/or there is no connection downstream. These features are generally characterized by lack of flow, evidence of cultivation, furrowing, presence of seasonal crop, and lack of natural vegetation. No management recommendations required.

3.6 Vegetation Communities and Flora

3.6.1 Approach

Site visits were completed in September 2018, October 2018, and May 2019 to document plant species and vegetation community characterizations as input to this scoped EIS. Refer to the field survey chronology in Appendix C for further details on the surveys conducted.

Vegetation communities were assessed using:

- Vegetation communities have been characterized using the Ecological Land Classification for Southern Ontario– first approximation (ELC) (Lee et al. 1998) for all natural and cultural vegetation communities within the Subject Property. For vegetation communities where the first approximation ELC does not provide an adequate description, the pending 2008 second approximation description has been used.
- Vegetation community significance was evaluated using Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario (Bakowsky 1996; NHIC website).
- The quality of a particular vegetation community can be reflected in its richness of conservative species as indicated by the *Floristic Quality Index* (FQI) number (Oldham et al. 1995). FQI is a measurement of a vegetation community's ecological quality based on its plant species composition. FQI is calculated by weighting the mean CC divided by species richness. Generally, 1 to 10 is low quality, 11 to 20 is moderate, 21 to 35 is high quality, and greater than 35 is exceptional.

Botanical inventory data from each survey date listed above has been complied into a vascular plant species list, which is presented in Table D.1 (Appendix D).

- Plant species status was evaluated using the List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E) (Oldham 2017) for regional significance; the NHIC website for provincial rarity ranks (i.e., S-Ranks); the Species at Risk in Ontario list (MNRF updated regularly) for provincial status designations; and the Canadian Species At Risk list (Committee on the Status of Endangered Wildlife in Canada [COSEWIC]) for national status designations.
- Analysis of floristics of all inventoried plant species was completed by using their CC and *Coefficient of Wetness* (CW), per the Floristic Quality Assessment System for Southern Ontario (Oldham et al. 1995), which uses an objective, quantitative method to compare the relative quality of two or more vegetation communities. The quality of a particular vegetation community can be reflected in the richness of conservative species within the community (Oldham et al. 1995).

3.6.1.1 Floristics

In total, 181 plant species were recorded during WSP field surveys on the Subject Property. A complete list of vascular plant species for each vegetation community is provided in Appendix D. Of the species recorded, the following was noted:

- 120 (66%) are native and 48 (27%) are non-native.
- Two provincially rare species (i.e., S-rank S1 - S3) were recorded within the Subject Property: Butternut (*Juglans cinerea*) in Vegetation Units 1 (CUW1) and 11 (CUW1), S2?; and Northern Pin Oak (*Quercus ellipsoidalis*), S3. All other recorded native species have a provincial ranking of S4 or S5 (apparently secure [S4] or secure [S5] in Ontario).
- No globally rare species (i.e., G-rank G1 - G3) were recorded.
- One SAR, Butternut (four trees total), was recorded. Butternut is designated as *Endangered* by COSEWIC (federal) and the Committee on the Status of Species at Risk in Ontario (COSSARO) (provincial). Therefore, Butternut is subject to the provisions of the Endangered Species Act (ESA) (2007) and the Species at Risk Act (SARA) (2002).
- In total, one species recorded within the Subject Property is considered 'Rare' in Brant County: Purple-veined Willowherb (*Epilobium coloratum*). Furthermore, nine species are considered 'Uncommon' in Brant County: Black Maple (*Acer nigrum*), Perennial Yellow Flatsedge (*Cyperus esculentus*), Beechdrops (*Epifagus virginiana*), Woodland Strawberry (*Fragaria vesca* ssp. *vesca*), Black Ash (*Fraxinus nigra*), Virginia Stickseed (*Hackelia virginiana*), Large-toothed Aspen (*Populus grandidentata*), Northern Pin Oak and Orange-fruit Horse-gentian (*Triosteum aurantiacum*) (Oldham 2017).
- Of the 120 naturally occurring native species recorded for which CC values are provided, the CC values range from 0 to 9 with 40% between 0 and 6 (i.e., high to moderate disturbance tolerance). Six species have a CC value of greater than 6, which is considered highly conservative and only include species that grow in vegetation communities with low levels of recent disturbance (Table 2).

Table 2. Regionally Significant Species and High CC Value

Scientific Name	Common Name	Brant County[1]	CC If Greater Than 6	Unit
Acer nigrum	Black Maple	U	7	1,5
Chelone glabra	White Turtlehead	C	7	3
Cyperus esculentus	Perennial Yellow Flatsedge	U	-	CUM/HR,9,10
Epifagus virginiana	Beechdrops	U	-	2
Epilobium coloratum	Purple-veined Willowherb	R	-	3
Fragaria vesca ssp. vesca	Woodland Strawberry	U	-	1,2,5
Fraxinus nigra	Black Ash	U	7	3
Hackelia virginiana	Virginia Stickseed	U	-	CUM/HR,1,5

[1] Oldham, Michael J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada and Ontario Ministry of Natural Resources and Forestry. Peterborough, ON. 132 pp.

Scientific Name	Common Name	Brant County[1]	CC If Greater Than 6	Unit
Populus grandidentata	Large-toothed Aspen	U	-	5
Quercus ellipsoidalis	Northern Pin Oak	U	9	1
Triosteum aurantiacum	Orange-fruit Horse-gentian	U	7	2
Viburnum rafinesquianum	Downy Arrowwood	X	7	2
Viburnum rafinesquianum	Downy Arrowwood	X	7	2

3.6.1.2 Vegetation Communities

Ten natural / semi-natural vegetation communities and four anthropogenic vegetation communities were delineated in the Subject Property, based on field surveys; none are provincially significant (per Bakowsky 1996 NHIC website). Vegetation communities are mapped on Figure 2, with descriptions included in Table 3.

Some of these vegetation communities exhibit signs of disturbance including erosion from seasonal flooding along the creek banks, disease and death of trees due to the Emerald Ash Borer and Beech Bark Disease, recreational use (camping, trails and unofficial trails), dumping and presence of non-native / invasive species. These disturbances are attributable to historic land use within and adjacent to the Subject Property.

Table 3: Vegetation Community Descriptions and General Vegetation Overview

Unit	Habitat / Community Type	Layer	Dominant Species	Attributes
	Cultural **CUM / HR** Cultural Meadow / Hedgerow	Canopy / Sub-canopy	White Ash (*Fraxinus americana)*	▪ 118 spp. recorded (44% native; FQI 20) ▪ Age: young ▪ Disturbance: exotic species, dead Ash in canopy with evidence of Emerald Ash Borer ▪ Overall botanical quality: **Low** ▪ SCC recorded: none
		Shrub	Grey Dogwood (*Cornus racemosa*), Hawthorn species (*Crataegus sp.),* Manitoba Maple (Acer negundo), North American Red Raspberry *(Rubus idaeus ssp. strigosus),* Riverbank Grape (*Vitis riparia)*	
		Ground	Eastern Tall Goldenrod (*Solidago altissima var. altissima*), Green Foxtail (*Setaria viridis)*	
1	**Cultural** **CUW1** Cultural Woodland	Canopy / Sub-canopy	White Ash, Bitternut Hickory *(Carya cordiformis*), Black Walnut (*Juglans nigra),* European Buckthorn (*Rhamnus cathartica),* Hawthorn species, Riverbank Grape	▪ 76 spp. recorded (63% native; FQI 24) ▪ Age: young ▪ Disturbance: exotic species, dead Ash in canopy with evidence of Emerald Ash Borer ▪ Overall botanical quality: **Medium** ▪ SCC recorded: Butternut (Endangered, COSEWIC, COSSARO)
		Shrub	Chokecherry (*Prunus virginiana),* European Buckthorn, White Ash, Grey Dogwood	
		Ground	White Ash, Garlic Mustard (*Alliaria petiolata),* Avens species (*Geum sp.),* Calico Aster (*Symphyotrichum lateriflorum var. lateriflorum),* Virginia Waterleaf (*Hydrophyllum virginianum)*, Yellow Trout Lily *(Erythronium americanum),* Eastern Spring Beauty (*Claytonia virginica)*	
2	**Deciduous Forest** **FODM5-11** Dry - Fresh Sugar Maple - Hardwood Deciduous Forest HR: He	Canopy / Sub-canopy	Sugar Maple (*Acer saccharum),* White Ash, Bitternut Hickory, Eastern Hop-hornbeam (*Ostrya virginiana)*	▪ 53 spp. recorded (77% native; FQI 26) ▪ Age: mature ▪ Disturbance: exotic species, disease / death of trees ▪ Overall botanical quality: **Medium**
		Shrub	Chokecherry, Sugar Maple, Bitternut Hickory	

Unit	Habitat / Community Type	Layer	Dominant Species	Attributes
		Ground	White Ash, Sugar Maple, Garlic Mustard, Hickory species (*Carya sp.),* Virginia Waterleaf	▪ SCC recorded: none
3	**Deciduous Forest** **FOD7** Fresh - Moist Lowland Deciduous Forest	Canopy / Sub-canopy	Black Walnut, Manitoba Maple, Green Ash (*Fraxinus pennsylvanica*), Willow species *(Salix sp*.), Hawthorn species	▪ 74 spp. recorded (62% native; FQI 21) ▪ Age: mid-aged ▪ Disturbance: exotic species, trail / recreational use, dumping, disease / death of trees, flooding ▪ Overall botanical quality: **Medium** ▪ SCC recorded: none
		Shrub	Reed Canarygrass (*Phalaris arundinacea var. arundinacea),* Eastern Tall Goldenrod, Great Ragweed (*Ambrosia trifida),* Wildrye species (*Elymus sp.)*	
		Ground	Grass species, Canada Avens (*Geum canadense),* Sedge species (C*arex sp.),* Virginia Waterleaf	
4	**Deciduous Forest** **FOD4-2** Dry - Fresh White Ash Deciduous Forest	Canopy / Sub-canopy	White Ash, European Buckthorn, Black Cherry (Prunus serotina)	▪ 13 spp. recorded (62% native; FQI 8) ▪ Age: young ▪ Disturbance: exotic species, dead Ash in canopy with evidence of Emerald Ash Borer ▪ Overall botanical quality: **Low** ▪ SCC recorded: none
		Shrub	European Buckthorn, Black Cherry	
		Ground	Garlic Mustard, Chokecherry, White Ash, Black Cherry	
5	**Deciduous Forest** **FOD5-3** Dry - Fresh Sugar Maple - Oak Deciduous Forest	Canopy / Sub-canopy	Northern Red Oak (Quercus rubra), Sugar Maple, Black Cherry, White Ash, Bitternut Hickory, American Beech (Fagus grandifolia), Eastern Hop-hornbeam	▪ 35 spp. recorded (87% native; FQI 24) ▪ Age: mature ▪ Disturbance: historic logging, exotic species, recreational use, dead Ash in
		Shrub	Chokecherry, Black Cherry	

Unit	Habitat / Community Type	Layer	Dominant Species	Attributes
		Ground	White Ash, Garlic Mustard, Hickory species	canopy with evidence of Emerald Ash Borer, Beech Bark Disease ▪ Overall botanical quality: **Medium** ▪ SCC recorded: none
6	**Deciduous Forest** **FOD4 Dry** - Fresh Deciduous Forest	Canopy / Sub-canopy	White Ash, Bitternut Hickory, Black Walnut	▪ 25 spp. recorded (76% native; FQI 15) ▪ Age: mid-aged ▪ Disturbance: exotic species, dead Ash in canopy with evidence of Emerald Ash Borer ▪ Overall botanical quality: **Medium** ▪ SCC recorded: none
		Shrub	Great Ragweed, Eastern Tall Goldenrod, Black Raspberry (*Rubus occidentalis),* Virginia Smartweed (*Persicaria virginiana)*	
		Ground	White Ash, Avens species, Virginia Waterleaf, Yellow Trout Lily	
7	**Meadow Marsh** **MAM2-9** Jewelweed Mineral Meadow Marsh	Ground	Spotted Jewelweed (*Impatiens capensis),* Clearweed species (*Pilea sp.),* Nodding Beggarticks *(Bidens cernua*),Tall Beggarticks (*Bidens vulgata)*	▪ 2 spp. recorded (100% native; FQI 5) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality: **Low** ▪ SCC recorded: none
8	**Meadow Marsh** **MAM2-2** Reed - canary Grass Mineral Meadow Marsh	Ground	Reed Canarygrass, Purple Loosestrife (*Lythrum salicaria*), Blue Vervain (*Verbena hastata)*	▪ 9 spp. recorded (78% native; FQI 9) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality: **Low** ▪ SCC recorded: none

Unit	Habitat / Community Type	Layer	Dominant Species	Attributes
9	**Shallow Marsh** **MAS2-1 #1** Cattail Mineral Shallow Marsh	Ground	Narrow-leaved Cattail (*Typha angustifolia),* European Reed (*Phragmites australis ssp. australis),* Climbing Nightshade (*Solanum dulcamara),* Reed Canarygrass	▪ 18 spp. recorded (78% native; FQI 9) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality: **Low** ▪ SCC recorded: none
10	**Shallow Marsh** **MAS2-1 #2** Cattail Mineral Shallow Marsh	Ground	Eastern Black Nightshade (*Solanum ptychanthum),* Narrow-leaved Cattail, Broad-leaved Cattail (*Typha latifolia),* Slender Stinging Nettle (*Urtica dioica ssp. gracilis),* Sensitive Fern (*Onoclea sensibilis)*	▪ 16 spp. recorded (81% native; FQI 10) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality: **Low** ▪ SCC recorded: none
11	**Cultural** **CUW1** Cultural Woodland	Canopy / Sub-canopy	Black Walnut, Manitoba Maple, Hawthorn species	▪ 10 spp. recorded (50% native; FQI 6) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality: **Low** ▪ SCC recorded: Butternut (Endangered, COSEWIC, COSSARO)
		Shrub	Black Walnut, Manitoba Maple, Hawthorn species	
		Ground	Garlic Mustard, Common Burdock (*Arctium minus*), Smooth Brome (*Bromus inermis*), Canada Horseweed (*Erigeron canadensis)*	
12	**Cultural** **CUT1-4** Gray Dogwood Cultural Thicket	Canopy / Sub-canopy	Grey Dogwood (*Cornus racemosa*), Hawthorn species, Green Ash	▪ 6 spp. recorded (83% native; FQI 6) ▪ Age: young ▪ Disturbance: none ▪ Overall botanical quality**: Low** ▪ SCC recorded: none
		Shrub	Grey Dogwood (*Cornus racemosa*), Hawthorn species, Green Ash	

Unit	Habitat / Community Type	Layer	Dominant Species	Attributes
		Ground	Cursed Buttercup (*Ranunculus sceleratus var. sceleratus*),Eastern Tall Goldenrod, Purple-stemmed Aster (*Symphyotrichum puniceum*)	
		Ground	Narrow-leaved Cattail, European Reed, Reed Canarygrass, Nodding Beggarticks, Tall Beggarticks	

3.6.2 Delineation of Natural Feature Limits

Wetland and woodland limits were delineated by WSP in September 2018. These limits will be reviewed in the field by the relevant agencies as part of a future submission.

3.7 Wildlife

3.7.1 Wildlife Inventory & Habitat Assessment

3.7.1.1 Approach

In addition to the targeted surveys described in the following sections, a general wildlife survey and habitat assessment was undertaken during all field surveys (refer to Appendix C for the field survey chronology), as follows:

- Recording all direct wildlife observations and wildlife signs (including browse, track / trails, animal scat, bird nesting activity, tree cavities, burrows and vocalizations) and identifying potential wildlife usage and habitat functions associated with vegetation communities;
- Assessing SAR habitat availability, including a targeted survey on October 24, 2023 to search for concentrations of Monarch (*Danaus plexippus*) breeding and foraging habitat; and
- Assessing potential for *Significant Wildlife Habitat* (SWH) features within the study area.

3.7.1.2 Results

In addition to breeding bird and amphibian calling results described in Sections 3.7.2 and 3.7.3, evidence of the following wildlife species was recorded across the Subject Property:

- Observations / evidence of several common mammal species: Eastern Chipmunk (*Tamias striatus*), Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), Red Squirrel (*Sciurus vulgaris*) and White-tailed Deer (*Odocoileus virginianus*).
- Insects (7 common Lepidoptera and Odonata species, and 1 SAR):
  - SAR: Monarch (Special Concern, ESA and SARA);
  - Black Swallowtail (*Papilio polyxenes*);
  - Cabbage White (*Pieris rapae*);
  - Common Eastern Bumblebee (*Bombus impatiens*);
  - Eastern Tigern Swallowtail (*Papilio glaucus*);
  - Ebony Jewelwing (*Calopteryx maculate*);
  - Painted Lady (*Vanessa virginiensis*); and
  - Red Admiral (*Vanessa atalanta*).
- Herpetofauna (6 species):
  - American Toad (*Anaxyrus americanus);*
  - Dekay's Brownsnake (*Storeria dekayi);*

- Eastern Gartersnake (*Thamnophis sirtalis sirtalis);*
- Green Frog (*Lithobates clamitans);*
- Northern Leopard Frog (*Lithobates pipiens*); and
- Red-bellied Snake (*Storeria occipitomaculata).*

Wildlife SAR and SWH are discussed in Sections 3.8 and 4 respectively.

3.7.2 Avifauna

3.7.2.1 Approach

A breeding bird survey was undertaken by qualified, experienced staff under appropriate weather conditions (i.e., no precipitation, low winds) and during appropriate seasonal timing windows (between May 24 and July 10) and daily timing windows (between dawn and up to 5 hours after dawn).

Surveys were conducted on June 11 and June 27, 2019, with the Subject Property and adjacent lands thoroughly covered by walking random transects with frequent stops for observation / listening.

Species presence, abundance and level of breeding evidence was recorded according to the Ontario Breeding Bird Atlas (OBBA) protocols (Bird Studies Canada 2003); these observations were attributed into five Wildlife Survey Units (WSU):

- **WSU 1** – Cultural Thicket (Vegetation Unit 12), Meadow Marsh (Vegetation Unit 8), and adjacent hedgerows and Cultural Woodland in east portion of Subject Property.
- **WSU 2** – Former farmstead area in southeast portion of Subject Property, consisting of Cultural Woodland (Vegetation Unit 11), Shallow Marsh (Vegetation Unit 9), Cultural Meadow, and adjacent hedgerows, Cultural Thicket / Cultural Woodland along the rail corridor.
- **WSU 3** – Meadow Marsh and Shallow Marsh (Vegetation Units 7 and 10), with adjoining hedgerow and Cultural Woodland in northwest portion of Subject Property.
- **WSU 4** – Tributary of Fairchild Creek riparian zone, consisting of Deciduous Forest (Vegetation Units 3, 4, 5 and 6) and Cultural Woodland (Vegetation Unit 1A, 1B, 1C).
- **WSU 5** – Other hedgerows and agricultural field areas not included in WSU's 1, 2, 3 and 4.

Incidental observations were noted during other field surveys.

3.7.2.2 Results

In total, 56 species were recorded by WSP in 2019 within and adjacent to the Subject Property (see Appendix E).

- **Breeding Species** - 49 species were considered 'breeding' (i.e., 'possible', 'probable' or 'confirmed' breeding evidence) within the Subject Property. Six species were potential breeders within the local landscape but had no evidence of active nesting on the Subject Property (e.g., flyovers or previous year / non-active nests), or were recorded outside of the breeding season: Barn Swallow (*Hirundo rustica*), Canada Goose (*Branta canadensis*), Ring-billed Gull (*Larus delawarensis*), Turkey Vulture (*Cathartes aura*), White-breasted Nuthatch (*Sitta carolinensis*), Yellow-bellied Sapsucker (*Sphyrapicus varius*).

Additionally, while not able to be confirmed, three potential non-active Bank Swallow (*Riparia riparia*) nest holes were observed along a bank of the Tributary of Fairchild Creek.

- **MBCA** - 45 species are subject to provisions of the Migratory Birds Convention Act (1994).
- **Habitat Specialists** - The following 'habitat-specific' species (per Freemark and Collins 1989) were recorded:
  - Forest Interior Species: Five species recorded:
    - American Redstart (*Setophaga ruticilla*);
    - Hairy Woodpecker (*Dryobates villosus*);
    - Pine Warbler (*Setophaga pinus*);
    - Scarlet Tanager (*Piranga olivacea*); and
    - White-breasted Nuthatch.
  - Wetland associated species: Canada Goose and Mallard (*Anas platyrhynchos*); and
  - Interior / Edge or Edge Species: 41 species.

Species of Conservation Concern

- Four SAR birds were recorded (further discussion is provided in Section 3.8):
  - Bank Swallow (potential nests / not confirmed; Threatened, ESA and SARA);
  - Barn Swallow (no active nesting within property; *Special Concern*, ESA and *Threatened*, SARA) [2];
  - Eastern Wood-pewee (*Special Concern*, ESA and SARA); and
  - Wood Thrush (*Special Concern,* ESA and *Threatened*, SARA).
- Provincially significant species (NHIC S-rank of S1 to S3) are:
  - None recorded.
- 'Area Sensitive' species listed in the SWH Criteria Schedules for Ecoregion 7E (MNRF 2015) are:
  - Scarlet Tanager (*Piranga olivacea*); and
  - Yellow-bellied Sapsucker - No breeding evidence.
- 16 regionally significant species (per Hamilton Region Nature Counts Significance Rating [Hamilton Naturalist 2003]; a locally significant bird list was not available for City of Brantford), including the following additional SCC with breeding evidence (not previously listed above):
  - Black-billed Cuckoo (*Coccyzus erythropthalmus*), Belted Kingfisher, Brown Thrasher (*Toxostoma rufum*), Blue-winged Warbler (*Vermivora cyanoptera*), Eastern Towhee (*Pipilo erythrophthalmus*),

[2] Note that Barn Swallow was designated as Threatened under the ESA at the time of the November 2022 report. As of January 2023, Barn Swallow has been re-designated as Special Concern in Ontario and is no longer subject to the protection provisions of the ESA. This change in status has been reflected in the current report.

Hairy Woodpecker, Mourning Warbler (*Geothlypis philadelphia*), Pine Warbler, Red-bellied Woodpecker (*Melanerpes carolinus*), Red-tailed Hawk (*Buteo jamaicensis*), Yellow-billed Cuckoo (*Coccyzus americanus*).

- These regionally significant birds were primarility associated with habitat in WSU 1 (shrub thicket in eastern portion of Subject Property) and WSU 4 (Tributary of Fairchild Creek riparian forest).

3.7.3 Herpetofauna

3.7.3.1 Spring Amphibian Survey Approach and Methods

Surveys for spring breeding (calling) amphibians were completed at seven stations targeting potential amphibian habitats across the Subject Property. Station locations are shown on Figure 2**.** Surveys were completed on the following dates:

- April 22, 2019;
- May 17, 2019; and
- June 25, 2019.

Amphibian calling activity was assessed using a passive three-minute auditory survey as specified by the Marsh Monitoring Program (MMP) amphibian monitoring protocol (Bird Studies Canada 2008). Observations of species present, call levels and a count of individuals present, where applicable, were recorded on Amphibian Calling datasheets. MMP protocol uses the following assessment approach:

- Level 1 (L1) - individual calls can be counted, with no overlap;
- Level 2 (L2) - some calls can be counted, some overlap; and
- Level 3 (L3) - calls continuous and overlapping, individuals not distinguishable.

Per MMP protocols, surveys begin a half-hour after sunset on nights with suitable weather conditions and conclude near midnight. Appropriate timing for the amphibian calling surveys can be confirmed by referencing other local sites with known amphibian populations, liaison with other researchers and tracking weather information for the site. In accordance with MMP guidelines, nighttime air temperatures are ideally greater than 5°C for the first survey, 10°C for the second survey and 17°C for the third survey. All reasonable efforts were made to ensure calling surveys were carried out under these conditions; however, some temperature variability over the course of a survey night is expected. For the current study, calling amphibian surveys were undertaken during suitable wet spring night conditions, confirmed by visiting nearby sites with known amphibian populations.

Supplemental observations of herpetofauna were recorded during all field surveys, where noted.

3.7.3.2 Results

In total, six amphibian species (all anurans) were recorded in the 2019 field season as noted below and in Table 4:

- American Toad;
- Gray Treefrog (*Hyla versicolor*);
- Green Frog;

- Northern Leopard Frog;
- Spring Peeper (*Pseudacris crucifer*); and
- Wood Frog (*Lithobates sylvaticus*).

No amphibian SCC were recorded during the field surveys.

Table 4: Amphibian Monitoring Results

Species	Amphibian Calling Station						
	AC1	AC2	AC3	AC4	AC5	AC6	AC7
American Toad	Round 1: L3 Round 3: L2	-	-	-	-	Round 1: L2 Round 2: L1	-
Gray Treefrog	Round 2: L3 Round 3: L2	-	-	-	-	Round 3: L1	Round 3: L1
Green Frog	Round 3: L1	-	-	-	-	Round 3: L1	-
Northern Leopard Frog	-	-	-	-	-	Round 1: L1	-
Spring Peeper	Round 1: L3 Round 2: L3	-	-	-	Round 1: L1	Round 1: L3 Round 2: L3	-
Wood Frog	Round 1: L1	-	Round 1: L1	-	-	Round 1: L2	-

3.7.4 Wildlife Movement

Movements of the urban fringe and rural mammal species (e.g., Coyote [*Canis latrans*], White-tailed Deer, Raccoon, etc.) are typically opportunistic, crossing open fields, forest edges and hedgerows, often following areas where movement is unimpeded, and the animals do not feel threatened. Areas suitable for wildlife movement are present in the contiguous natural areas to the north and east, but barriers to movement are present at Lynden Road / Garden Avenue and developed lands abutting the Subject Property to the west.

In the October 2023 field survey, evidence of White-tailed Deer trails and bedding were observed in the Cultural Thicket area of WSU 1, as well as along the Tributary of Fairchild Creek (WSU 4). Further assessment of White-tailed Deer habitat and movement corridors will be completed in the winter of 2024.

3.7.5 Significant Wildlife Habitat

3.7.5.1 Evaluation

An assessment of SWH for the Subject Property and adjacent areas has been completed based on the Significant Wildlife Habitat Ecoregion Criteria Schedules, Ecoregion 7E (MNRF 2015). Three types of *confirmed* or *likely confirmed* SWH have been identified as described below and shown on Figure 2:

- **Amphibian Breeding Habitat (Wetland)** - Wetland amphibian breeding habitat is present in Vegetation Unit 9 (MAS2-1 Shallow Marsh). Three of the listed species were recorded, two in high abundances: American Toad (L3) and Gray Treefrog (L3); and one in low abundance: Green Frog (L1). The presence of American Toad and Gray Treefrog with a call level code of three, indicates the presence of SWH in this feature.

- **Shrub / Early Successional Bird Breeding Habitat** - Greater than 10 ha of shrub / early successional and cultural woodland habitat is present in Vegetation Unit 12 and adjoining areas off-site to the east. Breeding evidence for one indicator species (Brown Thrasher) and two common species (Eastern Towhee and Field Sparrow) was recorded during breeding bird surveys in this area. Given the species composition and extension of this vegetation community on adjacent lands to the east, it is likely that this SWH type is present on the Subject Property in this location.
- **Special Concern and Rare Wildlife Species**
  - The woodland riparian corridor in the north portion of the Subject Property provides habitat for Special Concern Species. Breeding evidence for two SCC birds was recorded in this woodland: Wood Thrush and Eastern Wood-pewee.
  - Monarch was also recorded along the field edges and the shrub successional habitat; however, no caterpillars or unique critical habitat features for this species were identified. During the October 2023 targeted survey, no Monarch adults, chrysalises or young were observed, and the following clusters of Milkweed vegetation were identified as potential Monarch foraging / reproduction habitat:
    - One larger-sized cluster (approximately 50 stems) in WSU 4 along the Tributary of Fairchild Creek floodplain (northeast corner of Subject Property);
    - One moderate-sized cluster (approximately 20 stems) in WSU 2 adjacent to vegetation Unit 9 (MAS2-1); and
    - Several smaller clusters (3 to 10 stems) in WSU 1 (Cultural Thicket area) and along the Tributary of Fairchild Creek (northwest portion of Subject Property).

    Based on the preliminary fall season assessment, it is likely that only the larger concentration of Milkweed in the Tributary of Fairchild Creek floodplain has potential to qualify as candidate SWH; however, further surveys in the spring / summer active period will be completed to assess habitat use.
  - In addition, two Butternut trees were recorded within the hedgerow along the west property limit.
  - Potentially suitable habitat for other Special Concern and rare wildlife species is present on and adjacent to the Subject Property, primarily within natural areas that are proposed for retention (e.g., Snapping Turtle, Monarch).

In addition, five types of candidate SWH have been identified, but these have not been confirmed through filed surveys:

- **Bat Maternity Colonies** - Suitable habitat is present in the woodland in the north portion of the Subject Property.
- **Turtle Wintering Areas** - Suitable over-wintering habitat may be present in the reach of the Tributary of Fairchild Creek that flows through the north portion of the Subject Property (other wetland communities within the Subject Property did not provide suitable overwintering habitat due to the lack of water depth after the summer months).

- **Turtle Nesting Areas** - Suitable habitat may be present in the agricultural fields adjacent to the Tributary of Fairchild Creek riparian zone, though no evidence of turtle nesting has been observed during field surveys.
- **Marsh Breeding Bird Habitat** - Though unlikely given their size, marsh wetland communities throughout the Subject Property may provide suitable breeding habitat for marsh bird species, though none of the listed species were observed during field surveys.
- **Terrestrial Crayfish** - Suitable habitat is present along the margins of the marsh wetland communities throughout the Subject Property, though no crayfish chimneys were observed during field surveys.

3.8 Species at Risk

3.8.1 SAR Habitat Assessment

A SAR habitat assessment for the Subject Property has been undertaken; for details refer to the SAR screening table in Appendix F. The SAR that have been recorded within or in proximity to the Subject Property, or for which suitable habitat may be present, are discussed below:

- Bank Swallow (*Threatened* in Ontario and Canada) - Potential nesting habitat for this species is present in exposed banks along the Tributary of Fairchild Creek. Three potential non-active nest holes were observed; however, no Bank Swallows were recorded on the Subject Property.
- Barn Swallow (*Special Concern* in Ontario and *Threatened* in Canada) - Five non-active Barn Swallow nests were observed in an old shed next to Vegetation Unit 11 (refer to Figure 2), which may not be consistently or currently used by the species. Four Barn Swallows were recorded foraging over the Subject Property, and nesting was confirmed in the large barn, which is located outside of the proposed development boundary to the south.
- Eastern Wood-pewee (*Special Concern* in Ontario and Canada) - Three individuals were recorded with 'Probable' breeding evidence in the woodland in the north portion of the Subject Property.
- Wood Thrush (*Special Concern* in Ontario; *Threatened* in Canada) - One individual was recorded with 'Probable' breeding evidence in the woodland in the north portion of the Subject Property.
- SAR bats: Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*) (*Endangered* in Ontario and Canada) and Eastern Small-footed Myotis (*Myotis leibii*) (*Endangered* in Ontario) - While not confirmed through field surveys, the woodland in the north portion of the Subject Property, as well as hedgerow trees and the shed located near Vegetation Unit 11 may provide suitable maternity roost habitat for these species of bat.
- Monarch (*Special Concern* in Ontario and Canada; designated *Endangered* by COSEWIC) - Monarchs were recorded during field surveys on August 23, 2018, September, 7 2018; June 27, 2019. Up to four individuals at a time were observed in small CUM patches and moving along forest edges or hedgerows. As described previously for SWH Section 3.7.5, no Monarch adults or young were observed during the October 2023 surveys; however, several small to large patches of Milkweed vegetation were identified in the Subject Property, which will be further assessed in the summer active period to determine potential habitat use.
- Butternut (*Endangered* in Ontario and Canada) - Four Butternut trees were recorded on the Subject Property, as shown on Figure 2. A Butternut Health Assessment (BHA) was completed on July 23, 2019

and a BHA report was submitted to Ministry of Environment Conservation and Parks (MECP) on September 3, 2019 and has been included in Appendix G.

- Of the four trees that were assessed, one (Tree #008) was assessed as a Category 1 tree. This tree was in an advanced state of disease and is able to be removed without authorization under the Endangered Species Act (ESA 2007), provided that MECP agrees with the assessment.
- Three of the assessed trees (Tree #007, #009 and #010) were assessed as Category 2 trees. These trees had few or no signs of disease and are eligible for an exemption from the ESA if the requirements of Section 23.7 Ontario Regulation 242/08 are followed.
- Based on the Detailed Concept Plan (August 2023) shown on Figure 5, Butternut #007 and its habitat (i.e., area within 50 m of the tree) will not be impacted by the proposed development. Trees #008, #009 and #010 will all be impacted (either harmed or killed) by the proposed development.
- Appropriate registration and compensation measures will be undertaken, with details to be confirmed through future submissions.

4.0 PROPOSED DEVELOPMENT

4.1 Proposed Development

As noted above, the proposed development consists of residential units including single detached and townhouse homes, parklands, internal roads, SWM facilities, and municipal services (sanitary, water), which is primarily restricted to portions of the Subject Property currently under agricultural land use, as shown on the Detailed Concept Plan (August 2023), included as Figure 5.

4.2 Stormwater Management and Hydrogeology

Natural Heritage features on and adjacent to the Subject Property depend, in part, on surface water and ground water contributions from adjacent lands, including the area proposed for development.

The recommended SWM approach is provided in the Block Servicing Strategy Report (BSS) Report Lynden Garden Block Plan BP-01-2023 (Urbantech 2024) with specific commentary on hydrogeology provided in the Hydrogeological Investigation Report (Terrapex 2022; rev. 2023). Information presented in this section relies primarily on these two reports. Note that additional details will be provided in a future submission.

The Subject Property is located within the Fairchild Creek Subwatershed, a major tributary of the Grand River. Based on the City of Brantford Storm Sewer, Design and Construction Manual, Linear Municipal Infrastructure Standards (V5 – January 2022), the SWM requirements for this site are as follows:

- Sewers are designed to convey the 5-year storm event;
- Storm sewers shall be designed to flow at a maximum of 80% full;
- The time of concentration at the upstream end of the system shall be a minimum of 10 minutes; and
- Provide safe overland flow conveyance of the 100-year event.

Building on these requirements, SWM for the site will be based on City of Brantford and MECP stormwater management guidelines, including:

- Post-development flows from the SWM structures will be the lesser of pre-development flow or critical discharge considering erosion threshold;
- 48 to 72 hour extended detention up to the first 25 mm of rainfall;
- A minimum of 80% Total Suspended Solids (TSS) removal (MECP Enhanced Removal); and
- Maintain pre-development water balance through the use of Low Impact Development (LID) measures.

In order to meet these requirements, two SWM wet pond facilities and one underground superpipe storage facility are proposed in order to manage the post-development runoff from the proposed development. The preliminary design of the SWM wet pond facilities are such that they will provide both water quality and quantity control, with the superpipe providing quantity control, augmented with a treatment train approach to achieve quality control. Preliminary details regarding the proposed SWM strategy are included in the following sections. Note that additional details regarding SWM, water balance and additional technical information will be provided as part of future submissions, as noted in Section 1.3.

4.2.1 Water Quality Control

The main quality control for the SWM wet ponds are the size of the permanent pools. The required permanent pool volumes are based on the area and imperviousness of the contributing lands. For each SWM pond, the permanent pool volume as designed (18,604 m^3 for SWM Pond 1 and 3,328 m^3 for SWM Pond 2) is greater than the required permanent pool volume to achieve the enhanced (80%) level of long term TSS removal. Each pond has been designed to provide extended detention up to the first 25 mm rain event for greater than 72 hours, which exceeds the recommended 48 – 72 hour extended detention time from the North Brantford and Tutela Heights Subwatershed Study (GM BluePlan 2020).

For the proposed superpipe storage, an Oil-Grit Separator (OGS) unit will be provided at the outlet to provide for water quality treatment. The sizing and design of the OGS unit will be provided at the detail design stage.

4.2.2 Water Quantity Control

The strategy to achieve water quantity control standards is sizing of the SWM ponds and superpipe. Each SWM pond facility has been sized to exceed the required storage volumes for the 100-year storm (19,190 m^3 required; 28,886 m^3 provided for Pond 1 and 4,570 m^3 required; 10,407 m^3 provided for Pond 2), as has the size for the superpipe (1,550 m^3 required; 1,620 m^3 provided).

4.2.3 Thermal Mitigation

In order to provide for thermal mitigation of stormwater outleting to the Tributary of Fairchild Creek, LID strategies or cooling trenches at the outlets will be implemented. The preferred thermal mitigation strategy will be refined during the detail design of the SWM system.

4.2.4 Water Balance

The water balance review and assessment will be based on the understanding of how groundwater interacts on the Subject Property. Based on studies completed to date, groundwater depths ranged from approximately 1.38 metres below ground (mbg) to 5.27 mbg, with the water table elevations ranging from 214.33 metres above sea level (masl) to 217.62 masl. It is noted that the ‘highest’ groundwater level was generally found in MW101 and the ‘lowest’ groundwater level was found in MW107. MW101 is located in the northwest part of the Subject Property, and MW107 is located in the southwest part of the Subject Property.

Based on the information compiled from the borehole reports and the hydraulic analyses above, shallow groundwater appears to reside preferentially within a layer of silt, which is confined above and below in some areas by layers of clayey silt materials (MW101, MW108). In the remaining locations, the silt layer of hydrostratigraphic importance is unconfined to the surface. It is noted that shallow grey soil conditions, indicative of redox conditions, were reported only at locations MW104, MW107, and MW108, indicating that groundwater does not remain at location MW101 year-round, likely due to the southward drainage present in this location of the Subject Property.

Groundwater flow directions were estimated using manual piezometric head measurements recorded on August 24, 2022 at groundwater monitoring well locations MW101, MW104, MW107, and MW108. These measurements indicate that groundwater flows across the Subject Property in a southeast direction.

Based on the assessment included within the Hydrogeological Investigation Report (Terrapex 2022; rev. 2023), without the incorporation of appropriate mitigation measures (i.e., LID SWM measures) the proposed development will result in an increase in runoff to receiving areas downstream of the Subject Property and a decrease in infiltration across the development envelope. Water balance details will be further refined as the site design progresses and demonstration of water balance to retained natural features will be provided as part of detailed technical studies prepared as part of a future Draft Plan application submission.

5.0 POLICY ASSESSMENT

Relevant planning legislation and policy pertinent to this study are summarized briefly in the following sections. An overview of key policies and implications is provided along with an assessment of the policy as it relates to natural heritage features within the Subject Property.

5.1 Fisheries Act (1985)

5.1.1 Overview of Key Policies

The purpose of the federal Fisheries Act (Canada 1985) is to maintain healthy, sustainable, and productive Canadian fisheries through the prevention of pollution and the protection of fish and their habitat. Under the Fisheries Act, work in and near water must comply with the fish and fish habitat protection provisions of the Fisheries Act by incorporating measures to avoid the following (DFO 2019):

- causing the death of fish; and
- harmful alteration, disruption, or destruction (HADD) of fish habitat associated with the works, undertaking or activity.

All projects where work is being proposed that cannot avoid impacts to fish or fish habitat or are at high risk of causing impacts require a Fisheries and Oceans Canada (DFO) project review (DFO 2019). If potential impacts can be avoided, project approval is not required (DFO 2020).

When reviewing a project, DFO will identify potential risks of the project to the conservation and protection of fish and fish habitat. If it is determined that the project is likely to result in death of fish or HADD of fish habitat, an Authorization is typically required under the Fisheries Act. Proponents of projects requiring a Fisheries Act authorization may be required to also submit a habitat offsetting plan, which provides details of how the death of fish and/or HADD of fish habitat will be offset, and outlines associated costs and monitoring

commitments. Proponents also have a duty to notify DFO of any unforeseen activities during the project that cause harm to fish or fish habitat.

5.1.2 Applicability

There are waterbodies on the Subject Property that are subject to the Fisheries Act, specifically the Tributary of Fairchild Creek along the northern limits.

5.1.3 Potential Impacts

Aquatic habitat on the Subject Property (i.e., Tributary of Fairchild Creek) is located within the northern limits of the Subject Property and is planned to be maintained as a NHS and as such will be retained in full. Potential impacts to fish and fish habitat that may result from the proposed development are limited to indirect or secondary impacts: 'during-construction' impacts (e.g., erosion / sedimentation, temporary interruption of surface and groundwater inputs); and post-construction impacts due to changes in land use (e.g., changes to surface and groundwater inputs, potential thermal impacts and alteration of nutrient and allochthonous inputs).

With the proper installation and operation of mitigation and protection measures outlined in Section 6.1, the potential impacts on aquatic habitat can be mitigated such that the project will be able to comply with the Fisheries Act.

5.1.4 Conclusion and Recommendations

Based on the Detailed Concept Plan and recommended mitigation measures outlined herein, including maintenance of surface water and groundwater inputs to downstream watercourses (to be confirmed in future submissions / updates to current studies), the potential impacts on aquatic habitat across the Subject Property can be mitigated such that the proposed development will comply with the Fisheries Act.

Implementing all recommended during-construction measures / best management practices and recommended SWM measures to mitigate potential impact to aquatic habitat is recommended. Compliance with the Fisheries Act should be documented during the detailed design stage, with consultation with relevant agencies as required.

5.2 Migratory Birds Convention Act (1994)

5.2.1 Overview of Key Policies

Most birds in Canada are protected by the federal Migratory Birds Convention Act (MBCA) (Canada 1994), which prohibits the disturbance or destruction of migratory birds, their eggs and nests on all lands in Canada, even incidentally. Upon the enforcement of the Migratory Birds Regulations (MBR) (Canada 2022) in July 2022, nest protection has been limited to active nests for most migratory bird species. Schedule 1 of the MBR identifies 18 migratory bird species whose nests are protected year-round and must be confirmed inactive for a defined period (ranging between 12 and 36 months depending on the species) before they can be disturbed or destroyed. The nests must also be registered at the start of the defined period.

Environment and Climate Change Canada (ECCC) implements policies and guidelines to protect migratory birds, their eggs and their nests. There is guidance on the ECCC website to minimize the risk of incidental take effects on migratory birds, achieve compliance with the law and maintain sustainable populations of migratory birds.

Compliance with the MBCA and MBR is best achieved through a due diligence approach, which identifies potential risk, based on a site-specific analysis in consideration of the Avoidance Guidelines and Best Management Practices information on the ECCC website.

5.2.2 Study Assessment

Implications of the MBCA have potential to occur during the construction phase of the project when the land is cleared and grubbed of vegetation, potentially removing nests of migratory birds.

Most avian species that would be expected to use habitat on the Subject Property are subject to the provisions of the MBCA. Vegetation removals are limited to crops, cultural meadow along and hedgerows, which provide habitat for generalist and/or urban-adapted species. No habitat unique in the local landscape will be impacted by proposed works.

Compliance with the MBCA will be achieved using the following due diligence approach:

- Proponent *awareness* of the MBCA, potential for nesting in the area and potential for impacts to migratory birds, nests and eggs.
- Implementation of the following avoidance and mitigation measures, where possible (refer to Section 6.1 for additional details):
  - Avoiding works (i.e., vegetation / potential nesting habitat removal) within the “regional nesting period” for this area[3];
  - Avoiding works in key sensitive locations;
  - Minimizing vegetation removals;
  - Implementing post-construction habitat creation / restoration; and
  - Recommended Best Management Practices (BMPs) during construction to minimize potential indirect impacts to vegetation / potential nesting habitat outside of the direct footprint.

5.3 Species at Risk Act (2002)

5.3.1 Overview of Key Policies

SARA incorporates several prohibitions to protect individuals of listed threatened, endangered or extirpated SAR (per Schedule 1 of the SARA), including:

- *No person shall kill, harm, harass, capture or take an individual of a Threatened, Endangered or Extirpated species.*
- *No person shall possess, collect, buy, sell or trade an individual of a Threatened, Endangered or Extirpated species, or any part or derivative of such an individual.*
- *No person shall damage or destroy the residence of one or more individuals of a Threatened or Endangered species, or of an Extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.*

[3] https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html

- *No person shall destroy any part of the critical habitat of any listed Endangered species or of any listed Threatened species – or of any listed Extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.*

Per Section 34, Section 58 and Section 61, these prohibitions apply to:

1) Aquatic species – on any lands;

2) Species of migratory birds protected by the MBCA– on any lands;

3) Any listed wildlife species – when on federal lands; and

4) Any listed wildlife species – when on non-federal lands, if recommended by the Minister of the Environment to the Governor in Council.

5.3.2 Study Assessment

The project is situation on non-federal lands and there is no order by Governor in Council; hence, SARA applies only to aquatic and migratory bird species and habitat within the Subject Property.

There is potential habitat for migratory birds subject to SARA within the Subject Property. Habitat suitability and presence / use was evaluated through field inventories and habitat assessments as described in 3.6.1 (Avifauna).

5.3.2.1 Individuals and Residences:

No SARA-listed aquatic species were recorded on the Subject Property and we are aware of no recent records. We are not aware of any downstream critical habitat for aquatic SAR species which would be impacted by the proposed activities, without proper implementation of recommended mitigation and protection measures.

SARA listed species have been recorded in the Subject Property:

- Butternut - Four recorded across the Subject Property.
- Barn Swallow - Recorded as potential and confirmed occasional foraging visitants overhead / in agricultural fields, with no evidence of active nesting recorded on the Subject Property.
- Wood Thrush - Recorded with ‘Probable’ breeding evidence within the woodland in the north portion of the Subject Property.

No vegetation removals or direct impacts are proposed within identified nesting habitats for these SARA-listed species. With the implementation recommended retention and mitigation measures, including MBCA related mitigation measures, no SARA permitting requirements are anticipated.

5.3.2.2 Critical Habitat:

No critical habitat for SARA listed aquatic or migratory bird species is present within the proposed area of works and none is known on adjacent lands where there is potential for indirect impact.

5.4 Endangered Species Act (2007)

5.4.1 Overview of Key Polices

Species designated as *Threatened or Endangered* by COSSARO, otherwise known as Species at Risk in Ontario (SARO), and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are automatically afforded legal protection under the ESA (Government of Ontario 2007). 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"*

The ESA also calls for the development of species-specific Recovery Strategies and Habitat Regulations. Unlike the *general habitat* of a species, *regulated habitat* may include areas that are currently unoccupied by the species. These areas are commonly referred to as "recovery habitat." In order to balance social and economic considerations with protection and recovery goals, the ESA also enables the MECP to issue permits or enter into agreements with proponents in order to authorize activities that would otherwise be prohibited by subsections 9(1) or 10(1) of the Act provided the legal requirements of the Act are met.

5.4.2 Study Assessment

5.4.2.1 Applicability

Potentially suitable habitat for species afforded protection under the ESA is present within the Subject Property.

5.4.2.2 Habitat Assessment / Screening

A SAR habitat suitability evaluation ('screening') for the study area was undertaken based on a list of SAR known to occur within the region from a review of various sources including: species indicated by MNRF through previous correspondence on separate projects; NHIC website; MNRF Species at Risk regional species list; eBird website; Ontario Reptile and Amphibian Atlas website; DFO aquatic species at risk mapping; and professional / corporate experience.

The habitat assessment is summarized in Appendix F. In that process, 'reasonable likelihood of presence on the Subject Property' based on the 'key habitats used by species' (based on SARO website habitat descriptions) was assessed. Considering findings of surveys and habitat suitability, 'likelihood and magnitude of impacts to species or habitats' was then assessed.

5.4.2.3 Results and Conclusions

It was concluded that for the majority of the listed species, no suitable habitat is present or only a small amount / marginally suitable habitat is present and the likelihood of occurrence is low or nil. To assess presence for those species and habitats potentially impacted by the proposed development, the field surveys described in Section 3 were completed.

One *Endangered* SAR plant species has been recorded during surveys and potentially suitable habitat for one *Threatened* SAR bird species and three *Endangered* bat species has been identified based on field assessments:

- Bank Swallow - No Bank Swallows were recorded during field surveys, but potentially suitable nesting habitat was observed along the Tributary of Fairchild Creek.
    - Conclusion: Proposed activities will not impact nesting habitats for these SAR birds and abundant suitable foraging habitat will remain available in surrounding areas; therefore, no ESA permitting / authorization requirements are anticipated.
- Potential habitat for SAR Bats (Little Brown Bat, Northern Myotis, Eastern Small-footed Bat and Tri-coloured Bat) - Potential roosting habitat is present in the woodland in the north portion of the Subject Property and in the shed located next to Vegetation Unit 11. Additionally, potential foraging habitat is present over the wetland areas (and to a lower extent over the agricultural fields).
    - Conclusion: With implementation of recommended mitigation measures (Section 6.1), including timing windows for tree and structure removals, no impacts on SAR bat individuals are anticpated. However, prior to demolion, a bat exit survey is recommended to assess use of potential roosting habitat in the shed next to Unit 11 as well as follow-up consultation with MECP regarding ESA permitting / authorization requirements. Regarding woodlands, the proposed works will not impact potential SAR bat roosting habitats in the retained woodland and abundant suitable foraging habitat will remain available in surrounding areas; therefore, no ESA permitting / authorization requirements are anticipated.
- Butternut - Four trees were recorded across the Subject Property.
    - See discussion in Section 3.8.1 for details on the BHA and future registration requirements.

For all other SAR species with some potentially suitable habitat in the vicinity of the proposed works, but not recorded during field surveys, the likelihood and magnitude of impacts are 'none' or 'minimal', based on the size and/or quality of habitat, low likelihood of occurrence and presence of abundant (and generally much larger / higher quality) habitat in the local landscape. Note that potentially suitable habitat for some SAR will be retained / enhanced with the implementation of enhanced buffers along the development / natural area interfaces.

5.5 Provincial Policy Statement (2020)

5.5.1 Overview of Key Policies

The Ontario PPS (2020) was issued under Section 3 of the Ontario Planning Act and identifies natural heritage provisions that restrict development and site alteration in and/or adjacent to certain natural heritage features (e.g., significant woodlands, wetlands, valleylands, wildlife habitat, habitat of endangered or threatened species, and fish habitat). The current PPS came into effect May 1, 2020. Section 3 of the Planning Act requires that decisions affecting planning matters "shall be consistent with" policy statements issued under the Act (OMMAH 1990). The PPS "provides policy direction on matters of provincial interest related to land use planning and development." It "provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment".

Per Section 2.1.4 of the PPS, development and site alteration shall not be permitted in:

1) Significant Wetlands in Ecoregions 5E, 6E, and 7E1; and

2) Significant Coastal Wetlands.

Per Section 2.1.5 of the PPS, development and site alteration shall not be permitted in:

3) Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E, and 7E;

4) Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);

5) Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);

6) Significant Wildlife Habitat;

7) Significant Areas of Natural and Scientific Interest; and

8) Coastal Wetlands in Ecoregions 5E, 6E, and 7E1 that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

Per Section 2.1.6 of the PPS, "Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

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

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

5.5.2 Study Assessment

An assessment of the PPS natural heritage policies was undertaken, as described herein.

- **Endangered or Threatened Species**[4] - One *Endangered* plant species and potentially suitable habitat for one *Threatened* bird species and four *Endangered* bat species have been observed on the Subject Property.
  - Conclusion: No impact to endangered or threatened species or their habitat, with implementation of recommended protection, mitigation and enhancement measures. Impacts to Butternut will be addressed through the registration process, as detailed in Section 3.8.1.
- **PSW** - No PSW are present within or adjacent to the Subject Property.
- **Significant Woodlands** - The woodland within and adjacent to the north portion of the Subject Property is considered a *Significant Woodland / Core Natural Area* in the City of Brantford Official Plan; this feature will be retained in full, with a development setback and other mitigation measures discussed herein.
  - Conclusion: no impacts to Significant Woodland / Core Natural Area.
- **Significant Valleylands** - *Significant Valleyland* / *Core Natural Area*, as identified in the City of Brantford Official Plan, is associated with the main branch of Fairchild Creek and extends onto the north portion of the Subject Property along the Tributary of Fairchild Creek. Limit of the *Significant Valleyland* is interpreted to be coincident with the *Significant Woodland*, as plotted on figures herein. Natural heritage features within the Significant Valleyland (i.e., woodland, fish habitat, wetland) will be retained, with mitigation measures as recommended herein.
  - Conclusion: no impacts to Significant Valleyland / Core Natural Area.
- **Significant Wildlife Habitat** - An evaluation of *Significant Wildlife Habitat* was undertaken using the Significant Wildlife Habitat Ecoregion Criteria Schedules, Ecoregion 7E (MNRF 2015). The analysis is presented in Section 3.6.5.
  - Three types of confirmed or likely-confirmed SWH have been identified: Amphibian Breeding Habitat (Wetland); Shrub / Early Successional Breeding Bird Habitat; and Special Concern and Rare Wildlife Species.
  - In addition, five types of candidate SWH have been identified across the Subject Property, but these have not been confirmed through field surveys: Bat Maternity Colonies; Turtle Wintering Areas; Turtle Nesting Areas; Marsh Breeding Bird Habitat; and Terrestrial Crayfish. Further assessment of candidate habitat for Monarch will be completed in the spring / summer of 2024 to determine habitat use for this Special Concern species.
    - Conclusion: With recommended protection and mitigation measures, there is no impact to confirmed or candidate SWH with the exception of the Vegetation Unit 9 wetland that is proposed to be removed. Options to enhance another existing wetland on the Subject Property are being reviewed with further details to be provided in subsequent submissions (i.e., Draft Plan of Subdivision).
- **ANSI** - No ANSIs are present within or adjacent to the Subject Property.

[4] Note that the "significant habitat of Endangered and Threatened species is also considered a Core Environmental Feature in the Regional Official Plan – policy 7.C.1 (a).

- **Fish Habitat** - See Sections 3.4 and 6.1 for an assessment of aquatic features and fish habitat. No fish habitat is present within the development envelope. Potential impacts to fish habitat on adjacent lands will be addressed through the proposed site / SWM design, buffers and other mitigation described herein.

Conclusion: Potential impacts to fish habitat will be addressed through the proposed development design, buffers and other mitigation measures described herein.

5.6 Grand River Conservation Authority

The Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 150/06), is a regulation issued under the Conservation Authorities Act, R.S.O. 1990. Through this, GRCA has the responsibility to regulate activities in natural and hazardous areas (e.g., areas in and near rivers, streams, floodplains, wetlands, slopes and shorelines).

A permit will be required from the GRCA under the Ontario Regulation 150/06 to proceed with site alteration within regulated areas. In addition, site alteration proposed within 120 m of these features, requires the completion of an EIS to evaluate and demonstrate that there will be no negative impacts on the identified natural feature or on its ecological functions, as described under Ontario Regulation 150/06.

Impacts and enhancement measures to the natural areas on the Subject Property will be further refined and addressed with details provided in subsequent submissions (i.e., Draft Plan Approval).

5.7 City of Brantford Official Plan

5.7.1 Overview of Key Policies

The City of Brantford Official Plan (August 2021) includes a *Natural Heritage System* consisting of *Core Natural Areas Designation* and *Adjacent Lands Overlay*.

- The woodland and valleyland along the Tributary of Fairchild Creek (Vegetation Units 1 to 7 as well as 8 and 12) on and adjacent to the Subject Property has been identified as part of the *Core Natural Areas Designation* on Schedule 6 of the Official Plan. Underlying Provincial designations (i.e., Growth Plan Natural Heritage System) are also shown.
- Lands within 90 m and abutting the *Core Natural Areas Designation* are shown on Schedule 6 as the *Adjacent Lands Overlay*. Areas within the proposed development envelope, adjacent to the *Core Natural Areas Designation* are located within the *Adjacent Lands Overlay*.

Per Policy 5.6.a of the *Official Plan*, policies for the natural heritage system are as follows:

- To ensure that the biodiversity, ecological function and connectivity of the Natural Heritage System is protected, maintained, restored or, where possible enhanced for the long-term, the Natural Heritage System is intended to:
  - Protect the health and water quality of the Grand River Watershed;
  - Protect surface and underground water resources;
  - Conserve biodiversity; and
  - Protect all significant natural heritage features and their associated ecological and hydrological functions.

5.7.2 Study Assessment

Policy 5.6.1 a. notes that the *Core Natural Areas Designation* includes the following:

- **Provincially Significant Wetlands**
  - None are present.
- **Significant Woodlands**
  - See discussion in Section 5.5.2.
- **Provincially Significant Valleylands**
  - See discussion in Section 5.5.2.
- **Significant Wildlife Habitat attributes and functions, including habitat for species-at-risk and rare plant communities such as prairie, savannah and oak woodland.**
  - See discussion in Sections 3.7.5 and 5.2.2.
- **Significant Areas of Natural and Scientific Interest**
  - None are present.
- **Hazard Lands**
  - See discussion in Section 5.6.
- **Other natural heritage features (i.e., woodlands that are less than 4 ha, locally significant wetlands, treed slopes, and cultural habitat features)**
  - Features meeting these definitions are present on the Subject Property, within and adjacent to the development envelope.
- **Enhancement / Restoration Areas**
  - No enhancement / restoration areas are currently present within the Subject Property; however, ecological enhancement will be a component of the mitigation strategy for the proposed development and details will be provided as part of subsequent submissions.

5.7.3 Policy Compliance

Official Plan policies related to the Natural Heritage System that are relevant to the proposed development include:

- Per Policy 5.6.1 f.: “No buildings, structures, nor the removal or placing of fill of any kind whether originating on the site or elsewhere, may be permitted within the Core Natural Areas Designation, except with approval of the City, in consultation with the Conservation Authority and any other agency having jurisdiction.”
  - No development or works are proposed within the *Core Natural Areas Designation*, subject to refinement of feature limits through in-season feature staking and approval by relevant agencies (e.g., City and GRCA).

- Per policy 5.6.1 g.: “Wherever possible and practical, areas designated as *Core Natural Areas* shall generally not form part of any new lots to be created for the purposes of development.”
    - No new lots are proposed to be created within areas designated as *Core Natural Areas*.
- Per Policy 5.6.2 f. “Prior to any lands being considered for development, redevelopment or site alteration, within any area identified as subject to the *Adjacent Lands Overlay*, an Environmental Impact Study is to be undertaken by the proponent in accordance with City and Conservation Authority requirements and approved by the City in consultation with the Conservation Authority and any agency having jurisdiction.”
    - No development or site alteration is proposed within the *Core Natural Areas Designation*; this area will be maintained in full, with development setbacks, buffer enhancements and other mitigation measures. Development that has the potential to impact the features and functions of natural areas is proposed within the *Adjacent Lands Overlay*. These potential impacts will be further assessed through subsequent submissions; however, it is anticipated that with implementation of recommended protection, enhancement and mitigation measures impacts can avoided and an overall net benefit to retained natural areas will be realized.

6.0 PRELIMINARY IMPACT ASSESSMENT AND MITIGATION

This section outlines a preliminary assessment of impacts that may occur within the Subject Property as a result of the proposed project as shown in the Detailed Concept Plan. This impact assessment and the recommendations for mitigation noted below will be updated as part of a future Draft Plan of Subdivision submission.

6.1 Fisheries and Aquatic Habitat

6.1.1 Fisheries Impacts

Fish habitat within the Subject Property is not expected to be directly impacted by the proposed development as there is no direct fish habitat within the development envelope. Impacts to fish habitat on the Subject Property and adjacent lands are anticipated to be limited to ‘during-construction’ activities such as grading and other indirect impacts typically associated with site development (e.g., erosion and sediment transport, anthropogenic inputs, pollutants, etc.). These indirect or secondary impacts are not likely to contravene the Fisheries Act and can generally be addressed with the implementation of standard construction-related mitigation measures that will be refined as the design of the proposed development progresses.

6.1.2 Fisheries Mitigation

The following standard mitigation measures are being recommended for implementation to avoid potential impacts to fish and fish habitat adjacent to the proposed development. These mitigation measures will be reviewed and updated as necessary as part of future submissions.

Construction Design

- Any temporarily stockpiled soil, debris or other excess materials, and any construction-related materials should be properly contained (e.g., within silt fencing) in areas separated at least 30 m from any watercourse. All construction materials and debris should be removed and appropriately disposed of following construction.

- All construction-related activities should be controlled to prevent entry of any petroleum products, debris or other potential contaminants / deleterious substances, in addition to sediment as outlined above to downgradient watercourses.

Sediment and Erosion Control Measures (from the BSS) (Urbantech 2024)

- Erosion and sediment control (ESC) measures will be implemented during all site construction works including topsoil stripping, bulk earthworks, foundation excavation, site servicing and stockpiling of materials and will conform to standard construction ESC guidelines. These measures will include:
  - Sediment fencing placed along the perimeter of the site prior to construction to delineate the limit of disturbance and protect retained natural features.
  - Sediment ponds and/or traps will be constructed at each temporary SWM outlet.
  - Construction of sediment control ponds and other settling basins.
  - Cut-off swales / diversions to direct runoff to control devices and to keep construction areas dry. Swales will include check dams at regular intervals.
  - Construction access mud mats will be utilized at access points to minimize off-site tracking of sediments.
  - All ESC measures will be routinely inspected and repair to maintain them until such time as the adjacent areas are restored and stable and once the Engineer or the City approves their removal.
- Site-specific measures will be refined during detail design / through future submissions.
- All erosion and sediment control measures will be routinely inspected, cleaned and repaired as required during construction. Controls will not be removed until the areas they serve are restored and stable.

6.2 Vegetation

6.2.1 Vegetation Impacts

Direct Impacts

Removal of culturally influenced and natural vegetation is proposed, including multiple hedgerows, a small cultural woodland (Vegetation Unit 11 [CUW1 – Mineral Cultural Woodland]), two small wetlands (Vegetation Units 9 and 10 [MAS2-1 – Cattail Mineral Shallow Marsh]) and small areas of cultural meadow (CUM). None of the vegetation communities that are proposed for removal are provincially, regionally or local unique habitat types. The most sensitive vegetation communities are being retained in the areas noted as NHS in the Detailed Concept Plan, primarily associated with the forested habitat along the Tributary of Fairchild Creek valley. There is no anticipated impact to / loss of overall botanical or vegetation community diversity from the broader landscape, based on the Detailed Concept Plan (Figure 5). Note that the final development limit will be determined following agency verification of the WSP recommended feature limits. The development limit will be set as the most appropriate limit based on the findings in an updated EIS to be prepared as part of a future Draft Plan application (anticipated to be the *Significant Woodland / Valleyland* plus 10 m).

As noted in Section 3.8.1, three Butternut are proposed to be harmed / killed as a result of the proposed development. Impacts to Butternut, including details pertaining to registration and any required compensation will be dealt with through future submissions, prior to any site development.

Based on the Detailed Concept Plan, removal of two small, isolated wetland features is proposed (Vegetation Units 9 and 10). Consultation with GRCA and the City will take place through the Draft Plan of Subdivision application process to determine process requirements and any enhancement measures to create a net benefit to the existing natural area to address these proposed removals.

The Detailed Concept Plan does not substantively increase fragmentation of sensitive natural features (e.g., Fairchild Creek and Tributary of Fairchild Creek valleys) or reduce connectivity. Development is restricted to active agricultural fields, aside from the small, isolated features identified above that are proposed for removal. Retained natural features will be protected with setbacks, buffer enhancements and other mitigation measures, to be confirmed through future submissions.

Indirect Impacts

There is potential for indirect impacts to retained vegetation communities as a result of the construction, change in land use, changes in hydrology and occupancy related activities. Indirect impacts may include edge effects, construction-related impacts, hydrogeology changes and occupancy-related impacts.

If vegetation removal is required along the edges of retained features for hazard tree removal or other similar reasons, edge effects such as vegetation dieback and species composition changes from increased sunlight (e.g., sunscald, drought) and the introduction of exotic / invasive species may occur. However, these wooded areas abut active agricultural fields, so some evidence of edge impacts under current conditions is present, and as such, the magnitude of such impacts that could result from the proposed development is small.

Construction impacts may include damage to vegetation outside of the work zone, sedimentation, spills of contaminants, root pruning, damage to tree limbs and soil compaction.

Hydrogeology effects may include changes to surface water volume / flow direction, changes to groundwater volume / flow direction and reduced infiltration. These changes may impact hydrogeologically connected features (e.g., wetlands, aquatic features, other vegetation communities).

Occupancy effects may include the introduction of exotic / invasive species (e.g., garden escapes), informal trail creation, vandalism, dumping of yard waste and other items, and contaminated road runoff. Given the urban context in the surrounding landscape, many of these effects are already present to varying degrees.

6.2.2 Vegetation Mitigation

Impacts to vegetation can be mitigated by implementation of the following:

- Avoidance of development in / disturbance to significant and sensitive areas, particularly along the Fairchild Creek and Tributary of Fairchild Creek valleys.
- Development setbacks from retained aquatic, wetland and woodland features / limits.
  - 10 m from the *Significant Woodland* and continuous retained vegetation limit (i.e., thicket habitat on and adjacent to the eastern portion of the Subject Property).
    - Note that the final development limit will be determined following agency verification of the WSP recommended feature limits. The development limit will be set as the most appropriate limit based on the findings in an updated EIS to be prepared as part of a future Draft Plan application.
  - 15 m from retained wetland habitat on the Subject Property.

  - 15 m from the Tributary of Fairchild Creek (encompassed within the recommended setback from the *Significant Woodland*.

- Buffer management within the setback areas which may include ecological enhancement, maintenance of hydrological inputs to receiving areas (e.g., wetland and watercourses) and restricted access.
- An ESC Plan which may include the location of fencing, berms, diversion swales and construction access locations, as well as topsoil stockpile areas, treatment / seeding of exposed soils and a regular site inspection and maintenance schedule.
- A Tree Preservation Plan to identify trees to be retained and protected, trees to be removed and tree compensation planting areas, if required.
- A Stormwater Management Strategy to control post-development flows and treat stormwater runoff.
- Maintenance of hydrogeological inputs to receiving areas.
- Temporary vegetation protection fencing to prevent damage to retained natural areas (which may be combined with erosion and sediment control fencing and wildlife exclusion fencing).

6.3 Wildlife

6.3.1 Wildlife Impacts

Specific impacts to wildlife and wildlife habitat will need to be confirmed or updated / refined through future submissions. In general, direct and indirect impacts to wildlife habitat are anticipated to be consistent with the impacts to vegetation described above. A preliminary list of potential impacts to wildlife include:

- Loss of habitat associated with vegetation removals described in Section 6.1.1.
- Removal / damage to migratory birds and their nests during any vegetation clearing or grubbing, depending on the timing of works.
- Harm to wildlife moving through construction zones or developed areas as there is some limited potential for snakes, turtles, small mammals, etc. to move through the agricultural fields.

Most wildlife species that occur or potentially occur within the study area are common, tolerant species. Sensitive wildlife habitat features (i.e., SAR and SAR habitat, candidate or confirmed SWH, wetland and aquatic habitat) are primarily concentrated in natural areas that are to be retained based on the Detailed Concept Plan; this includes the larger cluster of Milkweed vegetation identified as candidate SWH for Monarch, which is within the Tributary of Fairchild Creek floodplain (to be retained in full). While some habitat for relatively more sensitive species (i.e., old shed providing potential Barn Swallow nesting habitat and isolated wetlands [Vegetation Units 9 and 10]) are proposed for removal, these are isolated features that lack connectivity to adjacent natural areas and are fairly common in the local landscape. Enhancement measures will be identified through future submissions and consultation with relevant agencies to ensure an overall net benefit to the existing natural heritage system within the Subject Property.

Specific impacts and mitigation measures associated with removal of wildlife habitat on the Subject Property will be identified through future submissions, following consultation with review agencies. In general, anticipated impacts to wildlife can be managed through the implementation of mitigation measures outlined below.

6.3.2 Wildlife Mitigation

In general, the mitigation measures outlined in Section 6.1.2 for vegetation will also protect the associated wildlife habitat functions. However, it is also necessary to ensure the protection of breeding birds and wildlife in general that may nest or otherwise use areas where development is proposed.

Nesting migratory birds are protected under the MBCA and compliance with the MBCA can be achieved using the following due diligence approach:

- Proponent awareness of MBCA, potential for nesting in the area, and potential for impacts to migratory birds, nests and eggs. Areas outside of the development envelope provide suitable habitat for nesting of forest-associated and generalist species.
- Implementation of the following avoidance and mitigation measures, where possible:
  - Avoiding works (i.e., vegetation / potential and confirmed nesting habitat removal) within the “Regional Nesting Period” for the majority of species in this area (i.e., extending from early April to late August, as identified on the Environment Canada website by “nesting zone” C).
  - Avoiding works in sensitive locations.
  - Minimizing area of vegetation removals.
  - Implementing post-construction habitat enhancement, creation / restoration.
  - Recommending Best Management Practices (BMPs) during construction to minimize potential indirect impacts to vegetation / potential nesting habitat outside of the development envelope.
- For the protection of wildlife in general, the following should be implemented:
  - Any wildlife incidentally encountered during construction will not be knowingly harmed and will be allowed to move away from the construction area on its own.
  - In the event that an animal encountered during construction does not move from the construction zone or is injured, the Contract Administrator should be notified.
  - Wildlife salvage and relocation completed where aquatic / wetland habitats are filled / removed / altered during construction.
- For the protection of SAR bats:
  - All tree removals shall be completed during the non-active period for SAR bats (i.e., during hibernation period of November 1 to March 31).
- For the enhancement of potential Monarch foraging / reproduction habitat:
  - The meadow seed mix used for vegetation buffers or enhancement areas should include Milkweed and other wildflower species.

Refinement of mitigation measures will occur through future submissions. Proper implementation of mitigation measures will help ensure that potential impacts on wildlife and wildlife habitat are minimized.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the review discussed herein, and with the incorporation of the recommendations below in future submissions, the proposed development can be undertaken while protecting key environmental features, with the confirmation of feature limits, implementation of recommended development setbacks and other mitigation measures, subject to refinement and updates to technical studies and detailed designs that will be prepared as part of future submissions. This conclusion reflects the following considerations:

- Natural Area Protection and Enhancement - There will be no intrusion into natural heritage features that make up the *Core Natural Areas Designation* in the City of Brantford Official Plan. The limits of these areas will be confirmed and subsequently retained in full, and their ecological functions will be protected with development setbacks, permanent fencing, buffer enhancement and other mitigation measures to be identified / confirmed through future submissions.
- The conceptual development design measures, as well as the recommended mitigation measures conform to relevant natural heritages system policies outlined in the City of Brantford Official Plan.
- Future studies will demonstrate water balance to receiving areas / retained natural heritage features and mitigate downstream impacts to receiving watercourses (i.e., through an approved SWM strategy for the proposed development).

The following work is recommended to confirm or refine conclusions and recommendations herein. Note that these items are recommended to be completed as part of a future Draft Plan application submission / through the detailed design of the proposed development:

- Confirmation that a water balance to retained natural features can be achieved post-development with the implementation of appropriate mitigation measures. Demonstration of water balance should be documented through technical studies prepared as part of future submissions.
- Finalize the ESC plan and SWM strategy, including details regarding outlet locations and design, as well as low-impact development measures as needed to demonstrate water balance.
- Complete site walks with relevant agencies to refine and confirm feature limits presented herein, with the limits to be surveyed and incorporated into future submissions.
- Complete additional fieldwork in 2024 to assess for the presence of potential Monarch and White-tailed Deer habitats across the Subject Property based on discussion with SNGR representatives.
    - The Monarch surveys will include one site visit completed in the summer active period to search for evidence of adult foraging or reproductive habitat use, focusing on areas where Milkweed concentrations were identified in 2023.
    - The White-tailed Deer surveys will be based on agency approved protocols (MNRF 2018), which include wandering transects completed throughout wooded areas after snowfall events, assessing White-tailed Deer habitat based on track densities, pellets, evidence of browse, bedding sites and suitable tree cover. Two rounds of surveys will be conducted in the 2024 winter season.
- For the shed structure (adjacent to Vegetation Unit 11): In the bat active season immediately prior to the planned demolition of this structure, it is recommended to complete two rounds of bat exit surveys according to MECP protocols. This will assess potential use of the structure by SAR bats. Appropriate ESA compliance activities are to be completed pending the results of targeted SAR bat surveys.

- Preparation of detailed landscape planting plans, including naturalized buffers to environmental features.
- Undertake registration and appropriate compensation measures related to the removal / harm of Butternut trees.
- An appropriate Biological Monitoring program is recommended to be prepared and included in future submissions in order to assess the potential impacts and efficacy of the recommended mitigation and enhancement measures.

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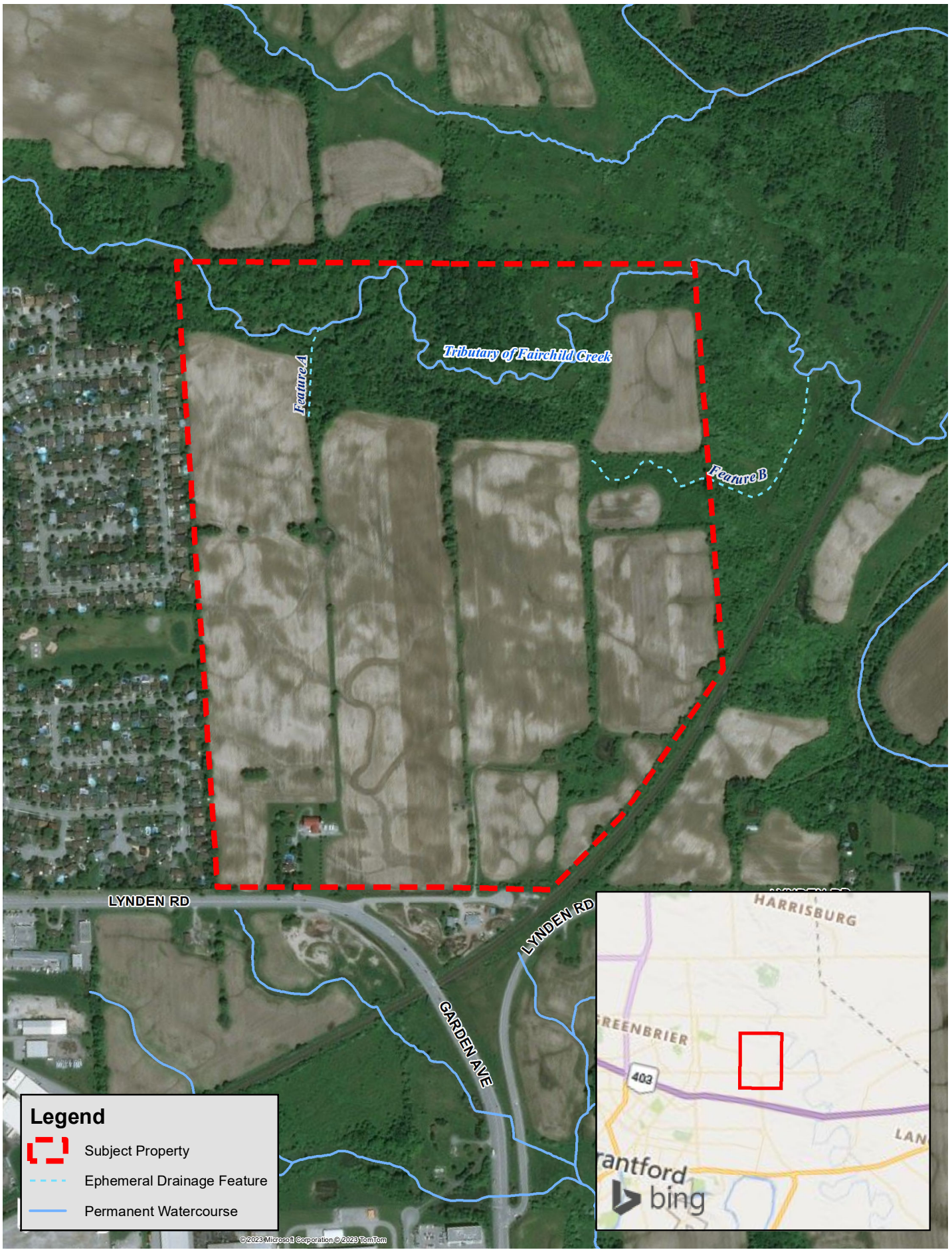
FIGURES



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Sorbara Brantford Expansion Lands
Subject Property Location

0 100 200 Metres
1:8,000

N

Date: January 2024
Project No: CA0007600
Figure No: 1

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Name, Description
AG: Agricultural
CUM: Cultural Meadow
CUT: Cutural Thicket
CUT1-4: Gray Dogwood Cultural Thicket
CUW1: Mineral Cultural Woodland
FOD: Decidous Forest
FOD4-2: Dry - Fresh White Ash Deciduous Forest
FOD5-3: Dry - Fresh Sugar Maple - Oak Deciduous Forest
FOD7: Fresh - Moist Lowland Deciduous Forest
FODM5-11: Dry - Fresh Sugar Maple - Hardwood Deciduous Forest
HR: Hedgerow
MAM2-2: Reed - canary Grass Mineral Meadow Marsh
MAM2-9: Jewelweed Mineral Meadow Marsh
MAS2-1: Cattail Mineral Shallow Marsh
RES: Residential
Note: off property vegetation communities are based on edge observations and air photo interpretation

Legend
Subject Property
Butternut Tree Location
Amphibian Calling Survey Station
Potential SAR Bat Habitat
Vegetation Community
WildlifeSurveyUnits
Railway
Intermittent Watercourse
Permanent Watercourse
Flow Direction

Confirmed Significant Wildlife Habitat
Amphibian Breeding Habitat (Wetland)
Special Concern and Rare Wildlife Species
Shrub / Early Successional Bird Breeding Habitat

Unit 5A FOD5-3
Unit 5B FOD5-3
Unit 6 FOD4
Unit 4 FOD4-2
Unit 3 FOD7
Unit 1C CUW1
Unit 2 FODM5-11
Unit 1B CUW1
Unit 1A CUW1
Unit 7 MAM2-9
Unit 8 MAM2-2
Unit 10 MAS2-1
Unit 12 CUT1-4
Unit 9 MAS2-1
Unit 11 CUW1
Tributary of Fairchild Creek
Feature A
Feature B
Fairchild Creek
AC1
AC2
AC3
AC4
AC5
AC6
AC7
BNUT 7
BNUT 8
BNUT 9
BNUT 10
WSU 1
WSU 2
WSU 3
WSU 4
CUM
CUT / CUW1
AG
HR
RES
BRANTWOOD PARK RD
GARDEN AVE
LYNDEN RD

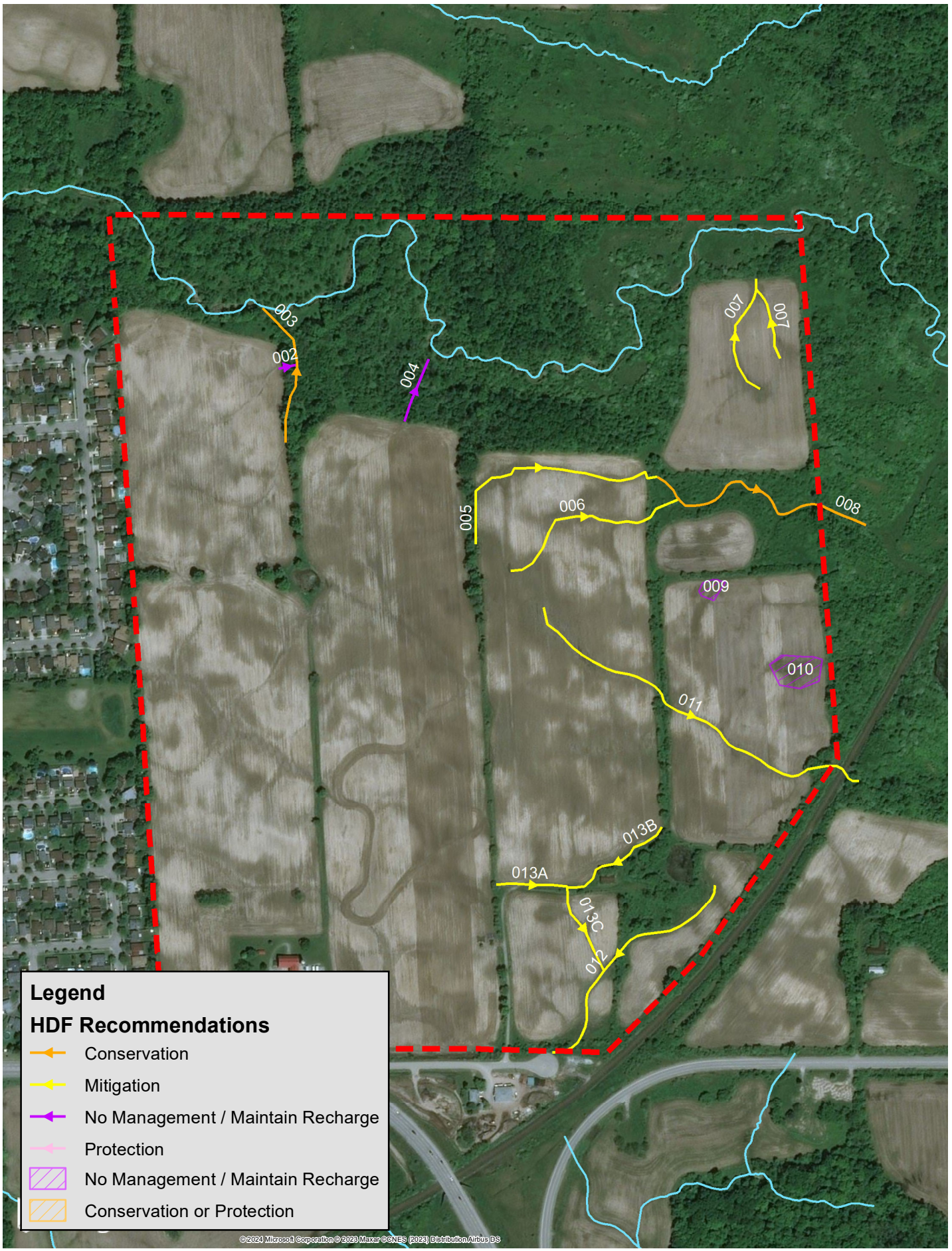
WSP

Sorbara Brantford Expansion Lands
Natural Heritage Features and Survey Locations

0 50 100
Meters
1:6,000

N

Date: January 2024
Project No: CA0007600
Figure No: 2



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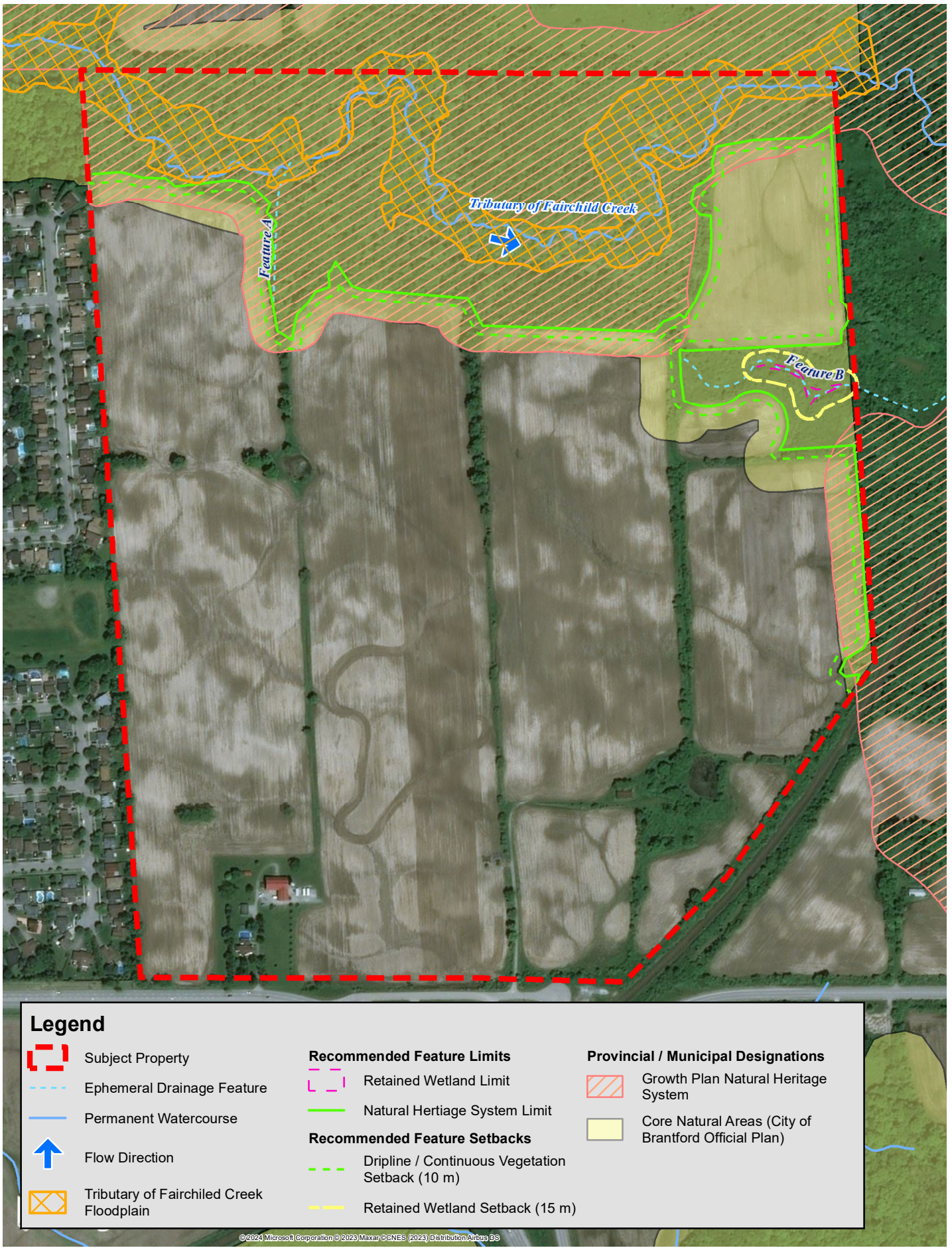
Sorbara Brantford Expansion Lands
Headwater Drainage Feature Assessment
Results

0 50 100
Metres
1:6,000

N

Date: January 2024
Project No: CA0007600
Figure No: 3



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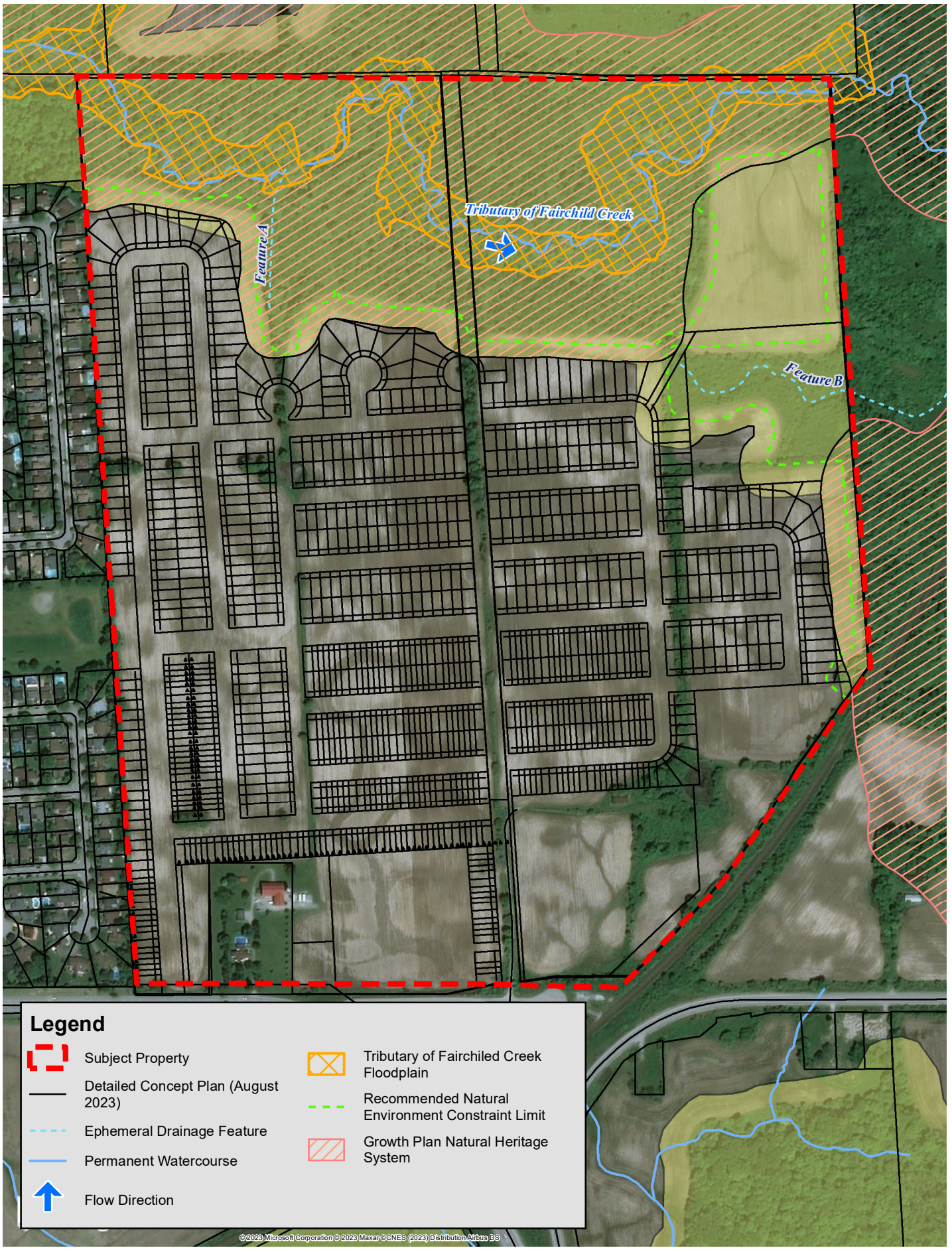
Sorbara Brantford Expansion Lands
Existing Environmental Designations

0 50 100
Metres
1:5,500

N

Date: January 2024
Project No: CA0007600
Figure No: 4



Sorbara Brantford Expansion Lands Development Concept

0 50 100
Metres
1:5,500

N

Date: January 2024
Project No: CA0007600
Figure No: 5

09 Jan 2024

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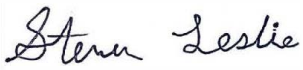
Signature Page

WSP Canada Inc.



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APPENDIX A

Meeting Minutes – Six Nations of the Grand River

MEETING # 1 SUMMARY NOTES – DRAFT

Project Title / Ref:	Proposed Residential Development at 299 Lynden Road, City of Brantford		
Project Number	OMHE2305A	**Date**	July 4, 2023
Time	2 – 3 PM	**Venue**	Six Nations Development Corporation Boardroom, 2498 Chiefswood Road, Ohsweken, ON
Purpose	Project Information Meeting		
Attachments	Prior to the meeting, a PDF version of the presentation was provided to meeting participants on July 3, 2023. (File Name: Proposed Residential Development at 299 Lynden Road_July 3 2023_Final.pdf)		

ATTENDEES			
Six Nations of the Grand River (SNGR)	**Sorbara Group (Sorbara)**	**City of Brantford (City)**	**WSP**
1 Lonny Bomberry 2 Phil Monture 3 Tayler Hill 4 Daylon Gee 5 Peter Graham 6 Tanya Hill-Montour	1 James Bujak 2 Herthana Siva	1 Nicole Wilmot 2 K.C. Pongracz 3 Jeff Medeiros	1 Alex Stettler 2 Peter Popkin 3 Aniqa Shams, 4 Shaina Sehgal

1 INTRODUCTIONS

Six Nations of the Grand River (SNGR) facilitated a round of introductions. WSP opened the meeting and thanked SNGR for inviting everyone to the in-person meeting. Following introductions, WSP provided background information on the Proposed Residential Development at 299 Lynden Road (Project) by the Sorbara Group (Sorbara) in the City of Brantford (City).

2 PROJECT OVERVIEW

WSP provided an overview of the Project. SNGR's Archaeology lead noted that they had limited time to attend the meeting, and it was agreed to begin with a discussion of the Archaeological Assessments.

3 TECHNICAL STUDIES

WSP noted the concept Block Plan is supported by several technical studies that were completed. WSP indicated the technical studies discussed today would include the Archaeological Assessments, Master Environmental Servicing Plan, and Scoped Environmental Impact Study.

3.1 Archaeological Assessments

WSP summarised findings from the Stage 1 Archaeological Assessment (AA) in 2007, Stage 2 AA and Stage 3 AA in 2020. WSP indicated the Stage 2 and Stage 3 AAs were conducted by This Land Archaeology Inc. WSP noted that one site was recommended for a Stage 3 AA. The Stage 3 AA has been completed and the Stage 2 – 3 AA report has been reviewed by the Ministry of Tourism, Culture and Sport (now renamed to the Ministry of Citizenship and Multiculturalism) and entered into the *Ontario Public Register of Archaeological Sites.* WSP indicated that other than the approximately 16 ha environmentally sensitive area at the north end of the property, which has not been subject to Stage 2 AA and which will require Stage AA in advance of any disturbance, the property is clear of archaeological concern.

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
Q & C 3.1	SNGR enquired whether WSP conducted the Stage 1 AA.	WSP noted that the Stage 1 AA was not conducted by WSP. Sorbara noted that the Stage 1 AA was completed by another firm on behalf of the previous landowner.
Q & C 3.2	SNGR requested to receive the Stage 1 AA.	Sorbara indicated the Stage 1 AA would be provided to SNGR.
Q & C 3.3	The City enquired whether SNGR had a list of recommended consultants for Archaeological Assessments.	SNGR indicated there was a list and it would be shared with the City.
Q & C 3.4	WSP noted Project documents were shared with SNGR and indicated the Stage 1 AA would be shared as well.	SNGR indicated a link to the EIS was provided.

3.2 Master Environmental Servicing Plan, 2022

WSP provided information on the Master Environmental Servicing Plan. Sorbara noted that the Master Environmental Servicing Plan was not finalized and is currently being reviewed by the City.

There were no comments or questions received from SNGR on this topic.

3.3 Natural Heritage Systems

WSP indicated access to the Natural Heritage Systems (NHS) will be limited to avoid potential impacts and property development is proposed to back onto or be adjacent to the NHS (i.e., backlotting along much of the NHS) with access at two points to ensure impacts are minimized.

3.4 Scoped Environmental Impact Study, 2022

WSP provided information on the surveys conducted as part of the Scoped Environmental Impact Study (EIS), including breeding bird, anuran, and vegetation surveys and the documentation of species on the proposed Project site. WSP noted the presence of two Species at Risk (SAR), including the Barn Swallow and Butternut tree.

WSP noted that as the Barn Swallow was recently downlisted, it would not be considered for compensation offsetting. WSP also indicated the presence of dying Butternut trees and indicated that a Butternut health assessment would be required. WSP noted that any tree removal would be discussed with the Ministry of the Environment, Conservation and Parks, and would have an associated compensation to the SAR Conservation Fund.

WSP noted the EIS indicated that other habitats were not likely to be impacted, and more details on the studies were available in the EIS. WSP indicated further environmental assessments to determine any compensations could take place after the completion of stormwater and geotechnical studies.

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
Q & C 3.5	SNGR noted the absence of species of importance to SNGR from the EIS, including deer, and plant species of sustenance.	WSP indicated the botanical surveys were provided in the EIS and requested SNGR to review the survey and provide comments to better document the species on the proposed Project site. SNGR noted their wildlife experts were not available in the meeting to provide more detailed feedback. SNGR also noted they were not consulted during drafting of the terms of reference for EIS.
Q & C 3.6	SNGR indicated that sustenance species need to be identified and mapped.	Sorbara indicted the technical studies were prepared to refine the understanding of proposed Project site, and noted these studies would support the proposed land use application to the City. Sorbara indicated the present meeting was intended to facilitate

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
		discussions, gather comments and continue discussions with SNGR.
Q & C 3.7	SNGR noted there were no proposed mitigations for the Monarch butterfly in the EIS. SNGR enquired about observations of caterpillars during field surveys.	WSP indicated there were surveys undertaken during three seasons in which observations for wildlife species were recorded. Specifically, Monarchs were observed on August 23, 2018, September 7, 2018, and June 27, 2019. Up to four individuals at a time with an overall total of 6 individuals observed within study area. WSP noted the seed mix used during ecological restoration would support caterpillars.
Q & C 3.8	SNGR indicated the area was ecologically sensitive and the EIS met the legal minimum criteria.	WSP noted the NHS is unlikely to be impacted by proposed works, and indicated the present EIS was a preliminary draft. The EIS will be updated to reflect the latest reports from the City.
Q & C 3.9	SNGR enquired about the two isolated wetland features.	WSP noted that one of the isolated wetland features (Unit 9) drains to the south into the ditch system along Lynden Road. This wetland is within the footprint of the proposed park block. As the design progresses, opportunities to incorporate this feature into the design will be reviewed. The other isolated wetland feature (Unit 10) is located at the southern tip of a hedgerow and is proposed for removal. Both wetlands support some level anuran breeding, although no SAR were observed.
Q & C 3.10	SNGR indicated there was also interest in protection of species not at risk.	WSP indicated that fish, frogs, and other species would be salvaged and protected to the extent possible.
Q & C 3.11	SNGR noted that the mapping showed a significant portion of north was a	WSP indicated the Ecological Land Classification mapping was followed for

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
	wetland, but it was not presented similarly in the EIS.	the EIS. WSP noted that nesting behaviors were observed mostly in the habitats in the north of the site which would be protect as part of the NHS.
Q & C 3.12	SNGR noted there was disproportionate focus around tributaries and requested to be included to determine appropriate setbacks.	WSP indicated that appropriate setbacks could be decided once there was a wetland determination. WSP noted that the EIS was completed following Provincial guidelines, however WSP confirmed that they would work with the City and SNGR to continue discussions regarding setbacks.
Q & C 3.13	SNGR requested the estimated area of Natural Heritage Systems before and after the proposed Project.	Sorbara indicated that the compensation lands could be provided to SNGR, once determined through the draft plan process. The proposed development will maintain the existing NHS as noted the Growth Plan Natural Heritage System and in the City of Brantford Official Plan (Core Natural Areas) with the of exception of a proposed stormwater management pond within the Core Natural Area which is currently an active agricultural field.
Q & C 3.14	SNGR noted the ongoing land claims and indicated the lands were presently under litigation. SNGR noted the natural and archaeological studies may continue for the proposed Project but the land claims would have to be addressed at some stage.	The City noted there were ongoing conversations between SNGR and Senior Management at the City about the lands, and the present meeting participants would not be privy to this information. However, the City indicated that SNGR's concerns would be shared with the City's leadership.
Q & C 3.15	SNGR noted the lands claims were not surrendered and the Crown did not fulfill conditions relating to removal of squatters and selling land at a fair market value. SNGR indicated the land was	Sorbara asked whether SNGR has ongoing conversations with City regarding the land claims. SNGR indicated there were resolutions on

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
	obtained illegally, and the duty to accommodate SNGR devolves from the Crown to the municipalities, based on their understanding of the Provincial Policy Statement and Provincial Plans for the Greater Golden Horseshoe. SNGR also noted the duty to consult and accommodate was part of the treaty with Brant County.	many areas and did not want pursue litigation but the conversations on land claims are frequently set back with administrative changes following provincial and municipal elections. The City acknowledged the frustrations expressed by SNGR and noted SNGR was involved in conversations regarding land claims with different levels of government. The City noted that in terms of the block planning process under discussion, SNGR is being requested for input prior to the formalisation of Sorbara's application. The City indicated this process was begun early to create a line of communication and make an introduction so that SNGR is included in the block planning process at an early stage.
Q & C 3.16	SNGR noted Sorbara would be interested in the ongoing litigations discussion regarding land tenure as a developer.	Sorbara indicated interest in working together constructively with SNGR and to explore how Sorbara could support SNGR in their ongoing conversations with other municipalities.

4 CLOSING COMMENTS

WSP and the City thanked SNGR for sharing information on ongoing issues of land tenure and annexations with the Governments of Ontario and Canada, and recognised the importance of these discussions even though they were beyond the scope of the Project.

WSP noted the next steps included engagement by the City with SNGR on the Block Plan Process. The City noted engagement with SNGR would take place on the developer application that would be submitted by Sorbara. The City encouraged SNGR to provide feedback to Sorbara in the meantime, and to voice their interests and concerns.

WSP indicated a draft meeting summary would be provided for record and validation.

S. NO.	QUESTIONS & COMMENTS (Q&C)	RESPONSE
Q & C 4.1	WSP enquired about SNGR's engagement preferences relating to the Project.	SNGR requested to be provided any new updates, and to be called immediately in case artifacts are discovered.
Q & C 4.2	Sorbara noted there were limited artifacts found and would require direction on what to do with the remains.	SNGR indicated new remains could also be discovered. Sorbara indicated SNGR would be informed if any remains are discovered during the Project.
Q & C 4.3	SNGR enquired about the number of units planned in the proposed Project.	Sorbara indicated there would be approximately 1,000 units.

WSP thanked the meeting participants and adjourned the meeting.

5 ACTIONS

1. WSP to provide SNGR with a copy of draft meeting summary for feedback and validation.
2. WSP/Sorbara to send Stage 1 AA (**Comment 3.2 and 3.4**).
   a. Post-Meeting Note: WSP provided Stage 1 AA on Sept 11, 2023.
3. SNGR to provide the City a list of preferred consultants for Archaeological Assessments (**Comment 3.3**).
4. WSP to continue discussions with SNGR and the City regarding setbacks (**Comment 3.12**).
5. Sorbara to provide SNGR the estimated area of Natural Heritage Systems before and after the proposed Project (see **Comment** and **Response 3.14**).
6. City to share SNGR's concerns regarding ongoing land claims with leadership (**Comment 3.15**).

APPENDIX B

Terms of Reference

SORBARA
group of companies

February 1, 2022

K.C. (Karen) Pongracz, MCIP, RPP
Senior Planner, Development Planning
People, Legislative Services and Planning
City of Brantford
58 Dalhousie Street
Brantford, Ontario N3T 2J2
Phone: (519)759-4150 ext 5415

Dear Karen Pongracz:

Re: Block C10 Block Terms of Reference first submission
299 Lynden Rd, Brantford
Part of the South Half of Lot 42 Concession 2 and
Part of the South Half of Lot 43 Concession 2
Geographic Township of Brantford, County of Brant

On behalf of Welton and Innes G.P. Inc. we are submitting a Block Plan Terms of Reference for C10 Block located at 299 Lynden Road in Brantford.

An application processing fee of $52,570.00 ($15,670 base+57.8acres at $500/ac + 8,000) has also been submitted with this application.

If you have any questions or require any additional information, please do not hesitate to contact the undersigned at nshurigina@sorbara.com or 905-850-6154 x273.

Sincerely,

Sorbara Development Group

Natalie Shurigina
Manager, Development

3700 STEELES AVENUE WEST, SUITE 800 VAUGHAN, ON CANADA L4L 8M9

telephone 905 850-6154 fax 905 850-6884

www.sorbara.com

C10 Block Terms of Reference

The C10 area Block Plan document will contain the following items. Each category and subcategories are listed below.

EIS

An Environmental Impact Study (EIS) will be prepared in accordance with the approved Block Plan Terms of Reference. The EIS is to be approved by the City as part of the Block Plan process and will satisfy the Natural Heritage System requirements of the City's Official Plan to the satisfaction of the City in consultation with the Grand River Conservation Authority.

The EIS will include:

- Field studies to address gaps or updates in subwatershed level information for the applicable catchment or subcatchment areas of the Block Plan;

- Integration of the existing management goals and recommendations of applicable subwatershed studies;

- Completion of an impact assessment and development recommendations for mitigation, restoration and enhancement following the City's Natural Heritage System policies based on the Block Plan concept and including all related infrastructure, parks, trails, etc.;

- Provide a water balance that is inclusive of natural heritage features and areas based on the Block Plan concept;

- Refine stormwater management plans and recommendations including infiltration targets to support and achieve the overall water balance for the Block Plan area and support maintaining or improving the hydrologic functions of natural heritage features and areas, surface water features and ground water features (refer to engineering requirements in Section 2.3.2);

- Provide recommendations for the enhancement and restoration of existing surface water features and their riparian areas, and the management of contaminants (i.e. salt) and runoff, in order to support fish habitat and the improvement of water quality and quantity;

- Assess impacts and develop recommendations to mitigate proposed refinements for the trail network and associated alignments including looking at opportunities to collocate trails with other existing or proposed infrastructure. Where trails are proposed within the Natural Heritage System, provide recommendations to ensure compatibility between natural heritage features and areas and the proposed trail network, including the provision of sufficient space for trails, in accordance with the Official Plan Natural Heritage System policies;

- Develop management objectives for stewardship and restoration of natural heritage features and areas, including the provision of recommendations regarding the protection and enhancement of the City's forest resources, including the identification of plantable spaces, while also providing opportunities for meadow communities and pollinator habitats;

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• Identify and develop monitoring and adaptive management recommendations to ensure long-term sustainability of the Natural Heritage System within the Block Plan area and natural heritage features and areas, surface water features and ground water features.

MSP

MSP will include:

• Description of Proposed Development and Required Infrastructure;

• Sanitary, Stormwater and Water Servicing, including Servicing Connectivity to adjacent Blocks and hydraulic grade line assessments;

• Establish sanitary and storm drainage area boundaries, confirm capacity of outlets and conveyance systems;

• Location and preliminary sizing of sanitary sewers, storm sewers and watermains;

• Phasing/Sequencing of Infrastructure;

• Stormwater management strategy including hydrogeological assessment and preliminary design of stormwater management facilities including volumetric sizing, stage/storage/discharge relationship, outlet control calculations, forebay design, length/width ratios, decanting area, access routes, overland flow route;

• Preliminary Grading Plan to a level of detail that ensures that the future subdivision lotting will meet Engineering grading standards;

• Full transportation network to the local road level including active transportation connections (plan and profile drawings including all road geometrics);

• Noise impact analysis to ensure noise sensitive land uses are located away from noise sources;

• A Phase I/One Environmental Site Assessment and subsequent study reports;

• High level cost estimates for engineering works

TIS

The Block Plan will include a road schedule that builds upon Schedule 12: Road Network of the City's Official Plan. Roads shall generally be designed and built-in accordance with the Complete Streets Framework of the Transportation Master Plan, standards outlined in the policies of the Linear Design and Construction Manuals, and the Official Plan.

The active transportation network shall be designed in accordance with the approved Transportation Master Plan and Schedule 11: Bikeways and Trails Network Plan of the Official Plan. The City's approved Bikeway and Trail Network Plan passes through parks and open spaces wherever possible, and aligns within the road right-of-way only where necessary to connect the network, and where fully-separated

facilities in the boulevard are possible. The cycling network is within the road right-of-way. Active Transportation network connections must follow the design guidelines stated in the City's Complete Street Framework in the Transportation Master Plan.

Comprehensive Block Plan

The submission of a Comprehensive Block Plan will be informed by supporting studies required as part of the Block Servicing Strategy and will include both a Conceptual Master Plan and Block Plan Document. The Conceptual Master Plan should detail public and private design elements including, but not limited to:

- Proposed residential, commercial and employment areas;
- Neighbourhood Centres and Corridors;
- The creation of Neighbourhoods within the Block;
- Conceptual building siting;
- Integration of the Natural Heritage System;
- Sustainability;
- Proposed parks and open space network;
- New community facilities and institutional uses;
- Roads and active transportation network; and
- Preliminary servicing considerations.

Comprehensive Block Plan components:

Vision and Purpose

The Block Plan Document should provide an overview of the Conceptual Master Plan and an explanation of the vision and purpose of the Block Plan.

Background and Existing Conditions

A brief description and analysis of the existing Block Plan area and surrounding context should be provided in the Block Plan Document. This should include an inventory of existing conditions and physical features of the site and surrounding lands, including but not limited to:

- Natural heritage features, topography and vegetation;
- Any existing buildings and structures within the area;

- Views and vistas to and from the area;
- Existing or planned landmarks or gateways;
- Existing or planned transportation networks, including vehicular, cycling, pedestrian and transit;
- Existing infrastructure utilities including telecom, electrical, natural gas;
- Existing open space linkages; and
- Any connections or interfaces with adjacent areas.

City Policy and Design Context

A Block Plan should be designed in accordance with the City's Official Plan and Urban Design Manual. These documents should be read in their entirety, with specific policies and guidance applied to the development of a Block Plan area where applicable. The Block Plan Document should provide a description of the overall character of the proposed development and identify conformity with the planning context for the area. The Block Plan should be designed to foster a distinct community identity and purpose for each Block Plan area which is to be developed in accordance with specific direction for Brantford's Designated Greenfield Areas. This direction is provided within:

- Section 5.2: Neighbourhoods of the City's Official Plan, which includes policy direction for Residential Areas, Neighbourhood Centres, Neighbourhood Corridors, Transitional Residential Areas, and Suburban Residential Areas;
- Section 5.3: Strategic Growth Areas of the City's Official Plan, which includes policy direction for the Intensification Corridor Designation; and
- Section 2: Urban Structure of the City's Urban Design Manual, which outlines the planned vision and key directions for Residential Areas, Neighbourhood Centres, Neighbourhood Corridors and Intensification Corridors.

Block Plan Design and Development Considerations

Both the Conceptual Master Plan and Block Plan Document should illustrate urban design and development considerations for elements within the private and public realm of each Block Plan area. Written descriptions along with images and graphics within the Block Plan Document should provide a basis for the vision of the community and detailed rationale for the design of the proposed development. The following should be included and graphically shown within a Conceptual Master Plan, and the Block Plan Document should explain how each component has been addressed:

Streets and Blocks

- Configuration of blocks and future lots
- Pedestrian and vehicle linkages to adjacent areas, including streets, multipurpose pathways and trails
- Layout and design of development parcels

Public Realm – Streetscape Design

- Streetscape Typologies for:
    - o Neighbourhood Corridors
    - o Neighbourhood Centres o Collector Roads
    - o Local Roads o Lanes o Special Streetscapes
- Existing or new neighbourhood focal points and/or landmarks

Land Use Mix & Distribution

- Distribution of density and land uses that meet the required Block Plan area density target as outlined within the Official Plan
- Mix of housing types and densities
- Distribution and range of employment uses
- Distribution and range of commercial and retail areas
- Identification of mixed use areas
- Appropriate intensification within Neighbourhood Centres and Corridors

Built Form Design and Site Planning

- Site analysis and building types
- Residential building types
- Mixed use and non-residential areas
- Public buildings and institutions

Natural Heritage System

- As determined by the Block Servicing Strategy, the following should also be included within the Conceptual Master Plan:
    - o Boundaries of the Natural Heritage System
    - o Location of natural features including mature trees and vegetation
    - o Strategies to enhance and protect existing Natural Heritage

Parks, Open Spaces, and Community Uses

- Parkland dedication strategy
- Location, orientation, and size of proposed parks, open spaces, and the trail system

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- Future public destinations including schools, community facilities, and institutional uses
- Emergency service buildings including fire, police, and emergency medical services
- Public Art and the provision of other Community Benefits

Transportation Network and Servicing

- As determined by the Block Servicing Strategy, the following should also be included within the Conceptual Master Plan:
    - o Proposed active transportation network, including public sidewalks, bike lanes and trails, walkways through planned parks, and accessible open spaces including midblock connections
    - o Proposed transportation and transit network, including new road pattern and key transit areas
    - o Interconnectivity of the transit network and the off-road trails system
    - o Details for the provision of water, sanitary trunks and sub-trunks
    - o Stormwater management facilities including location and area requirements
    - o Infrastructure utilities including gas, electricity and telecom

Other Uses/Considerations

- Strategies to apply sustainable best practices
- Cultural heritage resources and strategies to protect them
- Potential views and vistas in the development of built form and open spaces
- How the proposed development will influence and integrate with future development
- Phasing of development including all relevant information required to evaluate the phasing plan

Deliverables:

A complete submission will consist of the following:

1. A signed letter of authorization from the landowner(s) of the Block Plan area for applications submitted by an agent;

2. A cover letter that includes: a contact name, address, email and phone number, site addresses (street and number) and legal addresses within the Block Plan area, and date of submission;

3. A completed Block Plan application form and fee provided in accordance with the Development Planning Fee Schedule;

4. Two (2) hard copies and one digital PDF copy of the Terms of Reference.

APPENDIX C

Field Survey Chronology

Appendix C - Field Survey Chronology

Date	Staff	Task	Total Hours (person hours)	Coverage / Units	Weather Conditions
2018					
August 23, 2018	MD, SL	SAR Screening / General Wildlife Survey	9	Entire Study Area, with exception of hedgerow along western limits	Air Temp: 25C; Sky Code: 0; Wind Scale: 2-3
August 30, 2018	CL	Aquatic Habitat Assessment	5	Entire Study Area	N/A
September 7, 2018	JM, LW	ELC and Botanical Inventory	14	Entire Study Area	N/A
September 7, 2018	JM, LW	Wetland delineation	14	Within or adjacent to development envelope	N/A
October 15, 2018	JM, LW	ELC and Botanical Inventory	14	Entire Study Area	N/A
October 23, 2018	JM	Butternut DNA Assessment	2	Two Butternut on west hedgerow	N/A
2019					
March 21, 2019	SL	Aquatic habitat Assessment	4	Entire Study Area	N/A
April 22, 2019	MD, CB	Amphibian Calling Survey - Round 1	3.5	Stations 1-7	Air Temp - Start: 12C, End: 9C; RH: 67-82%; Sky Code: 1-0; Wind Scale: 1-1
April 30, 2019	MD	SAR Bat Cavity Tree / Habitat Assessment (Leaf-off), and spring season general wildlife	5.5	Throughout Study Area, targeting hedgerows and isolated trees where tree removals are proposed	Air Temp - Start: 5C, End: 8C; Sky Code: 2-2; Wind Scale: 1-1
May 16, 2019	MD, CB	Amphibian Calling Survey - Round 2	2.5	Stations 1-7	Air Temp - Start: 13C, End: 13C; RH: 70-75%; Sky Code: 2-2; Wind Scale: 1-2
May 27, 2019	LW	Botanical Inventory, Incidental wildlife / habitat assessment	6.5	All	Air Temp - Start: 15C, End: 20C; Sky Code: 0-1; Wind Scale: 1-2
June 11, 2019	MD	Breeding Bird and General Wildlife Survey - Round 1	5	Entire Study Area	Air Temp - Start: 8C, End: 19C; Sky Code: 0-0; Wind Scale: 2-3
June 25, 2019	MD, CB	Amphibian Calling Survey - Round 3	3	Stations 1-7	Air Temp - Start: 22C, End: 19C; RH: 81-93%; Sky Code: 0-0; Wind Scale: 1-2
June 27, 2019	MD	Breeding Bird and General Wildlife Survey - Round 2	4.5	Entire Study Area	Air Temp - Start: 16C, End: 24C; Sky Code: 1-1; Wind Scale: 0-1
July 5, 2019	SL	Aquatic Habitat Assessment	2	Aquatic Features A, B and C	N/A
July 23, 2019	JM	Butternut Health Assessment	4.25	Identified trees	N/A
2023					
October 24, 2023	MD	Monarch Habitat Assessment	4	Entire Study Area	Air Temp - Start: 18C, End: 20C; Sky Code: 1-1; Wind Scale: 2-2
Total # field dates	17				
Total # hours			**98.75**		

APPENDIX D

Vegetation and Flora

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC[1]	CW[1]	OWES WETLAND PLANT LIST[2]	GRANK[3]	SRANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	PHYSIOLOGY/HABIT[1]	BRANT COUNTY (Oldham 2017)[8]	NATIVE STATUS[9]	CUM/HR	Unit 1-CUW1	Unit 2-FODM5-11	Unit 3-FOD7	Unit 4-FOD4-2	Unit 5-FOD5-3	Unit 6-FOD4	Unit 7 - MAM2-9	Unit 8-MAM2-2	Unit 9-MAS2-1 - #1	Unit 10-MAS2-1 - #2	Unit 11-CUW1	Unit 12-CUT1-4
Acer negundo	Manitoba Maple	Sapindaceae	0	-2	X	G5	S5					Tree	C	N	X	X		X		X				X		X	
Acer nigrum	Black Maple	Sapindaceae	7	3		G5	S4?					Tree	U	N		X				X							
Acer rubrum	Red Maple	Sapindaceae	4	0	X	G5	S5					Tree	C	N		X		X		X							
Acer saccharum	Sugar Maple	Sapindaceae	4	3		G5	S5					Tree	C	N		X				X							
Agrimonia gryposepala	Hooked Agrimony	Rosaceae	2	2		G5	S5					Forb	C	N	X		X				X						
Alisma triviale	Northern Water-plantain	Alismataceae				G5	S5					Forb	X	N											X		
Alliaria petiolata	Garlic Mustard	Brassicaceae	*	0		GNR	SNA					Forb	IX	I	X	X	X		X	X						X	
Alnus glutinosa	European Black Alder	Betulaceae	*	-2	X	GNR	SNA					Tree	IX	I				X									
Amaranthus sp.	Amaranth sp.	Amaranthaceae										Forb			X	X											
Ambrosia artemisiifolia	Common Ragweed	Asteraceae	0	3		G5	S5					Forb	C	N	X	X											
Ambrosia trifida	Great Ragweed	Asteraceae	0	-1		G5	S5					Forb	C	N				X			X						
Amelanchier sp.	Serviceberry sp.	Rosaceae										Tree								X							
Amphicarpaea bracteata	American Hog Peanut	Fabaceae	4	0	X	G5	S5					Forb	C	N				X									
Anemone virginiana var. virginiana	Tall Anemone	Ranunculaceae	4	5		G5T5	S5?					Forb	C	N			X										
Arctium lappa	Great Burdock	Asteraceae	*	0		GNR	SNA					Forb	IX	I	X	X		X									
Arctium minus	Common Burdock	Asteraceae	*	5		GNR	SNA					Forb	IX	I	X											X	
Arisaema triphyllum	Jack-in-the-pulpit	Araceae	5	-2	X	G5	S5					Forb	C	N		X					X						
Asclepias syriaca	Common Milkweed	Apocynaceae	0	5		G5	S5					Forb	C	N	X	X		X									
Bidens cernua	Nodding Beggarticks	Asteraceae	2	-5	X	G5	S5					Forb	C	N				X				X	X	X	X		
Bidens frondosa	Devil's Beggarticks	Asteraceae	3	-3	X	G5	S5					Forb	C	N			X	X									
Bidens tripartita	Three-parted Beggarticks	Asteraceae	4	-3	X	GNR	S5					Forb	C	N										X			
Bidens vulgata	Tall Beggarticks	Asteraceae	5	-3	X	G5	S5					Forb		N	X								X	X	X		
Boehmeria cylindrica	False Nettle	Urticaceae	4	-5	X	G5	S5					Forb	C	N				X									
Bromus inermis	Smooth Brome	Poaceae	*	5		G5TNR	SNA					Grass	IX	I	X	X		X								X	
Calystegia sepium	Hedge False Bindweed	Convolvulaceae	2	0								Forb	C	N	X											X	
Carex communis	Fibrous-root Sedge	Cyperaceae	6	5		G5	S5					Sedge	X	N			X										
Carex cristatella	Crested Sedge	Cyperaceae	3	-4	X	G5	S5					Sedge	C	N										X			
Carex leptonervia	Finely-nerved Sedge	Cyperaceae	5	0		G5	S5					Sedge	X	N		X	X			X							
Carex retrorsa	Retrorse Sedge	Cyperaceae	5	-5	X	G5	S5					Sedge	C	N											X		
Carex rosea	Rosy Sedge	Cyperaceae	5	5		G5	S5					Sedge	C	N			X	X		X	X						
Carex sparganioides	Burreed Sedge	Cyperaceae	5	0		G5	S4S5					Sedge	C	N		X	X										
Carpinus caroliniana	Blue-beech	Betulaceae	6	0	X	G5	S5					Tree	C	N		X					X						
Carya cordiformis	Bitternut Hickory	Juglandaceae	6	0		G5	S5					Tree	C	N	X	X			X	X	X						
Carya ovata	Shagbark Hickory	Juglandaceae	6	3	X	G5	S5					Tree	C	N	X					X							
Chelone glabra	White Turtlehead	Plantaginaceae	7	-5	X	G5	S5					Forb	C	N				X									
Chenopodium album	Common Lamb's-quarters	Amarathaceae	*	1		G5	SNA					Forb	IX	I	X	X											
Cicuta maculata var. maculata	Spotted Water-hemlock	Apiaceae	6	-5	X	G5T5	S5					Forb	C	N				X									
Circaea canadensis	Broad-leaved Enchanter's Nightshade	Onagraceae	3	3		G5T5	S5					Forb	C	N	X		X			X							
Cirsium arvense	Canada Thistle	Asteraceae	*	3		GNR	SNA					Forb	IX	I	X	X											
Cirsium vulgare	Bull Thistle	Asteraceae	*	4		GNR	SNA					Forb	IX	I	X	X											
Claytonia virginica	Eastern Spring Beauty	Portulacaceae	5	3	X	G5	S5					Forb	C	N		X											
Clinopodium vulgare	Wild Basil	Lamiaceae	4	5		G5	S5					Forb	C	N	X		X										
Cornus racemosa	Grey Dogwood	Cornaceae	2	-2	X	G5?	S5					Shrub	C	N	X	X	X	X		X							X
Crataegus monogyna	English Hawthorn	Rosaceae	*	5		G5	SNA					Tree	IX	I		X											
Crataegus sp.	Hawthorn sp.	Rosaceae										Tree			X	X	X									X	X
Cynoglossum officinale	Common Hound's-tongue	Boraginaceae	*	5		GNR	SNA					Forb		I		X	X										
Cyperus esculentus	Perennial Yellow Flatsedge	Cyperaceae	1	-3	X	G5	S5					Sedge	U	N	X									X	X		
Dactylis glomerata	Orchard Grass	Poaceae	*	3		GNR	SNA					Grass	IX	I	X	X		X			X						
Daucus carota	Wild Carrot	Apiaceae	*	5		GNR	SNA					Forb	IX	I	X	X										X	
Dipsacus fullonum	Common Teasel	Caprifoliaceae	*	5		GNR	SNA					Forb	IX	I	X	X		X									
Echinochloa sp.	Barnyard Grass	Poaceae										Grass			X			X									
Echinocystis lobata	Wild Cucumber	Cucurbitaceae	3	-2	X	G5	S5					Vine	C	N		X		X							X		
Elaeagnus umbellata	Autumn Olive	Elaeagnaceae	*	3		GNR	SNA					Shrub	IX	I	X	X											
Elymus sp.	Wildrye sp.	Poaceae										Grass						X									

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC[1]	CW[1]	OWES WETLAND PLANT LIST[2]	GRANK[3]	SRANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	PHYSIOLOGY/HABIT[1]	BRANT COUNTY (Oldham 2017)[8]	NATIVE STATUS[9]	CUM/HR	Unit 1-CUW1	Unit 2-FODM5-11	Unit 3-FOD7	Unit 4-FOD4-2	Unit 5-FOD5-3	Unit 6-FOD4	Unit 7 - MAM2-9	Unit 8-MAM2-2	Unit 9-MAS2-1 - #1	Unit 10-MAS2-1 - #2	Unit 11-CUW1	Unit 12-CUT1-4
Epifagus virginiana	Beechdrops	Orobanchaceae	6	5		G5	S5					Forb	U	N			X										
Epilobium ciliatum ssp. ciliatum	Northern Willowherb	Onagraceae	3	3	X	G5T5	S5					Forb	C	N									X	X	X		
Epilobium coloratum	Purple-veined Willowherb	Onagraceae	3	-5	X	G5	S5					Forb	R	N				X									
Equisetum arvense	Field Horsetail	Equisetaceae	0	0	X	G5	S5					Fern	C	N	X			X	X						X		
Equisetum hyemale	Common Scouring-rush	Equisetaceae	2	-2	X	G5	S5					Fern	C	N			X										
Erigeron annuus	Annual Fleabane	Asteraceae	0	1		G5	S5					Forb	C	N			X	X									
Erigeron canadensis	Canada Horseweed	Asteraceae	0	1		G5	S5					Forb	C	N	X	X										X	
Erythronium americanum	Yellow Trout Lily	Liliaceae	5	5		G5	S5					Forb		N		X	X			X							
Euonymus obovatus	Running Strawberry-bush	Celastraceae	6	5		G5	S4					Shrub	C	N		X	X	X		X							
Euthamia graminifolia	Grass-leaved Goldenrod	Asteraceae	2	-2		G5	S5					Forb	C	N	X			X									
Eutrochium maculatum var. macula	Spotted Joe Pye Weed	Asteraceae	3	-5	X	G5T5	S5					Forb	C	N				X									
Fagus grandifolia	American Beech	Fagaceae	6	3		G5	S4					Tree	C	N			X			X							
Fragaria vesca ssp. vesca	Woodland Strawberry	Rosaceae	*			G5T4T5	SNA					Forb	U	I		X	X			X							
Fragaria virginiana ssp. virginiana	Wild Strawberry	Rosaceae	2	1		G5T5	SU					Forb	C	N	X		X										
Fraxinus americana	White Ash	Oleaceae	4	3		G5	S4					Tree	C	N	X		X		X		X						
Fraxinus nigra	Black Ash	Oleaceae	7	-4	X	G5	S4					Tree	U	N				X									
Fraxinus pennsylvanica	Green Ash	Oleaceae	3	-3	X	G5	S4					Tree	C	N	X			X									X
Galeopsis tetrahit	Common Hemp-nettle	Lamiaceae	*	5		GNR	SNA					Forb	IR	I				X									
Galium palustre	Common Marsh Bedstraw	Rubiaceae	5	-5	X	G5	S5					Forb	X	N				X							X		
Geranium maculatum	Spotted Geranium	Geraniaceae	6	3		G5	S5					Forb	C	N			X			X							
Geranium robertianum	Herb-Robert	Geraniaceae	*	5		G5	S5					Forb	C	I	X		X										
Geum canadense	Canada Avens	Rosaceae	3	0	X	G5	S5					Forb	C	N				X									
Geum fragarioides	Barren Strawberry	Rosaceae	5	5		G5	S5					Forb	X	N			X										
Geum sp.	Avens sp.	Rosaceae										Forb				X	X				X						
Geum urbanum	Wood Avens	Rosaceae	*	5		G5	SNA					Forb	IX	I				X									
Geum x catlingii	Catling's Avens	Rosaceae	*			GNA	SNA					Forb		I	X			X									
Glechoma hederacea	Ground-ivy	Lamiaceae	*	3		GNR	SNA					Forb	IX	I				X									
Hackelia virginiana	Virginia Stickseed	Boraginaceae	5	1		G5	S5					Forb	U	N	X	X				X							
Heracleum maximum	American Cow Parsnip	Apiaceae	3	-3	X	G5	S5					Forb	X	N				X		X							
Hesperis matronalis	Dame's Rocket	Brassicaceae	*	5		G4G5	SNA					Forb	IX	I	X	X	X	X			X						
Hydrophyllum virginianum	Virginia Waterleaf	Boraginaceae	6	-2		G5	S5					Forb	C	N	X	X	X	X		X	X						
Impatiens capensis	Spotted Jewelweed	Balsaminaceae	4	-3	X	G5	S5					Forb	C	N		X		X									
Impatiens glandulifera	Purple Jewelweed	Balsaminaceae	*	-3		GNR	SNA					Forb		I				X									
Juglans cinerea	Butternut	Juglandaceae	6	2		G4	S2?	END	END	1	END	Tree	C	N		X										X	
Juglans nigra	Black Walnut	Juglandaceae	5	3		G5	S4?					Tree	C	N	X	X	X	X			X					X	
Juncus tenuis	Path Rush	Juncaceae	0	0		G5	S5					Rush	C	N		X											
Lactuca sp.	Lettuce sp.	Asteraceae										Forb									X						
Leersia oryzoides	Rice Cutgrass	Poaceae	3	-5	X	G5	S5					Grass	C	N							X						
Lemna minor	Small Duckweed	Araceae	2	-5	X	G5	S5					Forb	X	N												X	
Lemna trisulca	Star Duckweed	Araceae	4	-5	X	G5	S5					Forb	X	N												X	
Leonurus cardiaca	Common Motherwort	Lamiaceae	*	5		GNR	SNA					Forb	IX	I	X	X											
Ligustrum vulgare	European Privet	Oleaceae	*	1		GNR	SNA					Shrub	IX	I							X						
Linaria vulgaris	Butter-and-eggs	Plantaginaceae	*	5		GNR	SNA					Forb	IX	I	X			X									
Lobelia inflata	Indian Tobacco	Campanulaceae	3	4		G5	S5					Forb	C	N			X										
Lycopus americanus	American Water-horehound	Lamiaceae	4	-5	X	G5	S5					Forb	C	N												X	
Lythrum salicaria	Purple Loosestrife	Lythraceae	*	-5	X	G5	SNA					Forb	IX	I				X					X				
Maianthemum racemosum	Large False Solomon's-seal	Asparagaceae	4	3		G5	S5					Forb	C	N						X							
Malus pumila	Common Apple	Rosaceae	*	5		G5	SNA					Tree	IX	I	X	X											
Matricaria chamomilla	Wild Chamomile	Asteraceae	*	5		GNR	SNA					Forb	IX	I		I											
Medicago lupulina	Black Medick	Fabaceae	*	1		GNR	SNA					Forb	IX	I	X			X									
Melilotus sp.	Sweet-clover sp.	Fabaceae										Forb						X									
Nasturtium sp.	Watercress sp.	Brassicaceae		0								Forb												X			
Onoclea sensibilis	Sensitive Fern	Onocleaceae	4	-3	X	G5	S5					Fern	C	N											X		
Ostrya virginiana	Eastern Hop-hornbeam	Betulaceae	4	4		G5	S5					Tree	C	N			X			X							

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC[1]	CW[1]	OWES WETLAND PLANT LIST[2]	GRANK[3]	SRANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	PHYSIOLOGY/HABIT[1]	BRANT COUNTY (Oldham 2017)[8]	NATIVE STATUS[9]	CUM/HR	Unit 1-CUW1	Unit 2-FODM5-11	Unit 3-FOD7	Unit 4-FOD4-2	Unit 5-FOD5-3	Unit 6-FOD4	Unit 7 - MAM2-9	Unit 8-MAM2-2	Unit 9-MAS2-1 - #1	Unit 10-MAS2-1 - #2	Unit 11-CUW1	Unit 12-CUT1-4
Oxalis stricta	European Wood-sorrel	Oxalidaceae	0	3		G5	S5					Forb	C	N	X	X					X						
Parthenocissus vitacea	Thicket Creeper	Vitaceae	3	3		G5	S5					Vine	C	N		X				X	X						
Persicaria hydropiper	Marshpepper Smartweed	Polygonaceae	4	-5	X	GNR	SNA					Forb	IX	I				X							X		
Persicaria lapathifolia	Pale Smartweed	Polygonaceae	2	-4	X	G5	S5					Forb	C	N				X									
Persicaria virginiana	Virginia Smartweed	Polygonaceae	6	0		G5	S4					Forb	X	N				X			X						
Phalaris arundinacea var. arundina	Reed Canarygrass	Poaceae	0	-4	X	GNR	S5					Grass	C	N				X					X	X			
Phleum pratense	Common Timothy	Poaceae	*	3		GNR	SNA					Grass	IX	I	X	X											
Phragmites australis ssp. australis	European Reed	Poaceae	*	-4	X	G5T5	SNA					Grass	IC	N	X									X			
Pilea sp.	Clearweed sp.	Urticaceae										Forb				X											
Pinus strobus	Eastern White Pine	Pinaceae	4	3	X	G5	S5					Tree	C	N		X											
Plantago rugelii	Rugel's Plantain	Plantaginaceae	1	0		G5	S5					Forb	C	N				X									
Poa palustris	Fowl Bluegrass	Poaceae	5	-4	X	G5	S5					Grass	C	N				X									
Poa pratensis ssp. pratensis	Kentucky Bluegrass	Poaceae	0	1		G5T5	SNA					Grass	IX	N	X	X		X			X						
Podophyllum peltatum	May-apple	Berberidaceae	5	3		G5	S5					Forb	C	N		X	X			X							
Polygonum aviculare	Prostrate Knotweed	Polygonaceae	*	1								Forb	IX	I	X			X									
Populus grandidentata	Large-toothed Aspen	Salicaceae	5	3		G5	S5					Tree	U	N						X							
Prunella vulgaris ssp. lanceolata	Lance-leaved Self-heal	Lamiaceae	5	5	X	G5T5	S5					Forb	C	N	X	X											
Prunus serotina	Black Cherry	Rosaceae	3	3		G5	S5					Tree	C	N	X	X	X		X	X							
Prunus virginiana	Chokecherry	Rosaceae	2	1		G5	S5					Shrub		N		X	X		X								
Quercus ellipsoidalis	Northern Pin Oak	Fagaceae	9	5		G5	S3					Tree	U	N		X											
Quercus macrocarpa	Bur Oak	Fagaceae	5	1	X	G5	S5					Tree	C	N	X	X	X	X									
Quercus rubra	Northern Red Oak	Fagaceae	6	3		G5	S5					Tree	C	N	X	X				X							
Ranunculus hispidus var. caricetor	Northern Swamp Buttercup	Ranunculaceae	5	-5	X	G5T5	S5					Forb	C	N				X									
Ranunculus sceleratus var. scelera	Cursed Buttercup	Ranunculaceae	2	-5	X	G5T5	SNA					Forb		N				X							X	X		X
Rhamnus cathartica	European Buckthorn	Rhamnaceae	*	3	X	GNR	SNA					Tree	IX	I	X	X	X	X	X								
Ribes cynosbati	Eastern Prickly Gooseberry	Grossulariaceae	4	5		G5	S5					Shrub	C	N		X											
Rosa multiflora	Multiflora Rose	Rosaceae	*	3		GNR	SNA					Shrub	IX	I	X		X		X								
Rubus allegheniensis	Alleghany Blackberry	Rosaceae	2	2		G5	S5					Shrub	X	N		X	X										
Rubus idaeus ssp. strigosus	North American Red Raspberry	Rosaceae	0	-2		G5T5	S5					Shrub	C	N	X	X		X		X							
Rubus occidentalis	Black Raspberry	Rosaceae	2	5		G5	S5					Shrub	X	N			X		X	X	X						
Rumex crispus	Curly Dock	Polygonaceae	*	-1	X	GNR	SNA					Forb	IX	I	X			X					X				
Rumex obtusifolius	Bitter Dock	Polygonaceae	*	-3	X	GNR	SNA					Forb	IX	I				X									
Salix amygdaloides	Peach-leaved Willow	Salicaceae	6	-3	X	G5	S5					Tree	X	N													
Salix eriocephala	Cottony Willow	Salicaceae	4	-3	X	G5	S5					Shrub	X	N				X									
Salix euxina	Crack Willow	Salicaceae	*			GNR	SNA					Tree	IX	I	X			X									
Salix interior	Sandbar Willow	Salicaceae	3	-5	X	GNR	S5					Shrub	C	N				X									
Sanguinaria canadensis	Bloodroot	Papaveraceae	5	4		G5	S5					Forb	C	N			X			X							
Scirpus sp.	Bulrush sp.	Cyperaceae										Sedge												X			
Setaria sp.	Foxtail sp.	Poaceae										Grass				X											
Solanum dulcamara	Climbing Nightshade	Solanaceae	*	0	X	GNR	SNA					Forb	IX	I	X			X	X					X	X		
Solanum ptychanthum	Eastern Black Nightshade	Solanaceae	3	5		G5	S5					Forb	C	N		X									X		
Solidago altissima var. altissima	Eastern Tall Goldenrod	Asteraceae	1	3		GNR	S5					Forb	C	N	X	X		X			X						X
Solidago caesia	Blue-stemmed Goldenrod	Asteraceae	5	3		G5	S5					Forb	C	N			X										
Solidago canadensis var. canaden	Canada Goldenrod	Asteraceae	1	3		G5T5	S5					Forb	C	N		X				X							
Solidago flexicaulis	Zigzag Goldenrod	Asteraceae	6	3		G5	S5					Forb	C	N			X										
Sonchus arvensis ssp. arvensis	Field Sow-thistle	Asteraceae	*	1		GNRTNR	SNA					Forb	IX	I		X											
Symphyotrichum lateriflorum var. la	Calico Aster	Asteraceae	3	-2	X	G5T5	S5					Forb	C	N		X				X	X						
Symphyotrichum novae-angliae	New England Aster	Asteraceae	2	-3		G5	S5					Forb	C	N	X	X		X									
Symphyotrichum puniceum	Purple-stemmed Aster	Asteraceae	6	-5	X	G5	S5					Forb	C	N										X			X
Symphyotrichum urophyllum	Arrow-leaved Aster	Asteraceae	6	5		G4G5	S4					Forb	C	N	X		X	X									
Taraxacum officinale	Common Dandelion	Asteraceae	*	3		G5	SNA					Forb	IX	I	X	X		X									
Thalictrum dioicum	Early Meadow-rue	Ranunculaceae	5	2		G5	S5					Forb	C	N			X										
Tilia americana	Basswood	Malvaceae	4	3		G5	S5					Tree	C	N	X	X	X										
Torilis japonica	Erect Hedge-parsley	Apiaceae	*	5		GNR	SNA					Forb	IX	I	X	X											

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC[1]	CW[1]	OWES WETLAND PLANT LIST[2]	GRANK[3]	SRANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	PHYSIOLOGY/HABIT[1]	BRANT COUNTY (Oldham 2017)[8]	NATIVE STATUS[9]	CUM/HR	Unit 1-CUW1	Unit 2-FODM5-11	Unit 3-FOD7	Unit 4-FOD4-2	Unit 5-FOD5-3	Unit 6-FOD4	Unit 7 - MAM2-9	Unit 8-MAM2-2	Unit 9-MAS2-1 - #1	Unit 10-MAS2-1 - #2	Unit 11-CUW1	Unit 12-CUT1-4
Toxicodendron radicans var. rydbe	Western Poison Ivy	Anacardiaceae	0	0		G5	S5					Vine	X	N	X	X	X		X								
Trifolium hybridum	Alsike Clover	Fabaceae	*	1		GNR	SNA					Forb		I	X			X									
Trillium grandiflorum	White Trillium	Melanthiaceae	5	5		G5	S5					Forb	C	N						X							
Triosteum aurantiacum	Orange-fruit Horse-gentian	Caprifoliaceae	7	5		G5	S4S5					Forb	U	N			X										
Tussilago farfara	Coltsfoot	Asteraceae	*	3	X	GNR	SNA					Forb	IX	I	X			X									
Typha angustifolia	Narrow-leaved Cattail	Typhaceae	3	-5	X	G5	SNA					Forb	IX	I										X	X		
Typha latifolia	Broad-leaved Cattail	Typhaceae	3	-5	X	G5	S5					Forb	C	N											X		
Ulmus rubra	Slippery Elm	Ulmaceae	6	0		G5	S5					Tree	X	N		X	X		X	X	X						
Urtica dioica ssp. gracilis	Slender Stinging Nettle	Urticaceae	2	-1	X	G5T5	S5					Forb	C	N		X		X							X		
Verbascum thapsus	Common Mullein	Scrophulariaceae	*	5		GNR	SNA					Forb	IX	I	X	X											
Verbena hastata	Blue Vervain	Verbenaceae	4	-4	X	G5	S5					Forb	C	N									X				
Verbena urticifolia	White Vervain	Verbenaceae	4	-1	X	G5	S5					Forb	C	N		X		X									
Veronica anagallis-aquatica	Water Speedwell	Plantaginaceae	*	-5	X	G5	SNA					Forb	IX	I				X									
Veronica officinalis	Common Speedwell	Plantaginaceae	*	5		G5	SNA					Forb	IX	I			X										
Viburnum opulus ssp. opulus	Cranberry Viburnum	Adoxaceae	*	0		GNR	SNA					Shrub	IX	I	X		X		X								
Viburnum rafinesquianum	Downy Arrowwood	Adoxaceae	7	5		G5	S5					Shrub	X	N			X										
Viola sp.	Violet sp.	Violaceae										Forb			X		X			X	X						
Vitis riparia	Riverbank Grape	Vitaceae	0	-2		G5	S5					Vine	C	N	X	X	X	X			X			X	X		
Xanthium strumarium	Rough Cockleburr	Asteraceae	2	0	X	G5	S5					Forb	C	N				X									

Plant List Legend

Scientific Name, Common Name and Family
Based on Vascan (Dec. 2017) and NHIC (Apr. 18, 2017)

Vascan: http://data.canadensys.net/vascan/search
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

[1] Coefficient of Conservatism, Coefficient of Wetness, Weediness, and Physiology/Habit
Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.
CW: Coefficient of Wetness. Value between 5 and −5. A value of −5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.
Weediness: Weediness Score, assigned to all non-native species and range from -1 (low impact of the species on natural areas) to -3 (high impact of the species on natural areas).
Habit: Physiology/Habit. The growth form of the species (e.g. forb, shrub, tree).

[2] OWES Wetland Plant List
Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Southern Manual. 3rd Edition, Version 3.3
Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Northern Manual. 1st Edition, Version 1.3

Species presence or absence on the Ontario Wetland Evaluation System (OWES) Wetland Plant List.
Codes are defined as follows:
X: Present on the list

[3] G-Rank (Global)
Global Status from Nature Serve (via NHIC, 2017)
NS: http://explorer.natureserve.org/
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

Global (G) Conservation Status Ranks
G1: Extremely rare – usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2: Very rare – usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3: Rare to uncommon – usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4: Common – usually more than 100 occurrences; usually not susceptible to immediate threats.
G5: Very common – demonstrably secure under present conditions.
G#G#: Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR: Unranked – Global rank not yet assessed
GNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
?: Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.
Q: Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.
C: Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct" in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).

[4] S-Ranks (Provincial)
Provincial Status from the NHIC (2017)
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities.

These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1: Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2: Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3: Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5: Secure – Common, widespread, and abundant in the nation or state/province.
S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX: Presumed Extirpated – Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH: Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
SE: Species is considered exotic in Ontario
SNR: Unranked – Nation of state/province conservation status not yet assessed.
SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
?: Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

[5] COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
The federal review process is implemented by COSEWIC (Status as of Feb. 2018) The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.

https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

EXT: Extinct – A species that no longer exists.
EXP: Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.
END: Endangered – A species facing imminent extirpation or extinction.
THR: Threatened – A species likely to become endangered if limiting factors are not reversed.
SC: Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR: Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD: Data Deficient (formerly Indeterminate) – Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

Implied COSEWIC Status Notations (Status Due to Taxonomic Relationships)
value (Flagged Value) – The taxon itself is not named in the Canadian Species at Risk list, however, it does have status as a result of its taxonomic relationship to a named entity. For example, if a species has a COSEWIC status of "threatened", then by default, all of its recognized subspecies that occur in Canada also have a threatened status. The subspecies in this example would have the value "T(2)" under COSEWIC. Likewise, if all of a species' infraspecific taxa occurring in Canada have the same COSEWIC status, then that status appears in the entry for the "full" species as well. In this case, if the species name is not mentioned in the Canadian Species at Risk list, the status appears with a flag (2) in NatureServe Explorer.
value, value: (Combination values with flags) – The taxon itself is not named in the Canadian Species at Risk list, however, all of its infraspecific taxa occurring in Canada do have status but two or more of the taxa do not have the same status. In this case, a combination of statuses shown with a flag (7) indicates the statuses that apply to infraspecific taxa or populations within this taxon.
PS: Indicates "partial status" – in only a portion of the species' range in Canada. Typically indicated for a "full' species where at least one but not all of a species' infraspecific taxa or populations has COSEWIC status.
PSvalue: Indicates "partial status" – status in only a portion of the species' range. The value of that status appears because the entity with status (usually a population defined by geopolitical boundaries within Canada) does not have an individual entry in NatureServe Explorer. Information about the entity with status can be found in reports for the associated species.

[6] SARA (Species at Risk Act) Status and Schedule
Federal status from the Government of Canada's Species at Risk Public Registry (Status as of Feb. 2018)
http://www.registrelep-sararegistry.gc.ca/

The Act establishes Schedule 1, as the official list of species at risk in Canada. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented.

EXT: Extinct – A species that no longer exists.
EXP: Extirpated – A species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END: Endangered – A species that is facing imminent extirpation or extinction.
THR: Threatened – A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC: Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern. Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Species at Risk.

[7] SARO (Species At Risk in Ontario)
Provincial status from MNRF (Status as of Feb. 2018)
https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Natural Resources and Forestry that assesses the status of species at risk of extinction.
EXT: Extinct – A species that no longer exists anywhere.
EXP: Extirpated – A species that no longer exists in the wild in Ontario but still occurs elsewhere.
END: Endangered – A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).

THR: Threatened – A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC: Special Concern (formerly Vulnerable) – A species with characteristics that make it sensitive to human activities or natural events.
NAR: Not at Risk – A species that has been evaluated and found to be not at risk.
DD: Data Deficient (formerly Indeterminate) – A species for which there is insufficient information for a provincial status recommendation.

[8] Regional Status

E: Extirpated native species
+ or I: Introduced species
X+: Introduced in municipality
SR: Sight record
LR: Literature record

Brant County
Oldham, Michael J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada and Ontario Ministry of Natural Resources and Forestry. Peterborough, ON. 132 pp.

Rankings are based on "previous lists, personal communications, and the author's knowledge of the Carolinian Zone flora."

Codes are defined as follows:
H: Historic. Native and no known records for at least 30 years.
R: Rare
U: Uncommon
C: Common
X: Present. Native but no status assigned because of lack of information, often due to confusion with similar species.
I: Introduced. A non-native (exotic) species that is established (or was formerly established) outside of cultivation.

[9]Native Status
Based on Vascan (Dec. 2017) and NHIC (Apr. 18, 2017)

Vascan: http://data.canadensys.net/vascan/search
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

Codes are defined as follows:
N = Native
I = Introduced

APPENDIX E

Breeding Bird Survey Results

Appendix E - Breeding Bird Survey Results

Common Name	Scientific Name	GRANK [1]	SRANK [2]	SARO (ESA) Status [3]	COSEWIC Status [4]	SARA Status [5]	SARA Schedule [5]	Habitat Use [6]	Area Sensitive Birds - Ecoregion 7E [7]	Locally Significant (Hamilton) [8]	Protected Under MBCA	WSU 1 (Area 1)						WSU 2 (Area 2)												WSU 3 (Area 3)						WSU 4 (Forest/Creek)										WSU 5 (Hedgerows/Field)										Overall Study Area		Comments
												Round 1 - June 11, 2019		Round 2 -June 27, 2019		Round 1 and 2 (2019) - Overall		Incidental		Round 1 - June 11, 2019		Round 2 -June 27, 2019		Round 1 and 2 (2019) - Overall		Round 1 - June 11, 2019		Round 2 -June 27, 2019		Round 1 and 2 (2019) - Overall		Incidental			Round 1 - June 11, 2019		Round 2 -June 27, 2019		Round 1 and 2 (2019) - Overall		Incidental			Round 1 -June 11, 2019		Round 2 -June 27, 2019		Round 1 and 2 (2019) - Overall				
												Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	2018-09-07	2019-05-27	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	2018-08-23	2018-09-07	2019-05-27	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	2018-09-07	2019-05-27	Number	Breeding Evidence	Number	Breeding Evidence	Number	Breeding Evidence	Total Abundance	Highest Breeding Status	
BIRDS																																																				
American Crow	*Corvus brachyrhynchos*	G5	S5B					E			x																								2	S	2	T	2	PROB											**2**	**PROB**	
American Goldfinch	*Spinus tristis*	G5	S5B					E			x	1	S, A			1	PROB									1	S			1	POSS				2	S, P	3	T	3	PROB					4	S	4	POSS	**9**	**PROB**	Rail corridor (Area 2)
American Redstart	*Setophaga ruticilla*	G5	S5B					I		h	x																								2	S	2	T	2	PROB					2	S	2	POSS	**4**	**PROB**	Rail corridor (Area 2) (hedgerow)
American Robin	*Turdus migratorius*	G5	S5B					E			x	1	S	1	T, A	1	PROB			3	S	1	T	3	PROB	1	S	1	T	1	PROB				4	S, A	5	T	5	PROB			3	S	1	T	3	PROB	**13**	**PROB**	
Baltimore Oriole	*Icterus galbula*	G5	S4B					E			x									2	S			2	POSS										2	S, A			2	PROB					1	A	1	PROB	**5**	**PROB**	Rail corridor (Area 2)
Barn Swallow	*Hirundo rustica*	G5	S4B	THR	SC	THR	1				x							1	3	X	3	X	3	OBS	1	X			1	OBS																	**4**	**OBS**	Foraging in fields on property; Nesting confirmed in green barn (off property); non-active nests in shed/barn in Area 2.
Bank Swallow	*Riparia riparia*	G5	S4B	THR	SC	THR	1			h	x																								-	OBS			-	OBS									**-**	**OBS**	3 potential non-active nest holes were observed along creek bank - no individuals were observed
Black-billed Cuckoo	*Coccyzus erythropthalmus*	G5	S4B,SZN					I/E		h	x																								3	S	1	T	3	PROB									**3**	**PROB**	
Black-capped Chickadee	*Poecile atricapillus*	G5	S5					I/E			x	2	S	1	T	2	PROB									2	S			2	POSS				6	S, P	3	T	6	PROB					1	S	1	POSS	**11**	**PROB**	
Belted Kingfisher	*Megaceryle alcyon*	G5	S4B							h																								1				1	POSS									**1**	**POSS**	Incidental observation (vegetation surveys)
Brown-headed Cowbird	*Molothrus ater*	G5	S4B					E				1	S	1	T, A	1	PROB			1	S	3	T	3	PROB										1	S			1	POSS			1	S	2	T	2	PROB	**7**	**PROB**	
Blue Jay	*Cyanocitta cristata*	G5	S5					I/E						1	S	1	POSS			1	S			1	POSS	2	S	1	T	2	PROB				5	S	4	T	5	PROB									**9**	**PROB**	Rail corridor (Area 2), south of creek
Brown Thrasher	*Toxostoma rufum*	G5	S4B					E		h	x									1	S			1	POSS																			2	S, P	2	PROB	**3**	**PROB**	Rail corridor (Area 2), Hedgerow south of Area 1
Blue-winged Warbler	*Vermivora cyanoptera*	G5	S4B					E		h	x																								1	S			1	POSS									**1**	**POSS**	
Canada Goose	*Branta canadensis*	G5	S5					M/F			x																																1				1	OBS	**1**	**OBS**	Incidental observation (vegetation surveys)
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B					E			x	2	S			2	POSS																				2	S	2	POSS					7	S	7	POSS	**11**	**POSS**	
Chipping Sparrow	*Spizella passerina*	G5	S5B					E			x																																3	S, P	2	T	3	PROB	**3**	**PROB**	
Common Grackle	*Quiscalus quiscula*	G5	S5B					E												7	H	2	T	7	PROB	2	H	1	T	2	PROB				1	H			1	POSS			2	H	1	T	1	PROB	**11**	**PROB**	
Common Yellowthroat	*Geothlypis trichas*	G5	S5B					I/E			x	2	S	1	T	2	PROB																		2	S	4	T, A	4	PROB									**6**	**PROB**	Rail corridor (Area 1)
Downy Woodpecker	*Picoides pubescens*	G5	S5					I/E			x																								1	S	1	T	1	PROB									**1**	**PROB**	
Eastern Kingbird	*Tyrannus tyrannus*	G5	S4B					E			x			1	S	1	POSS																											1	H	1	POSS	**2**	**POSS**	Rail corridor (Area 2)
Eastern Towhee	*Pipilo erythrophthalmus*	G5	S4B					I/E		h	x	2	S	2	T	2	PROB																				1	S	1	POSS									**3**	**PROB**	
Eastern Wood-pewee	*Contopus virens*	G5	S4B	SC	SC	SC	1	I/E			x																								1	1	1	2	S	3	T	3	PROB									**3**	**PROB**	Riparian Forest south side of creek
European Starling	*Sturnus vulgaris*	G5	SNA					E												6	H			6	POSS																							**6**	**POSS**	
Field Sparrow	*Spizella pusilla*	G5	S4B					E			x	3	S	3	T	3	PROB																				1	S	1	T	1	PROB					1	S	1	POSS	**5**	**PROB**	Rail corridor (Area 2) (hedgerow), adjacent /offsite (Area 1)
Great Crested Flycatcher	*Myiarchus crinitus*	G5	S4B					I/E			x															1	S			1	POSS				2	S	1	T	2	PROB									**3**	**PROB**	
Gray Catbird	*Dumetella carolinensis*	G5	S4B					I/E			x	3	S, A	8	T, P	8	PROB			1	S			1	POSS										4	S	6	T, P	6	PROB					5	S, A	5	PROB	**20**	**PROB**	Rail corridor (Area 2)
Hairy Woodpecker	*Picoides villosus*	G5	S5					I		h	x			1	S	1	POSS									1	S			1	POSS				2	S			2	POSS									**4**	**POSS**	
Horned Lark	*Eremophila alpestris*	G5	S5B,SZN								x															2	S	1	T	2	PROB													3	S	3	POSS	**5**	**PROB**	
House Sparrow	*Passer domesticus*	G5	SNA					E																																					2	S	2	POSS	**2**	**POSS**	
House Wren	*Troglodytes aedon*	G5	S5B					E			x			1	S	1	POSS									1	S	1	T	1	PROB				2	S	1	T, A	2	PROB					1	S	1	POSS	**5**	**PROB**	Rail corridor (Area 2) (hedgerow)
Indigo Bunting	*Passerina cyanea*	G5	S4B					E			x			1	S	1	POSS			3	S			3	POSS	2	S			2	POSS				6	S	5	T	6	PROB					1	S	1	POSS	**13**	**PROB**	Rail corridor (Area 2), north wood (Area 1)
Killdeer	*Charadrius vociferus*	G5	S5B,S5N								x									2	S	1	T	2	PROB			1	S	1	POSS				6	S	4	T	5	PROB			1	S	2	T	2	PROB	**5**	**PROB**	
Mallard	*Anas platyrhynchos*	G5	S5					S/B, M/F			x																								2	P			2	PROB									**2**	**PROB**	
Mourning Dove	*Zenaida macroura*	G5	S5					E			x			1	H	1	POSS									2	H			2	POSS						2	S	2	POSS			1	H	1	T	1	PROB	**6**	**PROB**	
Mourning Warbler	*Geothlypis philadelphia*	G5	S4B					E		h	x																								1	S			1	POSS									**1**	**POSS**	
Northern Cardinal	*Cardinalis cardinalis*	G5	S5					I/E			x	4	S	3	T, P	4	PROB																		5	S, A	3	T	5	PROB			1	S	3	T, A	3	PROB	**12**	**PROB**	Rail corridor (Hedgerow & south of Area 2)
Northern Flicker	*Colaptes auratus*	G5	S4B					I/E			x																	1	H	1	POSS													1	H	1	POSS	**2**	**POSS**	Rail corridor (Area 2) (hedgerow)
Pine Warbler	*Setophaga pinus*	G5	S5B					I		h	x																								2	S			2	POSS									**2**	**POSS**	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	G5	S4B					I/E			x																								3	S, P	1	T, A	3	PROB									**3**	**PROB**	
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN								x									1	X			1	OBS																							**1**	**OBS**	
Red-bellied Woodpecker	*Melanerpes carolinus*	G5	S4					I/E		h	x									2	S			2	POSS										1	S, A	1	T	1	PROB									**3**	**PROB**	
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B					I/E			x																								6	S	4	T	6	PROB									**6**	**PROB**	
Rock Pigeon	*Columba livia*	G5	SNA								x																																2	H	2	POSS	**2**	**POSS**	
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5					E		H																								1	H			1	POSS					1	X	1	OBS	**2**	**POSS**	
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4					E												24	S, A	12	T, A	24	PROB	10	S, A	9	T, FY	10	CONF											12	A	12	T, A	12	PROB	**46**	**CONF**	
Scarlet Tanager	*Piranga olivacea*	G5	S4B					I	x	h	x																								1	H			1	POSS									**1**	**POSS**	
Song Sparrow	*Melospiza melodia*	G5	S5B					E			x	5	S, A	4	T, A	5	PROB			5	S, A	1	T	5	PROB			3	S, A	3	PROB				7	S, A	9	T, A	9	PROB			3	S	6	T, A	6	PROB	**28**	**PROB**	Rail corridor (Area 2) (Hedgerow)
Turkey Vulture	*Cathartes aura*	G5	S5B							h															2	X			2	OBS																	**2**	**OBS**	
White-breasted Nuthatch	*Sitta carolinensis*	G5	S5					I			x																					1					1	OBS									**1**	**OBS**	Incidental observation (vegetation surveys, outside breeding period)
Willow Flycatcher	*Empidonax traillii*	G5	S5B,SZN								x											1	S	1	POSS																							**1**	**POSS**	
Wild Turkey	*Meleagris gallopavo*	G5	S5					I/E																														1	H	1	POSS									**1**	**POSS**	
Wood Thrush	*Hylocichla mustelina*	G5	S4B	SC	THR	THR	1	I/E			x																										1	1	T			1	PROB									**1**	**PROB**	South of Creek; incidental May 27 during vegetation survey was located offsite but within FOD unit
Yellow-billed Cuckoo	*Coccyzus americanus*	G5	S5B							H	x																																1	S	1	POSS	**1**	**POSS**	Rail corridor (Area 2) (hedgerow)
Yellow-bellied Sapsucker	*Sphyrapicus varius*	G5	S5B					I/E	x	H	x																										1	1			-	OBS	1								**-**	**OBS**	Incidental observation of feeding holes (no breeding evidence)
Yellow Warbler	*Setophaga petechia*	G5	S5B					E			x	6	S	9	T, A	9	PROB			3	S	1	T	3	PROB										2	S	5	T	5	PROB					3	S	3	POSS	**20**	**PROB**	Rail corridor (Area 1) (Area 2) (hedgerow)
Total No. of Species				**4**	**4**	**4**	**4**		**2**	**16**	**45**					**18**					**17**				**17**						**40**											**29**		**56**		

WILDLIFE LIST LEGEND

[1] G-Rank (global)

Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

G1	Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to Extinction.
G2	Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to Extinction.
G3	Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4	Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
G5	Very common - demonstrably secure under present conditions.

[2] S-Rank (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1	Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2	Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3	Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	Secure - Common, widespread, and abundant in the nation or state/province.
S#S#	Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SAN	Non-breeding accidental.
SE	Exotic - not believed to be a native component of Ontario's fauna.
SZN	Non-breeding migrants/vagrants.
SZB	Breeding migrants/vagrants.

[3] ESA (Endangered Species Act) Status

Provincial status from MECP (Status as of January 2024)

https://www.ontario.ca/page/species-risk-ontario

ESA Conservation Status Ranks

EXT	Extinct - A species that no longer exists anywhere in the world.
EXP	Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END	Endangered - A species that is facing imminent Extinction or extirpation.
THR	Threatened - A species that is likely to become Endangered if steps are not taken to address factors threatening to lead to its Extinction or extirpation.

SC	Special Concern – A species that may become Threatened or Endangered because of a combination of biological characteristics and identified threats.

[4] COSEWIC (Committee on the Status of Endangered Wildlife in Canada) Status

The federal review process is implemented by COSEWIC (Status as of January 2024)

COSEWIC is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.

https://www.cosewic.ca/index.php/en-ca/

COSEWIC Conservation Status Ranks

EXT	Extinct - A species that no longer exists.
EXP	Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END	Endangered - A species facing imminent extirpation or Extinction.
THR	Threatened - A species likely to become Endangered if limiting factors are not reversed.
SC	Special Concern (formerly vulnerable) - A species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.
NAR	Not At Risk - A species that has been evaluated and found to be not at risk of Extinction given the current circumstances.
DD	Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of Extinction.

[5] SARA (Species at Risk Act) Status and Schedule

Federal status from the Government of Canada's Species at Risk Public Registry (Status as of January 2024)

https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT	Extinct - A wildlife species that no longer exists.
EXP	Extirpated - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END	Endangered - A wildlife species that is facing imminent extirpation or Extinction.
THR	Threatened - A wildlife species that is likely to become Endangered if nothing is done to reverse the factors leading to its extirpation or Extinction.
SC	Special Concern - A wildlife species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as Extirpated, Endangered, Threatened and Special Concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as Endangered or Threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as Special Concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are Extirpated, Endangered, Threatened and Special Concern, the prohibitions do not apply to species of Special Concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[6] Habitat Use
I=interior species, I/E=interior edge species, E=edge species (Freemark and Collins, 1989); M/F=Marsh/Fen, S/B=Treed Swamp/Bog. Interior bird species require habitat which is often found 100m from the forest edge while Interior/Edge species are found within both interior and edge habitat. Often Interior and Interior/Edge are more sensitive to urban encroachment as they require these large, relatively undisturbed forest habitats to support viable populations. The increasing urbanization of rural areas often results in increased parasitism and predation as well as disturbance from human recreational activities (e.g. illegal bike trails, dumping and pets.) (Freemark, K. and Collins, B. 1989. Landscape ecology of birds breeding in temperate forest fragments. – In: Hagan III, J. M. and Johnston, D. W. (eds), Ecology and conservation of neotropical migrant landbirds. Smithsonian Inst. Press, pp. 443–454)

[7] MNR Area Sensitive Species
Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers

From: Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 7E. January, 2015. Regional Operations Division, Southern Region Resources Section. 41pp.

[8] Regional Status

Hamilton Region Nature Counts Significance Rating
Hamilton Naturalists Club. 2003. Based on a number of local sources (Natural Areas Inventory for Hamilton (1999), Nature Counts (2001-2002), Hamilton Naturalists' Club Records, etc.) NHIC, and OBBA counts. Significance is defined as:

h = Uncommon (21-200 breeding pairs in City of Hamilton)
H = Rare (1-20 breeding pairs in City of Hamilton)
Hamilton Naturalists Club. 2003. Nature Counts Project: Hamilton Natural Areas Inventory. Hamilton Naturalists Club.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED
X Species observed in its breeding season (no breeding evidence).

POSSIBLE
H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE
A Agitated behaviour or anxiety calls of an adult.

B	Brood Patch on adult female or cloacal protuberance on adult male.
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
M	Multiple (at least 7) individuals with S
N	Nest-building (Wren/Woodpecker)
P	Pair observed in suitable nesting habitat in nesting season.
T	Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
V	Visiting probable nest site

CONFIRMED

AE	Adult leaving or entering nest sites in circumstances indicating occupied nest.
CF	Adult carrying food for young.
DD	Distraction display or injury feigning.
FS	Adult carrying fecal sac.
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
NB	Nest-building (non-Wren/Woodpecker)
NE	Nest containing eggs.
NU	Used nest or egg shells found (occupied or laid within the period of the survey).
NY	Nest with young seen or heard.

APPENDIX F

Species At Risk Screening Table

Appendix F - Species at Risk Screening

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Amphibians								
Jefferson Salamander (*Ambystoma jeffersonianum*)	**Known to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	inhabit deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	**None** - no suitable vernal pool habitat identified within study area, and no known occurrences in vicinity	General Wildlife Survey/SAR Habitat Assessment; Road surveys for roadkill	No observations	**None** -- No suitable habitat in study area.
Birds								
Acadian Flycatcher (*Empidonax virescens*)	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines	**None** - no suitable large areas of mature forest habitat available within study area, and no known occurrences in vicinity	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Bald Eagle (*Haliaeetus leucocephalus*)	**Known to Occur**	N/A	MNRF Brant County List (2015)	prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers; They roost in super canopy trees such as Pine	**None** - this species prefers larger watercourses for foraging habitat than those found within the study area (Tributary of Fairchild Creek), no suitable super canopy trees identified for nesting habitat.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Bank Swallow *(Riparia riparia)*	**Known to Occur**	Species and General Habitat Protection June 27, 2014	MNRF Brant County List (2015)	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers	**Moderate** - there is potential for this species to forage over the agricultural fields or wetland habitats within the study area; potential nesting habitat was identified along steep eroding banks of the Tributary of Fairchild Creek	Breeding Bird Survey / SAR Habitat Assessment	3 potential non-active nests	**None** -- No individuals observed, potentially suitable nesting habitat along the Tributary of Fairchild Creek will be retained in full and the larger valley habitat will be protected with a development setback and other mitigation measures.
Barn Owl (*Tyto alba*)	**Suspected to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	generally prefer low-elevation, open country; often associated with agricultural lands, especially pasture. Nests are located in buildings, hollow trees and cavities in cliffs.	**None** - agricultural fields within the study area are planted with corn, no suitable grassland / pasture habitats	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Barn Swallow *(Hirundo rustica)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	**Confirmed** - nests of this species were confirmed during the August 2018 field surveys, nests were located in the small barn / shed and foraging habitat is present in the surrounding agricultural fields and wetlands.	Breeding Bird Survey / SAR Habitat Assessment	Observed foraging over fields, 5 non-active nests observed in barn / shed. Active nesting was confirmed in the barn off-property to the south.	**Minimal** -- This species was observed foraging over agricultural fields and nests were observed on structures. Structure removals will be completed in accordance with industry best practices including timing of removals to respect MBCA requirements. Abundant suitable nesting and foraging habitat is present throughout the local landscape.
Black Tern (*Childonias niger*)	**Historically Known to Occur**	N/A	MNRF Brant County List (2015)	generally prefer freshwater marshes and wetlands; nest either on floating material in a marsh or on the ground very close to water	**None** - no suitable freshwater marsh habitats within study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Bobolink (*Dolichonyx oryzivorus*)	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands	**Minimal** - no suitable grassland habitats were identified within study area during the August 2018 site visit, as the fields were planted with corn. Future changes in cropping (e.g., planting with wheat, fallow) may impact suitability of habitat within the study area.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Canada Warbler (*Cardellina canadensis*; formerly *Wilsonia canadensis*)	**Known to Occur**	N/A	MNRF Brant County List (2015)	Generally prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	**Minimal** - some potential to occur in the north forested habitat within the study area; however, this species is generally uncommon in the region and the forest habitat may lack suitable shrub layer.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Cerulean Warbler *(Setophaga cerulea;* formerly *Dendoica cerulea*)	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.	**None** - no suitable large areas of mature forest habitat available within study area.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Chimney Swift (*Chaetura pelagica*)	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	historically found in deciduous and coniferous, usually wet forest types, all with a well-developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys	**Minimal** - some potential to occur as foraging visitant over the agricultural fields or wetlands; however, no suitable chimney nesting habitat was identified.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Common Nighthawk (*Chordeiles minor*)	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops)	**None** - no suitable vegetation-free / open habitats within study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Eastern Meadowlark (*Sturnella Magna*)	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	**Minimal** - no suitable grassland habitats were identified within study area during the August 2018 site visit, as the fields were planted with corn. Future changes in cropping (e.g., planting with wheat, fallow) may impact suitability of habitat within the study area.	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Eastern Wood-Pewee (*Contopus virens*)	**Known to Occur**	N/A	MNRF Brant County List (2015)	associated with deciduous and mixed forests. Witin mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	**Confirmed** - recorded with 'probable' breeding evidence in the Significant Woodland in the northern portion of the Subject Property.	Breeding Bird Survey / SAR Habitat Assessment	3 individuals recorded with 'probable' breeding evidence	**None** -- Suitable habitat for this species is present within the woodland in the north portion of the study area. This habitat will be retained in full and protected with development setbacks and other mitigation measures.
Eastern Whip-poor-will *(Caprimlugus vociferus)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	**None** - no suitable semi-open deciduous forest habitats within study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Golden-winged Warbler *(Vermivora chrysoptera)*	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	**Moderate** - some potentially suitable breeding habitats within the shrub / cultural thicket / cultural woodland mosaic within and adjacent to the east of the study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Least Bittern *(Ixobrychus exilis)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants	**None** - no suitable large marsh habitats within study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Louisiana Waterthrush *(Seiurus motacilla)*	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps	**Minimal** - some marginally suitable habitat along the Fairchild Creek valleylands within study area; however, this forest habitat may lack size and maturity	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Northern Bobwhite *(Colinus virginianus)*	**Historically Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands.	**None** - no suitable grassland habitats within study area; this species has very limited current geographic range in Ontario	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Prothonotary Warbler *(Protonotaria citrea)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally found in the dead trees of flooded woodlands or deciduous swamp forests; Carolinian zone	**None** - no suitable swamp forest habitats with pools in study area	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Red-Headed Woodpecker *(Melanerpes erythrocephalus)*	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks	**Minimal** - this species is known to occur in a variety of forest / treed habitats; however, the preferred habitat of open Oak / Beech forest is not present	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Short-eared Owl *(Asio flammeus)*	**Suspected to Occur**	N/A	MNRF Brant County List (2015)	generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	**None** - agricultural fields within the study area are planted with corn, no suitable grassland / pasture habitats	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Wood Thrush *(Hylocichla mustelina)*	**Known to Occur**	N/A	MNRF Brant County List (2015)	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	**Confirmed** - recorded with 'probable' breeding evidence in the Significant Woodland in the northern portion of the Subject Property.	Breeding Bird Survey / SAR Habitat Assessment	1 individual recorded with 'probable' breeding evidence	**None** -- Suitable habitat for this species is present within the woodland in the north portion of the study area. This habitat will be retained in full and protected with development setbacks and other mitigation measures.
Yellow-breasted Chat *(Icteria virens)*	**Formerly Occurred and May Still Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer dense thickets around wood edges, riparian areas, and in overgrown clearings	**Minimal** - although potentially suitable habitat is present within the shrub thicket vegetation areas, this species is very rare within the region and unlikely to occur	Breeding Bird Survey / SAR Habitat Assessment	No observations	**None** -- No individuals observed and no suitable breeding habitat in study area.
Fish								
Black Redhorse *(Moxostoma duquesnei)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally lives in moderately sized rivers and streams, with generally moderate to fast currents	**None** - no suitable habitat identified within study area	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Eastern Sand Darter *(Ammocrypta pellucida)*	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer sandy-bottomed streams and rivers	**Minimal** - potentially suitable habitat within the Tributary of Fairchild Creek within study area; however, substrate variability makes presence unlikely	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.

Appendix F - Species at Risk Screening

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Northern Brook Lamprey ***(Ichthyomyzon fossor)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally inhabits small rivers and clear streams of varying sizes. Adults spawn in gravelly riffles.	**Minimal** - potentially suitable habitat within the Fairchild Creek tributary within study area; however, substrate variability makes presence unlikely	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Silver Lamprey **(*Ichthyomyzon unicuspis*)**	**Known to Occur**	N/A	MNRF Brant County List (2015)	Clean stream beds of sand and organic debris for larvae to live in, and unrestricted migration routes for spawning	**Minimal** - potentially suitable habitat within the Fairchild Creek tributary within study area; however, substrate variability makes presence unlikely	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Silver Shiner ***(Notropis photogenis)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients	**None** - no suitable habitat identified within study area	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Insects								
Monarch Butterfly ***(Danaus plexippus)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces	**Confirmed** - this species was confirmed within the study area during the 2018 field surveys, with foraging / dispersal habitat in cultural meadow and field edge habitats	General Wildlife Survey/SAR Habitat Assessment	6 individuals observed within study area along CUM patches and moving along forest edges	**None** -- No caterpillars or unique critical habitat for this species have been recorded. Concentrations of Milkweed were noted in three locations across the Subject Property, however, abundant foraging / dispersal habitat is present in the local landscape and no individuals are expected to be harmed by the proposed works.
Rapids Clubtail ***(Gomphus quadricolor)***	**Known to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	Clear, cool, medium to large rivers with wooded shorelines, gravel shallows and muddy pools. Adult females inhabit shoreline forests, moving to the rapids when ready to mate. The nymphs live in these quiet, muddy, downstream pools where they spend most of their time buried just below the surface of the sediment in the bottom of the pool.	**Minimal** - The Tributary of Fairchild Creek may provide marginally suitable habitat; however, there are no known occurrences in the vicinity	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area (no high quality suitable habitat). Furthermore, no impacts to marginal potential habitat.
Rusty-patched Bumble Bee ***(Bombus affinis)***	**Formerly Occurred and May Still Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows	**Minimal** - this species is known to occur in a variety of general habitats; however, there are no known occurrences in the vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area (no high quality suitable habitat).
West Virginia White ***(Pieris virginiensis)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort (*Cardamine diphylla*), which is a small, spring-blooming plant of the forest floor.	**Minimal** - the north forest / riparian corridor may provide marginally suitable habitat; however, there are no known occurrences in the vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area (no high quality suitable habitat). Furthermore, no impacts to marginal potential habitat.
Mammals								
American Badger ***(Taxidea taxus jacksoni)***	**Known to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	generally prefer open habitats, whether natural (grasslands) or man-made (agricultural fields, road right-of-ways, golf courses)	**Minimal** - This species is known to occur in the region; however, there is a lack of natural grasslands in the study area (fields planted with corn) and the soils are not sandy.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area. No observations, dens or tracks found during field investigations.
Eastern Small-footed Myotis ***(Myotis leibii)***	**Suspected to Occur**	Species and General Habitat Protection as of June 27, 2014	MNRF Brant County List (2015)	Overwintering habitat: Caves and mines that remain above 0 degrees. Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark.	**Minimal** - Suitable roosting habitat may occur in the buildings or forest areas; however, the preferred habitat of talus slopes / rock outcrops is not present.	General Wildlife Survey/SAR Habitat Assessment; Cavity Tree Assessment	No observations (no targeted bat monitoring surveys completed)	**Minimal** - Potential impacts are limited to the removal of lower quality roosting habitat (i.e. hedgerow trees) and foraging habitat. Abundant, higher quality roosting habitat is present in the Significant Woodland (which will be retained in full, with development setbacks) as well as throughout the local landscape. Potential impacts to individuals that may roost within the study area will be mitigated with appropriate timing for tree and building removals during the non-active period (i.e., removals between November 1 and March 31).
Grey Fox ***(Urocyon cineroargenteus)***	**Suspected to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefers deciduous forests, marshes, swampy areas, and urban areas	**Minimal -** This species is known to occur in a variety of general habitats; however, there are no known occurrences in the vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area, due to no observation or tracks found during field investigations. In addition to no high quality suitable habitat.

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Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Little Brown Myotis ***(Myotis lucifugus)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	Overwintering habitat: Caves and mines that remain above 0 degrees. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25 44 cm dbh).	**Moderate** - Some potential for roosting habitat in the buildings and forests where cavity trees occur, potential foraging habitat over the fields and wetlands.	General Wildlife Survey/SAR Habitat Assessment; Cavity Tree Assessment	No observations (no targeted bat monitoring surveys completed)	**Minimal** - Potential impacts are limited to the removal of lower quality roosting habitat (i.e. hedgerow trees) and foraging habitat. Abundant, higher quality roosting habitat is present in the Significant Woodland (which will be retained in full, with development setbacks) as well as throughout the local landscape. Potential impacts to individuals that may roost within the study area will be mitigated with appropriate timing for tree and building removals during the non-active period (i.e., removals between November 1 and March 31).
Northern Myotis ***(Myotis septentrionalis)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	Overwintering habitat: Caves and mines that remain above 0 degrees. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)	**Moderate** - some potential for roosting habitat in the buildings and forests where cavity trees / trees with loose bark occur, potential foraging habitat over the fields and wetlands	General Wildlife Survey/SAR Habitat Assessment; Cavity Tree Assessment	No observations (no targeted bat monitoring surveys completed)	**Minimal** - Potential impacts are limited to the removal of lower quality roosting habitat (i.e. hedgerow trees) and foraging habitat. Abundant, higher quality roosting habitat is present in the Significant Woodland (which will be retained in full, with development setbacks) as well as throughout the local landscape. Potential impacts to individuals that may roost within the study area will be mitigated with appropriate timing for tree and building removals during the non-active period (i.e., removals between November 1 and March 31).
Woodland Vole ***(Microtus pinetorum)***	**Suspected to Occur**	N/A	MNRF Brant County List (2015)	Generally associated with deciduous forests in areas of soft, friable, often sandy soil beneath deep humus, where it can burrow easily.	**Minimal** - unlikely to occur in the forest habitats within the study area due to the lack of sandy soils	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- Not likely to occur in study area (no high quality suitable habitat).
Molluscs								
Eastern Pondmussel ***(Ligumia nasuta)***	**Suspected to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally inhabit sheltered areas of lakes or slow streams in substrates of fine sand and mud	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Kidneyshell ***(Ptychobranchus fasciolaris)***	**Historically Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally found in small to medium-sized rivers and streams, where it prefers shallow areas with clear, swift-flowing water and substrates of firmly packed coarse gravel and sand	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary with inconsistent flow and variable conditions.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Mapleleaf ***(Quadrula quadrula)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally found in medium to large rivers in firmly packed substrate	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Rainbow Mussel ***(Villosa iris)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	most abundant in shallow, well- oxygenated reaches of small- to medium-sized rivers and sometimes lakes, on substrates of cobble, gravel, sand and occasionally mud	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary with inconsistent flow and variable conditions.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Round Pigtoe ***(Pleurobema sintoxia)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally occur in small rivers in areas of moderate flow on substrates of gravel, cobble and boulder. In larger rivers, they are found in mud, sand and gravel at varying depths.	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary with inconsistent flow and variable conditions.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Wavy-rayed lampmussel ***(Lampsilis fasciola)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally inhabit clear rivers and streams of a variety of sizes, where the water flow is steady and the substrate is stable	**None** -- No suitable habitat in study area as aquatic habitat consists of a small tributary with inconsistent flow and variable conditions.	General Aquatic Survey/SAR Habitat Assessment	No observations	**None** -- No suitable habitat in study area.
Plants								
American Chestnut ***(Castanea dentata)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils.	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
American Columbo ***(Frasera caroliniensis)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	most commonly associated with open deciduous forested slopes, thickets and clearings; grows in a variety of relatively stable habitats as well as on a wide variety of soils	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
American Ginseng ***(Panax quinquefolius)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock).	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Bird's-foot Violet ***(Viola pedata)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally grows in open, disturbed, well-drained, sandy sites, and, in Ontario, is found in Black Oak savannah habitats within deciduous forests	**None** - no suitable open, disturbed or sandy habitat within study area	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Broad Beech Fern ***(Phegopteris hexagonoptera)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally inhabits shady areas of beech and maple forests where the soil is moist or wet	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Butternut ***(Juglans cinerea)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows	**Confirmed** - Four Butternut trees were recorded within the study area / on the Subject Property.	ELC/Botanical Inventory; Butternut Health Assessment	5 individuals were identified within the study area	**High** -- Removal of three of the recorded Butternut trees will be required with the proposed development concept. Appropriate registration and compensation measures will be undertaken, with details to be confirmed through future submissions.
Common Hoptree ***(Ptelea trifoliata)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally grows in sandy soils in areas with a lot of natural disturbance - such as the outer edge of shoreline vegetation, sand spits, and sand points.	**Minimal** - some potential to occur within forest and marsh habitat along the Fairchild Creek valleyland	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Eastern Flowering Dogwood ***(Cornus florida)***	**Known to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	generally grows in deciduous and mixed forests, in the drier areas of its habitat, although it is occasionally found in slightly moist environments; Also grows around edges and hedgerows	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Gattinger's Agalinis (Agalinis gattingeri)	**Historically Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally grows in dry prairie and dry, open oak savanna habitats.	**None** - no suitable prairie habitat within study area	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Goldenseal ***(Hydrastis canadensis)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally grows in rich moist areas of deciduous forests dominated by the sugar maple, or in moist floodplain forests dominated by red maples and white oaks	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Green Dragon ***(Arisaema dracontium)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally grows in damp deciduous forests and along streams.	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Shumard Oak ***(Quercus shumardii)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally grows in deciduous forests, where the soils are poorly drained clay and clay loam. Requires full sunlight.	**Minimal** - some potential to occur within (FOD) deciduous forest habitat	ELC/Botanical Inventory	No observations	**None** -- Not recorded within the study area.
Reptiles								
Blanding's Turtle ***(Emydonidea blandingii)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	**None** - No suitable large wetlands or slow-flowing streams within study area.	General Wildlife Survey/SAR Habitat Assessment; Visual surveys for basking turtles in waterbodies.	No observations	**None** -- No observations and no suitable habitat in study area.
Eastern Hog-nosed Snake ***(Heterodon platirhinos)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer habitats with sandy, well-drained soil and open vegetative cover, such as open woods, brushland, fields, forest edges and disturbed sites. The species is often found near water.	**Minimal** - Potential habitat along the forest edges or shrub thicket; however, this species is uncommon in the region and sandy soils are not present.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- not likely to occur in study area (no quality suitable habitat). Furthermore, no impacts to potential forest or shrub thicket habitat.
Eastern Musk Turtle ***(Sternotherus odoratus)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefers shallow, slow-moving water where it typically walks along the bottom rather than swimming	**None** - No suitable large wetlands or slow-flowing streams within study area.	General Wildlife Survey/SAR Habitat Assessment; Visual surveys for basking turtles in waterbodies.	No observations	**None** -- No observations and no suitable habitat in study area.
Eastern Ribbonsnake ***(Thamnophis sauritus)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	**Minimal** - Some potential to occur along the edges of the Tributary of Fairchild Creek or wetlands; however, this species is unlikely to occur due to the adjacent urban development and lack of known occurrences in the vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- not likely to occur in study area (no quality suitable habitat). Furthermore, no impacts to potential forest or shrub thicket habitat.
Gray Ratsnake ***(Pantherophis spiloides)***	**Known to Occur**	Species Protection and **Habitat Regulation**	MNRF Brant County List (2015)	generally associated with deciduous forests, with a preference for a mosaic of forest and open habitats, such as fields and rocky outcrops	**None** - No suitable large areas with mosaic of forest / open habitat available within study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- No observations and no suitable habitat in study area.
Massassauga Rattlesnake ***(Sistrurus catenatus)***	**Historically Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally occur in habitats ranging from tall grass prairie to cedar bogs to shorelines. All habitats require canopies that are not too open, but they also require access to spots where they can get warm enough to effectively digest their food and reproduce. Sufficient moisture is also required for them to survive the winter, so they are often associated with wetlands or small, wet depressions in the terrain. (Wainfleet Bog)	**None** - No suitable tall grass or cedar bog habitats and no known occurrences in vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- No observations and no suitable habitat in study area.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Results of Field Surveys	Likelihood and Magnitude of Impacts to Species or Habitat
Northern Map Turtle ***(Graptemys geographica)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	**None** - No suitable slow flowing river or lake habitats within study area.	General Wildlife Survey/SAR Habitat Assessment; Visual surveys for basking turtles in waterbodies.	No observations	**None** -- No observations and no suitable habitat in study area.
Queensnake ***(Regina septemvittata)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally require a permanent body of water, flowing or still, with a temperature remaining at or above 18.3°C throughout most of the active season; abundant cover, such as flat rocks submerged and/or on the bank; and an abundance of crayfish. Other important habitat features may include rocky, gravelly, or slate stream-bed substrates, swift to moderate current, and woodland surroundings.	**None** - No suitable habitat and no known occurrences in vicinity pf the study area.	General Wildlife Survey/SAR Habitat Assessment	No observations	**None** -- No observations and no suitable habitat in study area.
Snapping Turtle ***(Chelydra serpentina)***	**Known to Occur**	N/A	MNRF Brant County List (2015)	generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.	**Moderate** - This species is known to occur in a variety of habitats, with potential habitat along the Tributary of Fairchild Creek.	General Wildlife Survey/SAR Habitat Assessment; Visual surveys for basking turtles in waterbodies.	No observations	**Minimal** -- This species was not recorded within the study area; however suitable habitat exists, primarily along the Tributary of Fairchild Creek. This habitat will be retained in full and protected with development setbacks and other mitigation measures. Best practices will be implemented during-construction to protect any individuals that may attempt to enter the former agricultural fields (e.g., temporary exclusion fencing, daily fence inspections, encounter protocols, and others to be determined through future submissions).
Spiny Softshell ***(Apalone spinifera)***	**Known to Occur**	Species and General Habitat Protection	MNRF Brant County List (2015)	generally prefer marshy creeks, swift-flowing rivers, lakes, impoundments, bays, marshy lagoons, ditches and ponds near rivers	**None** - No suitable river or lake habitats within study area, and no known occurrences in vicinity of the study area.	General Wildlife Survey/SAR Habitat Assessment; Visual surveys for basking turtles in waterbodies.	No observations	**None** -- No observations and no suitable habitat in study area.

APPENDIX G

Butternut Health Assessment Report

WSP Canada Ltd.
582 Lancaster Street West
Kitchener, ON Canada N2K 1M3
T: +1 519.904.1760
jennifer.mcphee@wsp.com
www.wspgroup.ca

September 3, 2019

Ministry of Environment, Conservation and Parks
Species At Risk Branch
50 Bloomington Rd, Aurora, ON
L4G 0L8

Attention: Paul Heeney

Subject: Butternut Health Assessment at the Brantford Expansion Lands north of Lynden Road, Brantford, ON.

Please find enclosed a Butternut Health Assessment report that is being submitted on behalf of Welton and & Innes G.P. Inc for the Brantford Expansion Lands project.

Yours sincerely,

Jennifer McPhee

Jennifer McPhee, M. Sc
Ecologist – Botanist & ISA Certified Arborist

CC: Jeff Gross (WSP), Natalie Shuringina (Sobara – on behalf of Welton & Innes G.P. Inc.)

WSP ref.: 17M-01333-00

Enclosures:

- Cover letter sent to landowner
- Information from the Ministry of Natural Resources and Forestry about Butternut and the *Endangered Species Act, 2007*
- Butternut Health Assessment Report Form
- Butternut Data Collection Forms 1 & 2
- Butternut Retainable Tree analysis
- Butternut Hybridity Test – Lab Report for Trees 009 and 010
- Photopages
- Butternut location map

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August 26, 2019

Natalie Shurigina – on behalf of Welton & Innes G.P. Inc.
3700 Steeles Avenue West, Suite 800
Vaughan, Ontario L4L 8M9
nshurigina@sorbara.com

Attention: Mrs. Shurigina
Subject: Butternut Health Assessment - Brantford Expansion Lands north of Lynden Road, Brantford, ON.

Four Butternut trees have been identified at the Welton & Innes G.P. Inc. - Brantford Expansion Lands project site as having the potential to be harmed. Butternut is an Endangered species protected under the provincial Endangered Species Act (ESA), 2007.

As there is potential for impact to the trees (25 m radius from the bole) and/or habitat (50 m radius from the bole) resulting from proposed works (i.e., development construction), a Butternut Health Assessment was conducted on July 23, 2019. The assessment was completed according to the Butternut Health Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007, Version 2 (Ministry of Natural Resources and Forestry, 2014). The Butternut Health Assessment (BHA) Report is enclosed. This BHA Report follows a standard Ministry of Natural Resources and Forestry (MNRF) template and includes additional details on the implications for the trees that were assessed on the property. As of April 1, 2019, MNRF no longer manages ESA files, as the responsibility has been shifted to the Ministry of Environment, Conservation, and Parks (MECP). Documentation mandatory for the BHA process has not yet been updated to reflect the change in the ESA administration authority. The MECP may request a site visit to audit the trees.

Please read through the attached report carefully for full details; highlights are provided below. Locations of the trees are shown on the attached figure.

Tree assessment results:

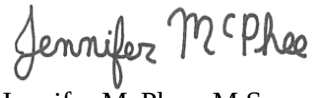
- One tree is Category 1 (Tree #008) – Category 1 trees are in an advanced state of disease and can be removed without ESA authorization / approval, following the 30-day MECP review period (provided the MECP agrees with the assessment).
- Three trees are Category 2 (Tree #007, #009, and #010) – Category 2 trees have few or no signs of disease and are eligible for an exemption from the ESA (i.e., can be harmed / killed) if the requirements of Section 23.7 of Ontario Regulation 242/08 are followed. These requirements include: registration; installation of compensation plantings; and tending, monitoring and

reporting on the plantings for two years. Note that this exemption is only available if no more than 10 Butternuts are to be harmed / killed by the same proponent in the same or nearby area.

It is recommended that the BHA Report be submitted to the MECP to confirm the status of the tree (i.e., Category). **Please confirm that you want us to submit the report on your behalf (as the landowner and proponent).** It is recommended that this letter be retained as proof that a Butternut Health Assessment has been completed for four Butternut trees on the above noted property, as well as any other documentation you may receive from the MECP should an audit of the assessment occur.

If you have any questions, please contact the undersigned Butternut Health Assessors by email at Jennifer.McPhee@wsp.com. Additional information can also be requested from a MECP Species at Risk Biologist at either SAROntario@ontario.ca or ESA-SARinquiries@ontario.ca.

Yours sincerely,



Jennifer McPhee, M.Sc
Ecologist – Botanist & ISA Certified Arborist

CC: Jeff Gross (WSP)

WSP reference #: 17M-01333-00

Enclosures:

- Information from the Ministry of Natural Resources and Forestry about Butternut and the *Endangered Species Act, 2007*
- Butternut Health Assessment Report Form
- Butternut Data Collection Forms 1 & 2
- Butternut Retainable Tree analysis
- DNA Sample Information and Test Summary
- Figures:
    1. Photo page
    2. Butternut location map

species at risk

Butternut Trees on Your Property

INTRODUCTION

The Ministry of Natural Resources is streamlining and automating its approvals processes for natural resource-related activities – with the goal of providing individuals and businesses with faster and more efficient service delivery.

This fact sheet provides information about regulatory provisions under the Endangered Species Act (ESA) for activities that may impact butternut trees.

The ESA provides protection for endangered or threatened species in Ontario. Some activities that would otherwise contravene the ESA may be eligible to proceed without a permit from the Ministry of Natural Resources provided that regulatory conditions for the ongoing protection of species at risk and their habitats are met.

ACTIVITIES THAT MAY AFFECT BUTTERNUT

Anyone intending to cut down or harm butternut trees may be able to follow the rules set out in the regulation, depending on the health of the trees as determined by a qualified butternut health assessor and the number of trees impacted. In some cases, this will include a requirement for the person to register with the Ministry of Natural Resources. A permit under the ESA is not required if the rules in regulation are followed for all eligible activities.

What is a "qualified butternut health assessor?"

A butternut health assessor is a person designated by the Ministry of Natural Resources for the purpose of assessing whether, and the extent to which, butternut trees are affected by a disease called butternut canker.

What are the categories for butternut trees?

A qualified butternut health assessor must inspect and report on the tree, and then assign it to one of three categories, based on the tree's condition or value as a genetic resource. The categories are:

- Category 1: the tree is in an advanced state of disease from butternut canker and is considered "non-retainable."
- Category 2: the tree does not have butternut canker, or the disease is not as advanced and the tree is considered "retainable."
- Category 3: the tree may be useful in determining sources of resistance to butternut canker and is considered "archivable." This regulation does not apply to Category 3 trees.

species at risk

What activities are eligible?

This section may apply to anyone who is proposing an activity the may have an impact on a butternut tree. The butternut must be assessed by a qualified butternut health assessor, and the regulation may apply depending on the number of trees proposed to be affected, and the category of the tree.

A person may be eligible if the activity affects Category 1 trees or 10 or fewer Category 2 trees.

A person is not eligible for the regulation and must obtain an ESA authorization if the activity affects a Category 3 tree, or more than 10 Category 2 trees.

What activities are not eligible?

- A person cannot affect more than 10 Category 2 trees identified in the butternut health assessors report.
- The regulation does not apply if a person has been previously exempted to remove 10 butternut trees, identified by a butternut health assessor as Category 2 trees and the location of the trees are in the same area or close proximity, the person is proposing to have an impact on additional butternut trees for the same or similar reasons.

What are the rules in regulation?

At least 30 days before any butternut is killed, harmed or taken:

- A designated butternut health assessor must;
- complete an assessment for each butternut tree in accordance with the "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007" published by the Ministry of Natural Resources and designate it as Category 1, 2, or 3;
- provide a written report of the assessment in accordance with those guidelines.
- The person proposing to carry out the activity must send the report of the butternut health assessor to the appropriate MNR District Manager and allow MNR staff to access the site during that time, if requested.

After the 30 day period has passed, the person may carry out activities on any Category 1 trees identified in the report.

If 10 or fewer Category 2 trees are affected (and the activity is not otherwise ineligible), the person carrying out the activity must:

- Register using the Notice of Butternut Impact form on the Registry.
- Follow the rules in regulation including:
  - Plant replacement trees to benefit butternut using best management practices outlined in the regulation.
  - Conduct monitoring and tending of the seedlings that are planted.
  - Keep required records.

Please refer to **Legal/Technical Background** below for a summary of these conditions.

species at risk

LEGAL/TECHNICAL BACKGROUND

The following is a summary of the conditions in the regulation that must be fulfilled to allow eligible activities, and is for information purposes only. Please refer to O.Reg. 242/08 section 23.7 at e-laws.gov.on.ca for the full legal text.

Summary of Conditions

Actions to Benefit Butternut:

The person must provide a benefit for butternut by carrying out these activities:

- follow planting ratios as described in the regulation for replacing the trees, based on the size of the tree(s) and whether the tree is being killed and taken or harmed;
- follow the rules in regulation regarding seed origin, timing of planting, soil characteristics, companion trees plantings and spacing requirements; and,
- replace planted butternut that die within two years of planting the seedling.

Monitoring and Tending:

The person must monitor and tend the planted butternut trees by following requirements described in the regulation:

- monitor planted trees once annually for two years between May 15 and September 20 to assess the health of each tree;
- tend each butternut tree planted once a week during the first growing season (May 15 – September 20) which includes maintenance of tree guards, vegetation control and watering; and,
- tend each butternut tree planted in the second growing season as required by completing vegetation control and watering.

Records:

The person must maintain a record of planting, monitoring and tending activities for every planted butternut tree and provide this record to MNR should it be requested. This record must include planting dates, dates and description of monitoring and tending activities and the health status of each tree, including any signs of butternut canker.

IMPORTANT LINKS

For more information about Ontario's species at risk, visit **ontario.ca/speciesatrisk.**

FOR MORE INFORMATION

1-855-613-4256
Email: mnr.rasc@ontario.ca

Ministry of Natural Resources and Forestry

Species At Risk
P.O. Box 7000, 300 Water Street
Peterborough ON K9J 8M5

Ministère des Richesses naturelles et des Forêts

Espèces en péril
C.P. 7000, 300, rue Water
Peterborough ON K9J 8M5

The enclosed Butternut Health Assessor's Report documents the results of the Butternut health assessment that was conducted by the designated Butternut Health Assessor (BHA) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be affected by the activity and they are not identified in the enclosed BHA Report, they too must be assessed by a designated BHA.

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the *Endangered Species Act, 2007* (ESA) from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: http://www.ontario.ca/environment-and-energy/butternut-trees-your-property.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local Ministry of Natural Resources and Forestry (MNRF) District Manager. Note that MNRF cannot accept photocopies or scanned electronic copies of the data forms.

Note regarding changes:
If the enclosed BHA Report does not identify which Butternut tree(s) are proposed to be killed, harmed, or taken in Table 1 (i.e., if "unknown" is indicated in the second last column of Table 1), or, if the information in the last two columns of Table 1 has changed since the date this BHA Report was produced, **do not make any edits to the BHA Report**. Instead, please attach a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed, or taken (by referencing the tree identification numbers) when you submit the enclosed BHA Report to the local MNRF District Manager.

The BHA Report must be submitted at least 30 days prior to registering an eligible activity to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNRF may contact you for an opportunity to examine the trees. If MNRF chooses to examine the trees, a representative of MNRF will contact you using the information you supplied when you submitted the BHA Report.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the "Notice of Butternut Impact" form on the MNRF Registry **after the 30 day period has elapsed**.

If you are **not** eligible to follow the rules in regulation under section 23.7, please contact the local MNRF district office to determine whether you will need to seek an authorization (e.g., a permit). A link to the directory of MNRF offices is provided below.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this information and a copy of the BHA Report (including copies of all data forms) for your records, along with any other documentation you may receive from MNRF should an examination of the trees occur. If you have any questions, please contact your local MNRF district office.

Links:
Endangered Species Act, 2007:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7):
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

MNRF Office Locations:
https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-district-offices

Butternut Health Assessor's Report Number: 602-021

Jennifer McPhee, BHA #602
582 Lancaster Street West
Kitchener, Ontario, N2K 1M3
226-988-6581

Natalie Shurigina, Development Planner – on behalf of Welton & Innes G.P. Inc.
3700 Steeles Avenue West, Suite 800
Vaughan, Ontario L4L 8M9
nshurigina@sorbara.com

Site location: Near 17T 563027 m E, 4781361 m N.

Date(s) of Butternut health assessment: July 23, 2019
Date BHA Report prepared: August 26, 2019

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 4 Butternut

The assessed trees were numbered on site using white flagging tape trees. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Butternut Trees Assessed
- Table 2: Trees Determined by BHA to be Butternut Hybrids
- Table 3: Summary of Assessment Results

Table 1: Butternut Trees Assessed

Tree #	UTM coordinates	Category *(1, 2, or 3[1])*	dbh[2] (cm)	Cultivated? *(Y/N)*	Proposed to be: *(enter one: unknown[3], killed, harmed or taken)*	If tree is proposed to be killed, harmed, or taken, indicate reason tree is proposed to be killed, harmed or taken:
007	17T 563244, 4781592	2	26	N	Not to be harmed	
008	17T 563467, 4781537	1	24	N	Critical protection zone damage (0 – 25 m from tree) and habitat harmed (25 – 50 m from tree)	Residential Development
009	17T 563027, 4781359	2	40	N	Killed	Residential Development
010	17T 563020, 4781390	2	1	N	Killed	Residential Development

[1] Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08.
[2] dbh: diameter at breast height, rounded to nearest cm (if tree is shorter than breast height, enter zero)
[3] In this column, "unknown" indicates that at the time of assessment, there are no proposals to kill, harm or take this tree that are known to the BHA.

Table 2: Trees Determined by BHA to be Butternut Hybrids

Tree #	UTM coordinates	Method used (genetic testing or field identification):
N/A		

Table 3: Summary of Assessment Results

Result:	**Total #:**	**Important information for persons planning activities that may affect Butternut:**
Category 1	1	• A Category 1 tree is one that is affected by butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of butternut in the area in which the tree is located; and is considered "non-retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Category 1 trees may be killed, harmed or taken **after** the 30 day period that follows submission of this BHA Report to the MNRF District Manager, unless the results of an MNRF examination indicate that the assessment has not been conducted in accordance with the document entitled "Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007"*.
Category 2	3	• A Category 2 tree is one that is not affected by Butternut Canker, or is affected by Butternut Canker but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of butternut in the area in which the tree is located, and is considered "retainable". • During the 30 day period that follows your submission of this BHA Report to the MNRF District Manager, no Butternut trees (of Category 1, 2, or 3) may be killed, harmed, or taken, and MNRF may contact you for an opportunity to examine the trees. • Activities that may kill, harm or take up to a **maximum of ten (10)** Category 2 trees may be eligible to follow the rules in section 23.7 of Ontario Regulation 242/08, in accordance with the conditions and requirements set out in the regulation. • Refer to e-Laws for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm • Activities that may kill, harm or take more than ten (10) Category 2 trees are not eligible to follow the rules in section 23.7 of Ontario Regulation 242/08. Contact the local MNRF district office for information on how to seek an ESA authorization (e.g., a permit) or consider an alternative that would be eligible for the regulation.
Category 3	0	• A Category 3 tree is one that may be useful in determining sources of resistance to Butternut Canker, and is considered "archivable". • Category 3 trees are not eligible to be killed, harmed or taken under section 23.7 of Ontario Regulation 242/08. • Contact the local MNRF district office for information on how to seek an ESA authorization, or consider an alternative that will avoid killing, harming or taking any Category 3 trees.
Cultivated	0	• An activity that involves killing, harming, or taking a cultivated Butternut tree that was not required to be planted to fulfill a condition of an ESA permit or a condition of a regulation, may be eligible for the exemption provided by subsection 23.7 (11) of O. Reg. 242/08.

Result:	Total #:	Important information for persons planning activities that may affect Butternut:
		• Prior to undertaking the activity, the owner or occupier of the land on which the Butternut is located (or person acting on their behalf) will need to determine whether the exemption for cultivated trees is applicable by determining whether or not the tree was cultivated as a result of the requirements for an exemption under O. Reg. 242/08 or a condition of a permit issued under the ESA. This information can be accessed by contacting the local MNRF district office. • The owner or occupier of the land on which the Butternut is located (or person acting on their behalf) is encouraged to append the details regarding whether the tree was planted to satisfy a requirement (e.g., the permit number or registration number) to this BHA Report for their records.
Hybrid	0	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

Butternut Health Assessor's Comments:

In addition to the four naturally-occurring *Juglans cinerea*, a total of six planted *Juglans regia* trees were also recorded. These six *Juglans regia* trees are not documented on Form 1 and 2, however, due to their superficial similarity to *Juglans cinerea*, their locations are documented on the attached mapping and photographs showing the distinctive identification features are included in the photopage on page 4 and 5.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
2. Electronic and printed copies of the Excel data analysis spreadsheet.

Butternut Data Collection Form 1 - 2010 Edition

Surveyor ID or BHA #: 0602

(PLEASE USE BLOCK LETTERS)

Date (dd/mm/yyyy): 23 - 07 - 2019

Shaded fields are mandatory for Butternut Health Assessments

Surveyor Contact

First: JENNIFER Last: MCPHEE

Email: JENNIFER-MCPHEE@WSP.COM

Telephone: (226) 988-6581 Telephone Other: ( ) - x

Property Owner (check if same as surveyor) ☐

First: Last:

or Company: WELTON ESTATES G.P. INC.

Email: NSHURIGINA@SOBARA.COM

Telephone: (905) 850-6154 Telephone Other: ( ) - x

Property Owner's Mailing address

Address: 3700 STEELES AVE W SUITE 800 Postal Code: L4L8M9 Prov.: ON

City: VAUGHAN

Tree Location (if different from mailing address)

Address/(911#): WELTON RD Postal Code: N3P1H4

Township: BRANT Lot: Con:

City: BRANTFORD

Directions:

☒ Yes ☐ No Can Share Location Information with other Butternut Recovery Organizations?

☒ Yes ☐ No Site visits OK? (prior arrangments will always be made for a site vist)

> (Greater than)
< (Less than)

Butternut Trees Tally by Diameter Class

(Do a dot tally in blank space; write total# in box for each)

Tree Condition	< 3 cm	3-15 cm	16-30cm	>30 cm
Vigorous: > 50% Live Crown Minor or no cankers	01		01	01
Poor Vigor: <50% Live Crown or >50% Live Crown + heavily cankered stem			01	
Dead				

Historically, do some trees produce seeds? ☒ Y ☐ N ☐ Unkown

Estimated area containing butternut for properties > 1 acre (0.4 hectares): ☐ Acres ☐ Hectares

Additional Six Juglans regia near barn were excluded from assessment - originally labeled BUUTI-6

Overall Property Description (area(s) containing Butternut)

☒ Rolling Upland ☐ Bottomland
☐ Valley Slope ☐ Variable
☐ Tableland ☐ Unknown

Vegetation Community/ies

☒ Open ☒ Fencerow
☐ Shrubland ☐ Roadside
☒ DeciduousForest ☐ Quary
☐ ConiferForest ☐ UrbanYard
☐ MixedForest ☐ UrbanPark

Other

Soil Drainage

☐ Well Drained
☒ Moderately Drained
☐ Poorly Drained
☐ Unknown

Soil Texture

☐ Clay ☐ Sand
☐ Clay Loam ☐ Variable
☐ Loam ☒ Unknown
☐ Loamy Sand

Soil Depth

☒ > 1metre
☐ 30 - 99cm
☐ < 30cm
☐ Variable
☐ Unknown

Please enter matching numerical page link code on forms 1 and 2

Page Link: 563244

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 333, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

Butternut Data Collection FORM 2 (2010 Edition)

(PLEASE USE BLOCK LETTERS)

Shaded fields are mandatory for Butternut Health Assessments

Fill when Form 1 indicates canker is well established. The information opn Form 2 must be filled out for all trees when doing a Butternut Health Assessment.

Site Code(A,B,...Z, AA...): SOB

Surveyor ID or BHA #: 0602

Date (dd/mm/yyyy): 23 - 07 - 2019

Surveyor Last Name: MCPHEE

Tree ID Numbering: 1,2,3,...Starting from 1 for each site

Tree 007

Tree #: 007 | Zone: 17 | Easting: 563244 | Northing: 4781592

Crown Class: I | Live Crown %: 095 | Main Stem Length(m) Below crown: 03

Twig Dieback ☐ | Branch Dieback ☐ | Defoliation ☐ | Discolouration ☐

#Stems: 3 | DBH(cm): 0 8, 21, 12

Butternut Origin: ■ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ■ Seed Set ☐ None

Assess below live crown:

	#Open	#Sooty
00 #Epic-Live		
00 #Epic-Dead		
S Bark Type		
01 # Callused Wounds		
Root	01	02
=<2m	00	00
>2m	01	02

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ■ None Found

Competing Species: JUGLNIG; FRAXRED; CRAT_SP.

Photos 266-277

Tree 008

Tree #: 008 | Zone: 17 | Easting: 563467 | Northing: 4781537

Crown Class: I | Live Crown %: 085 | Main Stem Length(m) Below crown: 03

Twig Dieback ☐ | Branch Dieback ☐ | Defoliation ■ | Discolouration ☐

#Stems: 1 | DBH(cm): 024

Butternut Origin: ■ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ■ Seed Set ☐ None

Assess below live crown:

	#Open	#Sooty
00 #Epic-Live		
00 #Epic-Dead		
S Bark Type		
02 # Callused Wounds		
Root	04	03
=<2m	04	01
>2m	03	01

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ■ None Found

Competing Species: RWAMCHT; FRAXPEN

Photos 278-292

Tree 009

Tree #: 009 | Zone: 17 | Easting: 563627 | Northing: 4781359

Crown Class: C | Live Crown %: 095 | Main Stem Length(m) Below crown: 03

Twig Dieback ☐ | Branch Dieback ☐ | Defoliation ■ | Discolouration ☐

#Stems: 1 | DBH(cm): 040

Butternut Origin: ■ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ■ Seed Set ☐ None

Assess below live crown:

	#Open	#Sooty
00 #Epic-Live		
00 #Epic-Dead		
D Bark Type		
01 # Callused Wounds		
Root	01	01
=<2m	01	01
>2m	01	01

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ■ None Found

Competing Species: RHAMCAT; JUGLNIG

Photos 293-307 (BUUT1 on DNA sample sheet)

Tree 010

Tree #: 010 | Zone: 17 | Easting: 563020 | Northing: 4781390

Crown Class: S | Live Crown %: 095 | Main Stem Length(m) Below crown: 04

Twig Dieback ☐ | Branch Dieback ☐ | Defoliation ☐ | Discolouration ☐

#Stems: 1 | DBH(cm): <1

Butternut Origin: ■ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ■ Seed Set ☐ None

Assess below live crown:

	#Open	#Sooty
00 #Epic-Live		
00 #Epic-Dead		
S Bark Type		
00 # Callused Wounds		
Root	00	00
=<2m	00	00
>2m	00	00

Metres from badly cankered tree: ■ < 40 ☐ > 40 ☐ None Found

Competing Species: RHUSTHY; RHAMCAT

Photos 308-315 (BUUT2 on DNA Sample sheet)

Tree

Tree #: | Zone: 1 | Easting: | Northing:

Crown Class: | Live Crown %: | Main Stem Length(m) Below crown:

Twig Dieback ☐ | Branch Dieback ☐ | Defoliation ☐ | Discolouration ☐

#Stems: | DBH(cm):

Butternut Origin: ☐ Natural ☐ Planted ☐ Unknown

Seed Signs: ☐ Male Flowers ☐ Female Flowers ☐ Seed Set ☐ None

Assess below live crown:

	#Open	#Sooty
#Epic-Live		
#Epic-Dead		
Bark Type		
# Callused Wounds		
Root		
=<2m		
>2m		

Metres from badly cankered tree: ☐ < 40 ☐ > 40 ☐ None Found

Competing Species:

Please enter matching page link code on forms 1 and 2

Page Link: 563244

(Contact Information follows all applicable privacy policies and guidelines)

Please return forms to:
Forest Gene Conservation Association
Suite 233, 266 Charlotte St.
Peterborough, ON, K9J 2V4
www.fgca.net

49731

BHA Tree Analysis (version: December 2013)

This table is to be completed by a designated Butternut Health Assessor (BHA).

BHA Report #	602-21	Assessment Date(s)	23-Jul-19	Total # Butternut Trees in BHA Report	4
BHA ID #	602	BHA Name	McPhee, J.		
Landowner / Client Name			Sobara		
Property Location			Brantford - Sobara		

input field data										automatic calculations from field data						Categories: 1: non-retainable, 2: retainable, 3: archivable				
			# bole cankers				# root flare (RF) cankers													
Tree #	Live Crown %	Tree dbh (cm)	sooty (S) (will be assigned 2.5 cm per canker)		open (O) (will be assigned 5 cm per canker)				<40 m from cankered tree? (Y or N)	Circ. (cm) = Pi x dbh	total bole canker width (sooty x 2.5 + open x 5)	total RF canker width (sooty x 2.5 + open x 5)	bole canker % of circ.	RF canker % of circ.	total bole & root canker % of 2xCirc	LC% >/= 50 & BC% = 0	LC% >70 & BRC % <20	LC% >70 & BC% <20	Preliminary tree call	FINAL TREE CALL a Cat 2, dbh>20cm <40m from a Cat 1
			S <2 m	S >2 m	O <2 m	O >2 m	RF S	RF O		Circ (cm)	BC (cm)	RC (cm)	BC%	RC%	BRC%					
7	95	26	0	2	0	1	2	1	n	81.64	10.0	10.0	**12.2**	**12.2**	**12.2**	1	2	2	**2**	**2**
8	85	24	1	1	4	3	3	4	n	75.36	40.0	27.5	**53.1**	**36.5**	**44.8**	1	1	1	**1**	**1**
9	95	40	1	1	1	1	1	1	n	125.6	15.0	7.5	**11.9**	**6.0**	**9.0**	1	2	2	**2**	**2**
10	95	1	0	0	0	0	0	0	y	3.14	0.0	0.0	**0.0**	**0.0**	**0.0**	2	2	2	**2**	**2**
11										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
12										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
13										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
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16										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
17										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
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21										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
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30										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!
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41										0	0.0	0.0	#####	#####	#DIV/0!	####	####	###	###	#DIV/0!

Ontario

FRMS-PL-F-003

LABORATORY TEST REPORT

BUTTERNUT HYBRIDITY TEST

OFRILS

1235 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Phone: 705 946 7448
Fax: 705 946 2030

Report Date: 2018-12-10

Report ID: OFRILS-PL- 18100

Client	WSP Canada Group Limited		
Address	582 Lancaster Street West Kitchener, Ontario N2K 1M3		
Contact	Jennifer McPhee		
Phone:	(519) 904-1760	Fax:	
E-mail:	Jennifer.McPhee@wsp.com		

MNRF Contact	Graham Buck		
Address	1 Stone Rd. W. Guelph, Ontario N1G 4Y2		
Phone:	(519) 826-4505	Fax:	
E-mail:	graham.buck@ontario.ca		

Sample Received On: 2018-10-24

Method: Molecular tests to detect butternut x Japanese walnut hybrids*

Test Report:

Three standard molecular tests were conducted on two samples from Lynden Hill Crescent, Brantford, Ontario. Hybridity was not detected in the results of laboratory tests. To the best of our knowledge, both samples represent butternut, Juglans cinerea. Sample details may be found on page two of this report.

Please direct any questions to the contact below.

The Forest Pathology Laboratory applies three standard molecular tests published by Zhao & Woeste (2011) * for detecting hybrids.
Note: If these tests are for the purpose of seed tree certification, the results apply only to the tested tree(s), and cannot extend to progeny resulting from open pollination.

This result and test report relates only to the items tested.

All appropriate laboratory quality controls were applied in producing the result/s. The results and interpretation are reported to the best of the knowledge and expertise of the lab and is based on the reference method adopted.

Laboratory Contact:
Glenna Halicki Hayden
Forest Pathology Lab Supervisor
Ontario Forest Research Institute
1235 Queen Street East
Sault Ste. Marie, ON P6A 2E5
Phone: 705 946 7412 Fax: 705 946 2030
Email: glenna.halickihayden@ontario.ca
Web: http://ontario.ca/ofri

Authorized Signature

glenna.halickihayden@ontario.ca
Digitally signed by glenna.halickihayden@ontario.ca
DN: cn=glenna.halickihayden@ontario.ca
Date: 2018.12.11 10:49:54 -05'00'

Name

* Based on published reference method: Peng Zhao & Keith E. Woeste. 2011. DNA markers identify hybrids between butternut (*Juglans cinerea* L.) and Japanese walnut (*Juglans ailantifolia* Carr.). Tree Genetics & Genomes 7:511–533. DOI 10.1007/s11295-010-0352-4.

Ontario

FRMS-PL-F-003

SAMPLE INFORMATION AND TEST SUMMARY

OFRILS

1235 Queen Street East
Sault Ste. Marie, Ontario P6A 2E5
Phone: 705 946 7448
Fax: 705 946 2030

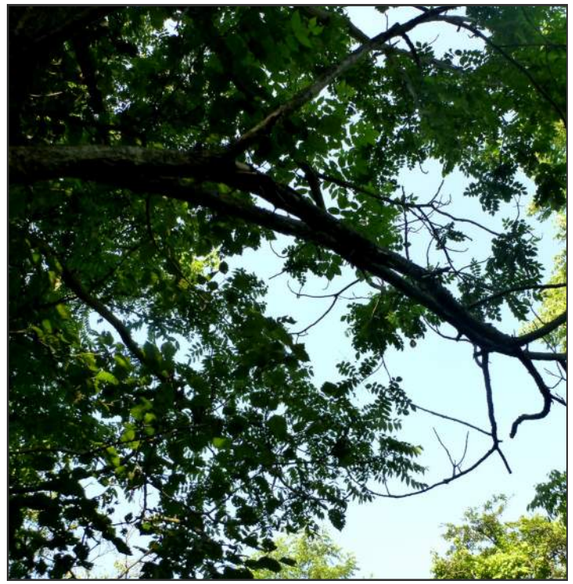
Report ID: OFRILS-PL- 18100

Lab ID	Sample Type	Tree ID	Collection Site	UTM Coordinates	LAB RESULT Hybridity Detected	
18487	Dormant Bud Tissue	BNUT # 1	Backyard of 56 Lynden Hill Crescent, Brantford, Ontario	17T 563027 4781361	☒ NO	☐ YES
18488	Foliage	BNUT # 2	Backyard of 58 Lyndon Hill Crescent, Branford, Ontario	17T 563020 4781390	☒ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES
					☐ NO	☐ YES

Butternut #9 in report

Butternut #10 in report

All errors and omissions are limited to the cost of the analysis



Butternut # 07. Canopy — July 23, 2019

Butternut # 07. Bark of upper bole — July 23, 2019

Butternut # 07. Bark at breast height -- July 23, 2019

Butternut # 07. Seed near trunk — July 23, 2019

Butternut # 07. Bole below 2 m — July 23, 2019

Butternut # 07. Root flare showing one sooty canker (yellow arrow) — July 23, 2019

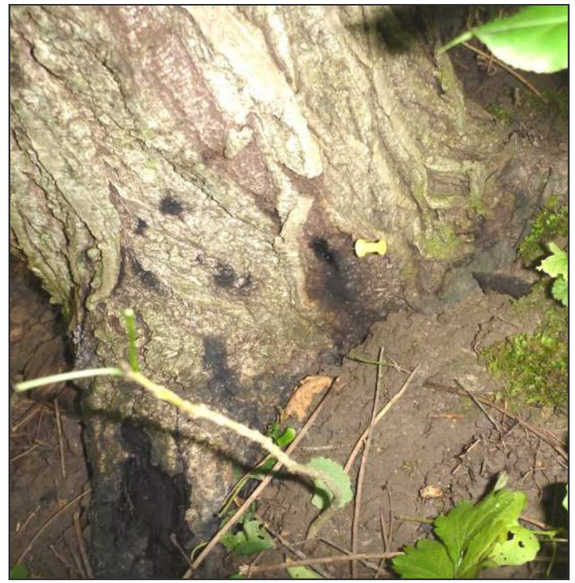
Butternut # 07. One open canker (red arrow) on root flare — July 23, 2019

Butternut # 07. One sooty canker on root flare — July 23, 2019

Butternut # 08. Canopy — July 23, 2019

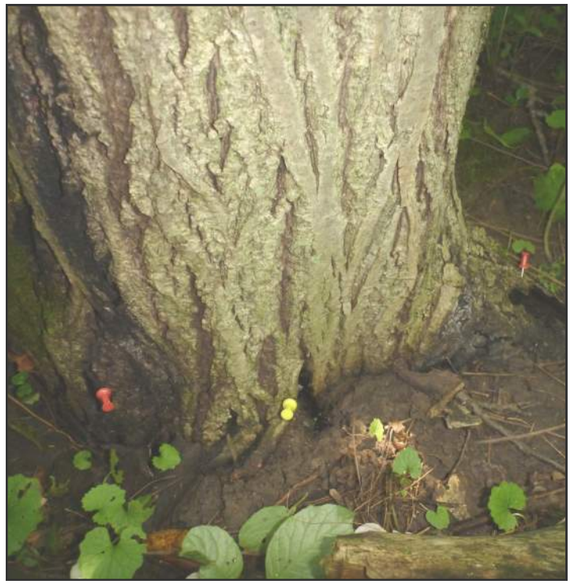
Butternut # 08. Bark of upper bole — July 23, 2019

Butternut # 08. Bark at breast height -- July 23, 2019



Butternut # 08. Root flare showing one sooty canker (Yellow Pin) — July 23, 2019

Butternut # 08. Two open cankers (Red pins) and one sooty canker on root flare — July 23, 2019



Butternut # 08. Two open cankers and one sooty canker on root flare — July 23, 2019

Butternut # 08. One open canker < 2 m — July 23, 2019

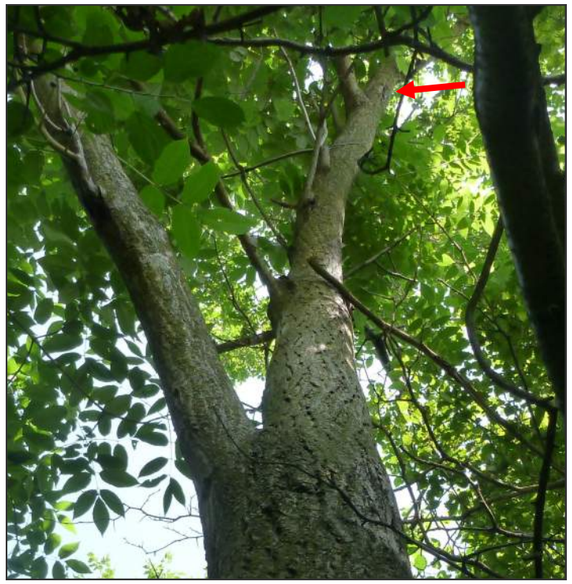
Butternut # 08. One open canker and one sooty canker < 2 m — July 23, 2019

Butternut # 08. One open canker < 2 m — July 23, 2019

Butternut # 08. One open canker < 2 m and two callused wounds — July 23, 2019

Butternut # 08. One open canker (red arrow) > 2 m and two callused wounds — July 23, 2019

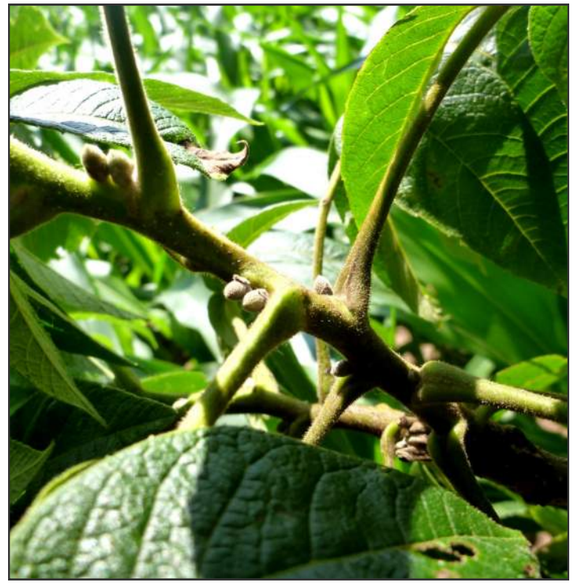
Butternut # 08. One open canker > 2 m and two callused wounds — July 23, 2019



Butternut # 08. One open canker > 2 m and two callused wounds — July 23, 2019

Butternut # 08. One sooty canker (yellow arrow) > 2 m — July 23, 2019

Butternut # 09. Fruit still on tree — July 23, 2019



Butternut # 09. Twigs — July 23, 2019

wsp

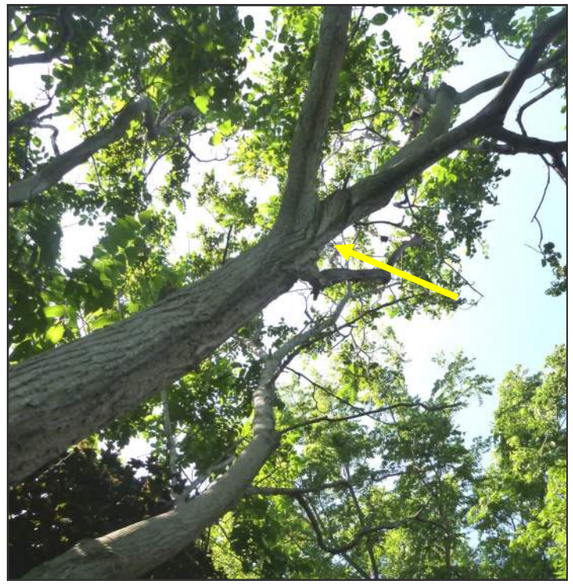
Brantford Expansion Lands—Phase 1 EIS: Butternut Health Assessment

REPRESENTATIVE SITE PHOTOGRAPHS

Date: August 2019

Project No: 18M-01454-00

BHA Report: 602 - 021



Butternut # 09. Canopy and sooty canker (yellow arrow) > 2 m — July 23, 2019

Butternut # 09. Open canker (red arrow) in bark > 2 m — July 23, 2019

Butternut # 09. Canopy and bark > 2 m— July 23, 2019

Butternut # 09. Canopy and bark > 2 m— July 23, 2019

Butternut # 09. Open canker (red arrow) in bark < 2 m — July 23, 2019

Butternut # 09. Bark < 2 m — July 23, 2019

Butternut # 09. Sooty canker (yellow arrow) < 2 m — July 23, 2019

Butternut # 09. Open canker (red arrow) on root flare (not a great photo angle) — July 23, 2019

Brantford Expansion Lands—Phase 1 EIS: Butternut Health Assessment
REPRESENTATIVE SITE PHOTOGRAPHS

Date: August 2019
Project No: 18M-01454-00
BHA Report: 602 - 021

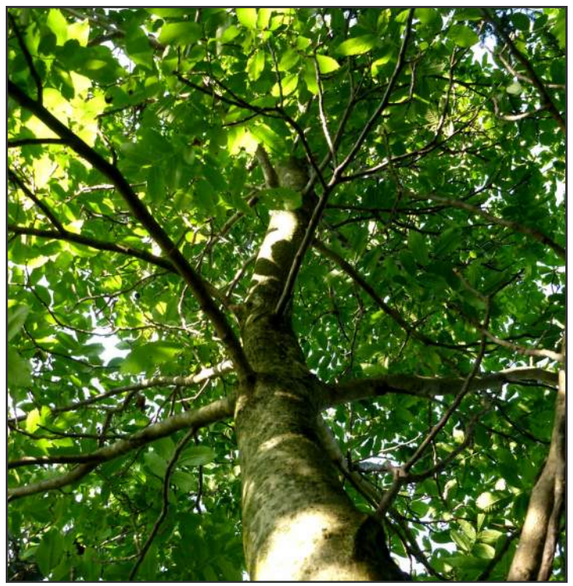
Butternut # 10. Canopy — July 23, 2019

Butternut # 10. Stem, leaves, and buds — July 23, 2019

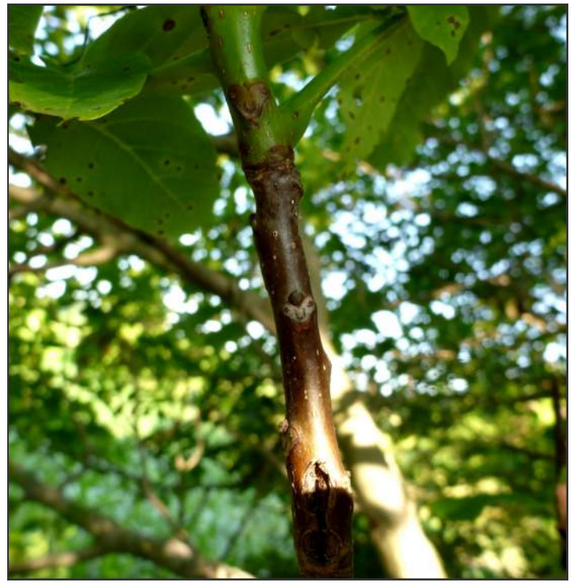
Butternut # 10. Stem — July 23, 2019

Butternut # 10. Stem — July 23, 2019

Light brown, smooth bark of one of the six planted trees determined to be *Juglans regia* — July 23, 2019

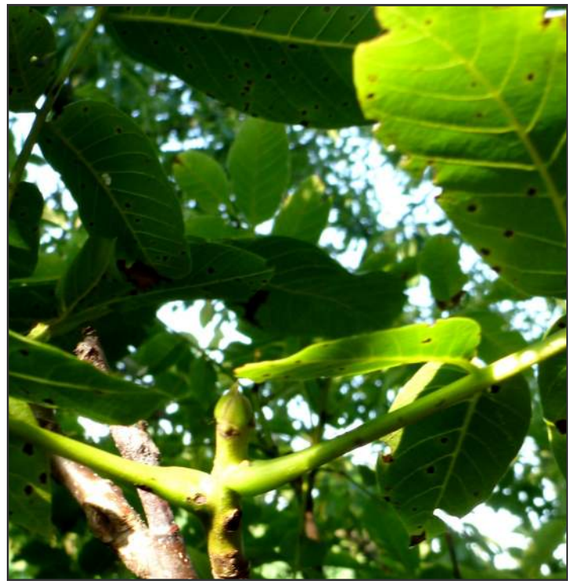


Light brown, smooth bark of one of the six planted trees determined to be *Juglans regia* — July 23, 2019



Bud scar with “V” shapped notch and elongated lenticels on planted *Juglans regia*— July 23, 2019

Only nine leaflets on tree determined to be *Juglans regia* — July 23, 2019



Short, stout bud on tree determined to be *Juglans regia* — July 23, 2019

Very light coloured pith on tree determined to be *Juglans regia* — July 23, 2019

Smooth edges and distinctive deep veins on tree determined to be *Juglans regia* — July 23, 2019

Short, stout bud on tree determined to be *Juglans regia* — July 23, 2019

Light brown, smooth bark of one of the six trees determined to be *Juglans regia* — July 23, 2019

Only nine leaflets and smooth edges on tree determined to be *Juglans regia* — July 23, 2019

Very light coloured pith on tree determined to be *Juglans regia* — July 23, 2019

Bud scar with “V” shapped notch and elongated lenticels *Juglans regia* — July 23, 2019

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BNUT 7

50.0 m

BNUT 8

BNUT 10

BNUT 9

BRAWTWOOD PARK ROAD

Location of six
Juglans regia trees

LYNDEN ROAD

GARDEN AVENUE

Legend

- Subject Property
- Butternut Tree Location
- Railway
- Intermittent Watercourse
- Permanent Watercourse

wsp

SORBARA BRANTFORD EXPANSION LANDS – DRAFT TERMS OF REFERENCE

Butternut Tree Locations

0 50 100

Meters
1:6,000

N

Date: August 2019

Project No: 19M-00542-00

Figure No: 1