NewCold Guelph: Phase 1

Environmental Impact Study

384 Crawley Road, Guelph (Parts of Lot 13, 14, and 15 Concession 7)

Prepared for:

Industrial Equities Guelph Limited Partnership
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Aquatic, Terrestrial and Wetland Biologists

NewCold Guelph: Phase 1

Environmental Impact Study

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Industrial Equities Guelph Limited Partnership ('The Landowner') to complete an Environmental Impact Study (EIS) for a proposed industrial development at 384 Crawley Road, Guelph, known formally as Parts of Lot 13, 14, and 15, Concession 7 (the "Subject Property"). This EIS is part of the Landowner's Site Plan Approval Application. This EIS provides a characterization of the entire Subject Property, with additional focus on areas proposed for Phase 1 development. It is anticipated that subsequent phases of development, as they go through the detailed design process, will have more focused impact assessments.

NewCold Advanced Cold Logistics has entered into an Agreement of Purchase and Sale with The Landowner and is proposing an industrial development that includes industrial land uses, parking areas, roadways and stormwater management facilities. Previous studies on the Subject Property completed by NRSI include an EIS in 2007, Pre-construction Terrestrial and Wetland Monitoring from 2006-2010, and an Environmental Implementation Report (EIR) in 2012 with addendum (2014). The 2007 EIS was approved by the City and the Grand River Conservation Authority ("GRCA"), however, the 2012 EIR was not. A tree permit application focusing on the plantation and hedgerows within the southwestern portion of the Subject Property necessitated an environmental study by Aboud & Associates in 2020. The tree permit was denied by the City of Guelph at that time.

On April 11, 2023, the Ministry of Municipal Affairs and Housing (OMMAH) approved Official Plan Amendment No.80 ("OPA 80") that amends the City of Guelph Official Plan, with modifications that include specific provisions that relate to the Subject Property. The following site-specific policies are included within OPA 80:

> *"13. Notwithstanding the policies of the Industrial designation, the maximum gross floor area shall be 160,000 square meters and the maximum building height shall be 46 metres.*
>
> *Nothing in this Plan shall prevent the construction of industrial buildings and ancillary buildings, landscaping and any related works, including without limitation:*
>
> *i) Policies 4.1.25, 4.1.3.3, 4.1.3.4, 4.1.3.6, 4.1.3.8, 4.1.3.9, 4.1.4.4, and 4.1.6.1.*

The alignment of the future planned public road shall be determined by the City in consultation with the proponent. The conveyance of the future planned public road may be secured through a site plan agreement or consent agreement."

Schedules 2, 3, 4, 4a, 4b, 4c, 4d, 4e, and 6 were also modified in accordance with these area specific policies.

The natural heritage characterization surveys and studies as part of this EIS were initially conducted in accordance with consolidated Official Plan (2022) policies, however, in light of the changes recently introduced by OPA 80, those policies no longer apply. Despite the express exclusion of these Official Plan policies' application to the Subject Property pursuant to OPA 80, this EIS provides an assessment of natural heritage features, sensitive species, ecological constraints, and associated impact assessments, consistent with the current Provincial Policy Statement (OMMAH 2020). Some assessments relating to City of Guelph policy are still included to provide additional area-specific context and to provide a comprehensive overview of natural heritage features (e.g., locally significant species, Natural Heritage System mapping, Significant Landform, etc.), notwithstanding that such Official Plan polices do not apply.

The project team relevant to the EIS includes:

- NRSI (natural heritage),
- Bousfields (planning),
- AECOM (grading/site plan, stormwater management), and
- GM BluePlan Engineering Limited (hydrogeology).

The Subject Property is approximately 81.7ha in area and is bordered by Crawley Road to the southwest, Maltby Road West to the south, open industrial lands (developed and undeveloped) to the west, and woodlands and agricultural fields to the north (Map 1). The Subject Property contains active agricultural fields, plantation, Significant Woodlands and other treed areas, Provincially Significant Wetlands (PSW), and open cultural habitats. Many of these features comprise the City of Guelph's Natural Heritage System (City of Guelph 2022).

Numerous wetlands that have been identified as part of the Mill Creek Puslinch PSW complex fall within the Subject Property; these wetlands are regulated by the GRCA under Ontario Regulation 150/06 and permitting will be required for development proposed within 120m of them (Government of Ontario 2013). At the time of preparing this report, one non-PSW is

present within the Subject Property for which the regulated area is considered to be within 30m (Government of Ontario 2013).

Because the Subject Property contains wetlands regulated by the GRCA, Natural Heritage System features identified by the City of Guelph (Significant Natural Areas, Ecological Linkages, Wildlife Crossings, and Restoration Areas), and features subject to the current Provincial Policy Statement (OMMAH 2020), an EIS is required to characterize the natural features and assess potential impacts from the proposed development. A Tree Inventory and Preservation Plan (TIPP) is also required by the City of Guelph because tree removals are required within the Subject Property to facilitate the proposed development.

This EIS has been prepared in accordance with GRCA wetland policy (2003) and GRCA's *EIS Guidelines and Submission Standards for Wetlands* document (2005), the City of Guelph's Guidelines for the Preparation of Environmental Impact Studies (2020), and the Natural Heritage Reference Manual (OMNR 2010).

1.1 Proposed Undertaking

The proposed development includes an industrial site that is to be developed in multiple phases, which includes cold storage manufacturing (warehouses, food production), parking, office space, stormwater management facilities, landscaping, and the extension of Southgate Drive to Crawley Road. A private pumping station and sanitary forcemain will also be required to discharge sanitary flow to the Southgate Drive right-of-way. A significant amount of ecological restoration is also proposed within buffers and agricultural fields to compensate for vegetation removal that is required to facilitate the proposed development. At this time, 6 phases of development have been identified, however, area stripping and pre-grading operations for Phases 1-4 are proposed to occur prior to construction of Phase 1. Vegetation removal within all developable lands (Phases 1-6) is proposed during Phase 1 as well. The proposed phasing plan is shown in Appendix I.

1.1.1 Phase 1 Development

Phase 1 is concentrated mostly within the southwestern portion of the Subject Property. Development is proposed to include the extension of Southgate Drive, an underground chamber storage system that will be conveyed to the City, frozen high bay and dispatch warehouses, office space, a pumping station, parking, and landscaped areas (Appendix I; Map 1).

1.2 Project Scoping

1.2.1 Study Area

For the purposes of this report, the Subject Property refers to the lands at 384 Crawley Road. The entire Subject Property is considered within this Phase 1 report because of the proposed vegetation removal and pre-grading work that will occur prior to Phase 1 construction for across the Subject Property, including within areas outside of the Phase 1 lands of the Subject Property. The Study Area, for which additional information was collected and reviewed, accordingly comprises the Subject Property plus 120m, as shown on Map 1. A distance of 120m was chosen to adequately capture adjacent lands as per the Provincial Policy Statement (PPS) (MMAH 2020). Because there are no watercourses or contiguous natural features that have the potential to be impacted beyond 120m from the property boundary, and the proposed stormwater management approach does not result in stormwater outlets to receivers outside the property, this distance is considered adequate.

1.2.2 Collection and Review of Background Information

Existing natural heritage information was gathered and reviewed to identify key natural heritage features and species that are reported from or have the potential to occur within the Study Area. Background information on the natural environment features within the Study Area vicinity was also gathered from the City of Guelph Official Plan (2022), the Grand River Conservation Network: Interactive Mapping Tool (GRCA 2022) and relevant taxa-specific databases, as listed below. Previous studies by NRSI (2007 EIS; 2012 EIR) and Aboud & Associates (2020) were also reviewed for site-specific monitoring results and conclusions.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the Study Area (10km radius) using various online atlases and results from previous environmental studies (NRSI 2007, NRSI 2012, Aboud & Associates 2020) where property-specific information was provided. These initial species lists were used to guide the scope and type of wildlife surveys required, as outlined in the following sections. The sources that were reviewed to inform project scoping include the following:

- City of Guelph Official Plan (June 2022 Consolidation),
- City of Guelph Locally Significant Species List (City of Guelph 2012),
- Guelph Natural Heritage Study (Dougan and Associates 2009),
- Clair-Maltby Secondary Plan and Master Servicing Plan CEIS Phase 1 / Phase 2 Characterization Report (Wood & BA Consulting Group 2022),

- Clair-Maltby Secondary Plan and Master Environmental Servicing Plan (CMSP / MESP) and Comprehensive Environmental Impact Study (CEIS). Phase 3 Impact Assessment and Management Plan (Wood et al., 2022),
- The Hanlon Creek Watershed Plan (MMM and LGL 1993),
- Hanlon Creek State-of-the-Watershed Study (Peil et al. 2004),
- Mill Creek Subwatershed Plan (CH2m Gore et al. 1996),
- Southgate Business Park EIS (NRSI 2007),
- Southgate Business Park EIR (NRSI 2012) and EIR Addendum (NRSI 2014),
- Southgate Business Park Environmental Study Report (Aboud & Associates 2020),
- GRCA Interactive Mapping Tool (2022),
- Make a Map: Natural Heritage Areas online mapping tool (MNRF 2022a),
- Government of Canada Species at Risk Act (SARA) Registry (2022a),
- MNRF SRanks (MNRF 2022b),
- Species at Risk list in Ontario (SARO) (MECP 2023),
- Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2006),
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2020),
- Atlas of the Mammals of Ontario (Dobbyn 1994),
- Department of Fisheries and Oceans Canada - Aquatic SAR Mapping (DFO 2022),
- Ontario Butterfly Atlas (Macnaughton et al. 2022),
- Ontario Odonata Atlas (OOAD), and
- eBird (Cornell Lab of Ornithology 2022).

The wildlife and insect atlases listed above provided data based on 10x10 km survey squares. Information was compiled from the atlas squares that overlap the Study Area (squares 17NJ6515, 17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614).

The background information is integrated with original updated data collected by NRSI during the 2022-2023 field surveys to inform the characterization component of the EIS.

1.2.3 Species at Risk and Species of Conservation Concern Screening

Based on the initial species lists, a number of Species at Risk (SAR) and Species of Conservation Concern (SCC) were identified as having records near the Study Area. Species at Risk are those species listed on the Species at Risk in Ontario List (MECP 2023). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as Endangered or Threatened are protected under the *Endangered Species Act* (ESA) 2007, which includes protection to their habitat, and are referred to herein as “regulated SAR”.

SCC include:

- species designated provincially as Special Concern,

- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the NHIC, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species may be protected by the federal *Species at Risk Act* (SARA) if they are listed as Threatened or Endangered on Schedule 1 of the *SARA*, but not provincially by the *ESA*.

Habitat for SCC is considered Significant Wildlife Habitat (SWH) (OMNR 2010), which is afforded protection under the Provincial Policy Statement (OMMAH 2020) and municipal natural heritage protection policies. For the purposes of this report, the term "SAR" will refer to provincially Threatened and Endangered species regulated under the *ESA* while provincial species of Special Concern will be considered SCC.

Based on NRSI's examination of background sources and federally or provincially significant species with occurrence records near the Study Area, an assessment of SAR and SCC suitable habitat presence within the Study Area was completed. Assessments of habitat suitability in the Study Area were made by cross-referencing each species' known habitat preferences or requirements (e.g., OMNR 2000) with habitat availability based on satellite imagery interpretation, and available mapping. The final results of the SAR and SCC screening, based on original field surveys and habitats present, are provided in Appendix II and discussed in more detail in Sections 4 and 5. This screening table integrates previous field work completed by NRSI (2007, 2012) and Aboud & Associates (2020) as well.

1.2.4 Significant Wildlife Habitat Screening

A screening for the presence of SWH was also completed for the Study Area. The Significant Wildlife Habitat Technical Guide (SWHTG) outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats for Ecoregion 6E, in which the Study Area is located (OMNR 2000, MNRF 2015a). The SWHTG groups SWH into four broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of SCC, and animal movement corridors. Final results of the SWH screening exercise based on original field surveys are provided in Appendix III and discussed in more detail in Section 5.4. This screening table integrates previous field work completed by NRSI (2007, 2012) and Aboud & Associates (2020) as well.

1.2.5 Terms of Reference and Agency Guidance

Based on the findings of the background review and previous studies, the SAR/SCC screening, and the SWH screening, a Terms of Reference (TOR) for the EIS was prepared by NRSI and

submitted on June 30, 2022 to the City of Guelph and GRCA. The TOR was revised based on the comments received from agencies and was resubmitted on August 9, 2022. The approved TOR is found in Appendix IV. This TOR was initially prepared under the assumption that a Draft Plan of Subdivision application would occur. An updated TOR based on the change to a Site Plan Application and the implications of OPA 80 has not been provided, however this approved TOR provides a reasonable and conservative basis for this EIS.

2.0 Relevant Policies, Legislation and Planning Studies

Table 1 provides an overview of natural heritage-based policies, regulations and legislation that were considered and which informed the field program and analysis. To help inform suitable land-use concepts and identify areas to be protected, inventoried natural features were evaluated against relevant policies, regulations and legislation outlined in the following sections.

Notably, OPA 80 removes the requirement to assess the proposed development of the Subject Property against the Natural Heritage System policies of the City of Guelph's Official Plan. To provide fulsome context these policies have nevertheless been considered within this report even though they are not constraints to development. Natural Heritage policies of the Provincial Policy Statement (OMMAH 2020) and requirements of federal and provincial acts, such as the *ESA*, still apply.

Table 1. Relevant Policies, Legislation, Planning Studies, and Guidelines.

Policy/Legislation/Study	Description	Project Relevance
Provincial Policy Statement (PPS) (OMMAH 2020)	• Issued under the authority of Section 3 of the Planning Act and came into effect on May 1, 2020, replacing the 2014 PPS. • Section 2.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'. • The Natural Heritage Reference Manual (Ontario Ministry of Natural Resources (OMNR) 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS. • Section 1.3 of the PPS – Employment establishes policies for provincially significant Employment lands that designate permitted land uses. • The PPS is to be read in its entirety and a decision-maker should consider all the relevant policies to understand how they work together. • OMMAH released a proposed updated PPS on April 6, 2023 which revises provincial policy and integrates Growth Plan policy. Amended Natural Heritage policies were not provided at this time and still remain under consideration by the Province.	• The following natural features, afforded consideration within the PPS, were identified within the Study Area: o Significant Woodland, o Significant Wetland, o Significant Wildlife Habitat, and o Habitat of Endangered and Threatened Species • The Subject Property is designated Provincially Significant Employment Lands.
Endangered Species Act (ESA) (Government of Ontario 2007)	• The original ESA, written in 1971, underwent a year-long review which resulted in a number of changes which came into force in 2007. • The ESA prohibits killing, harming, harassing, or capturing SAR and protects their habitats from damage and destruction.	• Based on the background review and SAR/SCC screening, several SAR were identified as potentially occurring within the Subject Property (Appendix I). • These SAR are described and considered throughout this report.

Policy/Legislation/Study	Description	Project Relevance
	• Ontario Regulation 242/088 under the ESA applies to all species on the Species at Risk in Ontario List, as of June 2, 2017.	
Migratory Birds Convention Act (MBCA) (Government of Canada 1994)	• The MBCA protects migratory game birds, insectivorous birds, and several other migratory non-game birds from persecution in the form of harassment. • Prohibits the disturbance, destruction, or taking of a nest or eggs of migratory birds. • The schedule of on-site work must consider MBCA windows, with timing of breeding bird season typically occurring approximately between April 1 and August 31; however, this is a guideline, since the MBCA applies to nesting bird species at any time. • "Incidental take" is considered illegal, with the exception of a permit obtained by the Canadian Wildlife Service (CWS).	• Any vegetation removal and grading required for the proposed maintenance access must have regard for this legislation in the form of timing window restrictions or other suitable mitigation measures.
Migratory Birds Regulations (Government of Canada 2022b)	• The Migratory Birds Regulations (MBR 2022) came into force on July 30, 2022, under the MBCA. This added new provisions for certain migratory birds and clarifies when nests are protected. • Provides year-round protection to the nests of 18 species, that are known to re-use nests annually, now listed under Schedule 1.	• Three of the listed species (Great Blue Heron, Green Heron, Pileated Woodpecker) are known from the vicinity of the study area through background review. • Two of the listed species (Green Heron, Pileated Woodpecker) were observed on the subject property, but no breeding or nesting evidence was found.
Fish and Wildlife Conservation Act (FWCA) (Government of Ontario 2019)	• The FWCA provides protection for certain bird species, not protected under the MBCA (e.g., raptors and owl), as well as furbearing mammals and their dens or habitual dwellings, aside from the Red Fox (*Vulpes vulpes*) and Striped Skunk (*Mephitis mephitis*).	• The timing of construction activities, especially vegetation clearing and site grading must have consideration for bird nesting (including nesting season for Raptors, Hawks and Owls) and den sites for furbearing mammals. • Wildlife sweeps by a qualified biologist are recommended in advance of any vegetation clearing and site grubbing during the active season to ensure no active nests/dens are present.

Policy/Legislation/Study	Description	Project Relevance
City of Guelph Official Plan (2022 Consolidation)	• The City's Natural Heritage System, as presented in the Official Plan, includes Significant Natural Areas and Natural Areas, which have been defined based on their level of significance and mapped in the Official Plan schedules. • The Natural Heritage System provides permanent protection to the Significant Natural Areas (including Ecological Linkages) and established buffers. • Development is not permitted with Significant Natural Areas or their minimum buffers (Table 4.1 / Schedule 4). • Policy 4.1.2 states that development or site alteration is not permitted within the Natural Heritage System, including buffers, unless under permitted uses. It may be permitted within or adjacent to natural heritage features and areas if an EIS demonstrates, to the satisfaction of the City, that there will be no negative impacts on the natural heritage features and area, or their ecological and hydrological functions.	• Natural Heritage System features are present within the Study Area. In general, development and site alteration are not permitted within the Natural Heritage System with the exception of permitted uses described in Section 4.1.1.11 of the OP • The following features of the Natural Heritage System are present within the Subject Property: o Significant Natural Areas, o Natural Areas o Wildlife Crossings, and o Restoration Areas. • Note that OPA 80 expressly exempts the Subject Property and proposed development from these Natural Heritage System policies of the Official Plan.
City of Guelph Tree By-Law – 19058 (2010)	• Aims to regulate tree protection within City limits. • Statutes of protection aims that no person shall destroy, injure, or permit destruction towards a defined, regulated tree.	• City of Guelph Environmental Planning staff determined that a TIPP would be required to comprehensively assess impacts from the proposed undertaking, and that it should be part of the complete application requirements • The TIPP will outline a replanting and compensation plan and demonstrate how trees remaining within the proposed development area will be protected from injury.
City of Guelph Tree Technical Manual (2019)	• Developed by the City of Guelph to support and supplement existing municipal policies (such as the Official Plan and By-law (2010)-19058).	• Sets out that a Tree Inventory and Preservation Plan is required to inform the draft plan and a detailed Tree Inventory and Preservation Plan and Vegetation

Policy/Legislation/Study	Description	Project Relevance
	• Promotes best practices for tree management and the maintenance and enhancement of Guelph's tree canopy, and establishes standards for tree-related plans and reports.	Compensation Plan are required at the Detailed Design stage. • Establishes tree protection zones, and compensation approaches for loss of tree cover. • Provides standard drawings for tree protection measures and tree plantings. • A TIPP report is appended to this EIS (Appendix V) that summarizes inventory information, identified potential impacts to trees and provides recommendations for tree protection, mitigation and suitable compensation measures to be considered at the Detailed Design stage.
GRCA Regulation 150/06 Under the Conservation Authorities Act (Government of Ontario 2013)	• Regulation issued under *Conservation Authorities Act,* R.S.O. 1990. • Through this regulation, the GRCA has the responsibility to regulate activities in natural and hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes). • GRCA requires that an EIS be undertaken in accordance with their *EIS Guidelines and Submission Standards for Wetlands* where development is proposed within 120m of PSW or 30m of non-PSW (GRCA 2005). • Changes to the Conservation Authorities Act were introduced in Bill 23 in 2022, which impacts the role of Conservation Authorities in planning applications. Hazard lands remain part of their jurisdiction.	• Due to the presence of the Mill Creek Puslinch Provincially Significant Wetland Complex within the Subject Property, a majority of the Subject Property is regulated by GRCA. • In accordance with this policy, any proposed development must demonstrate no negative impacts to the regulated natural features or their ecological functions. • Permitting from the GRCA must be obtained for proposed works within regulated areas and adjacent lands.
Hanlon Creek Watershed Plan (MMM and LGL 1993)	• The Watershed Plan was developed to determine the measures necessary to protect and enhance the natural resources of the Hanlon Creek watershed and to define the level of development which could proceed within the constraints established for this protection.	• Recommends that an Environmental Monitor is used to ensure the provisions of erosion and sediment control plans are followed. • The proposed development should consider and the recommendations for water quality targets in the HCWP in the management of stormwater quality for the Subject Property,

Policy/Legislation/Study	Description	Project Relevance
	• The Southgate Business Park was included in the watershed as part of this study. • Site-specific buffers and linkages are necessary to protect and enhance the value of the core natural areas. Connections between core natural areas are extremely important for systems that are currently severely stressed. Development in many areas of the watershed is limited by lack of surface water drainage	including for Chlorides and other contaminants. • No groundwater level recommendations are provided in the HCWP.
Hanlon Creek State of the Watershed Study (Peil et al. 2004)	• This study evaluates how well the processes for guiding human settlement have progressed towards achieving the objectives set out by previous watershed studies, and provides a plan for sustainable development. • Development is unlikely to cause significant impacts to the water table levels in the watershed. • A monitoring program is recommended that includes surfacewater, groundwater, aquatic, and terrestrial resources.	• A portion of the Subject Property falls within the watershed limits of this study. • It is important to be able to estimate the degree of success that can be expected from stormwater management facilities in mitigating impacts. • Development should include environmental inspectors. • Lot level and vegetative best management practices should be utilized. • Conservation agreements to protect sensitive lands are encouraged.
Mill Creek Subwatershed Plan (CH2M et al., 1996)	• The Mill Creek Subwatershed is located in the mid-reached of the Grand River Watershed. The Subwatershed Plan identifies a management plant that balances development and conservation and enhancement of natural resources. • Maintaining interconnections between groundwater recharge and surface water features is critical to preserving existing conditions with the Mill Creek subwatershed.	• For this study, only the southeastern portion of the Subject Property was part of the watershed. • Plantations were only considered part of the greenspace in selected cases where they provided “in-fill” to large patches of native forest because they are generally considered lower quality woodlands and support less diverse wildlife populations. The plantation on the Subject Property was not included. • An EIS is recommended to demonstrate conformance with subwatershed plan goals, objectives, recommendations, and targets. A monitoring program should be identified.

3.0 Field Methods

The type and scope of study methods was determined in consultation with the City of Guelph and GRCA through the TOR (Appendix IV).

A comprehensive, multi-season field program was undertaken by NRSI in 2022-2023. Numerous field visits were carried out between February 8, 2022 and April 8, 2023 to characterize natural features and identify significant and sensitive natural heritage features and species that have the potential to be adversely affected by the proposed development, which are summarized in Table 2. Monitoring stations as part of the 2022-2023 field program are shown on Map 2. Aboud & Associates completed surveys in 2020 in the southeastern portion of the Subject Property; where appropriate, the results of their surveys have been incorporated into this report. Their field program is summarized in Table 3. Monitoring stations as part of Aboud & Associates 2020 field program are also shown on Map 2. Details of each survey type, including protocols and methods are described further below.

During the field program, all observations of birds, reptiles, amphibians, mammals, butterflies, dragonflies, and damselflies were documented on all field visits. This included actual direct observations of individuals, as well as signs of wildlife presence (i.e., tracks, scat, dens, nests, etc.).

Table 2. NRSI Field Program Summary (2022)

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
Winter Wildlife Movement Surveys	Systemic area search throughout property	February 8, 2022	1000-1600	5 (start), 0 end)	1	100	Intermittent snow	JEP, MB
		March 3, 2022	1000-1600	-7	1	20	None	MB, TMB
		March 14, 2022	1000-1600	-1 (start), 6 (end)	1	20	None	EGM, DKP
Raptor Wintering Surveys	OMNR 2011	February 8, 2022	1000-1600	5 (start), 0 end)	1	100	Intermittent snow	JEP, MB
		March 3, 2022	1000-1600	-7	1	20	None	MB, TMB
		March 14, 2022	1000-1600	-1 (start), 6 (end)	1	20	None	EGM, DKP
		March 16, 2022	1300-1550	4	1	10	None	JIM, LEH
		March 29, 2022	0900-1200	-6	2	30	None	DKP, AAR
Wildlife Camera Checks	n/a	February 2022 – January 2023 (once a month)	n/a	n/a	n/a	n/a	n/a	Multiple
Vegetation Communities (ELC)	Lee et al. 1998	May 11/ June 9. 2022	1045-1830	15	2	50	None	JW, TS
		July 5, 2022	1000-1600	20	2	60	None	TS, SM
		September 27, 2022	0900-1745	11	2	100	Drizzle	JW, TS
Vascular Flora Inventory	Systematic area search by ELC polygon	May 11/ June 9, 2022	1045-1830	15	2	50	None	JW, TS
		July 5, 2022	1000-1600	20	2	60	None	TS, SM
		September 27, 2022	0900-1745	11	2	100	Drizzle	JW, TS
Wetland Delineation, Flagging and Survey	MNRF 2014a	July 29/August 5/August 10. 2022	n/a	n/a	n/a	n/a	n/a	CLH, LEH
Wetland Boundary Confirmation	MNRF 2014a	August 19, 2022	n/a	n/a	n/a	n/a	n/a	DES, LEH

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
with GRCA/ City of Guelph								
Significant Woodland Dripline Survey	City of Guelph 2022	July 29/August 10, 2022	n/a	n/a	n/a	n/a	n/a	CLH, LEH, BDW
Significant Woodland Dripline Boundary Confirmation with City of Guelph	City of Guelph 2022	September 9, 2022	n/a	n/a	n/a	n/a	n/a	BDW, LEH
Significant Landform Boundary Delineation	City of Guelph 2022	April 29, 2022	n/a	n/a	n/a	n/a	n/a	NGH, EAK
Significant Landform Boundary Confirmation with City of Guelph	City of Guelph 2022	August 23, 2022	n/a	n/a	n/a	n/a	n/a	NGH, LEH
Tree Inventory	City of Guelph Tree By-Law (2010)-19058 Tree Technical Manual (City of Guelph 2019)	Multiple	n/a	n/a	n/a	n/a	n/a	SLM, MP, HM, JLR, SLH, JBB, TMB, EMB
Breeding Bird Surveys	OBBA 2021a,b	June 6, 2022	0553-0823	12 (start), 13 (end)	2	100	None	KMH, NLS
		June 17, 2022	0625-0900	20	2	20	None	MEG
		July 6, 2022	0605-0825	19	1	70-100	None	JIM, EAK
Marsh Breeding Bird Surveys	BSC 2009a	May 25, 2022	1900-2028	15	3	100	Light drizzle	DKP, NS
		June 30, 2022	1858-2015	28	3	50	None	KJ, NS
	Hannah 2021	June 30, 2022	1824-2108	28	3	50	None	KJ, NS

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
Common Nighthawk Survey		July 12, 2022	2040-2101	21	2	25	None	KMH, AAR
Anuran Call Survey	BSC 2009b	April 20, 2022	2042-2210	6.5 (start), 6 (end)	1-3	80	None	SGB, AJT
		May 25, 2022	2120-2236	15 (start), 14 (end)	3	100	None (light rain before)	DKP
		June 21, 2022	2136-2256	27	2	60	None	AR
Egg Mass Surveys	Systematic area search within suitable habitats	April 12, 2022	0940-1400	13 (start), 17 (end)	0	0	None	LEH, DP
		May 17, 2022	1000-1700	11 (start), 15 (end)	3	35	None	TS, NS
Turtle Basking Surveys	MNRF 2015b	April 12, 2022	0940-1400	13 (start), 17 (end)	0	0	None	LEH, DKP
		April 28, 2022	1015-1325	11 (start), 15 (end)	3	0	None	KMH, EAK
		May 11, 2022	0845-1625	19 (start), 29 (end)	2	30	None	SLH, MB
		May 17, 2022	1000-1730	11 (start), 14 (end)	3	35	None	TS, NS
		June 2, 2022	0900-1325	17 (start), 19 (end)	4	60	None	SGB
Snake Visual Encounter Surveys	MNRF 2016a	April 28, 2022	1220-1700	14 (start, 15 (end)	3	0	None	KMH, EAK
		May 11, 2022	0845-1630	19 (start), 29 (end)	2	30	None	SLH, MB
		May 17, 2022	1000-1730	11 (start), 14 (end)	3	35	None	TS, NLS
		June 6, 2022	0900-1230	15 (start), 22 (end)	2	100	None	KMH, NLS
		July 14, 2022	0815-1200	18.5 (start), 31 (end)	2	30	None	KMH, MA
		July 22, 2022	0730-1200	17 (start), 27 (end)	1	0	None	DKP, SG

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
		August 10, 2022	0800-1330	17 (start), 30 (end)	1	25	None	KMH, EEV
		August 26, 2022	0822-1335	21.5	0	90	None	NJG, AAR
		September 21, 2022	0800-1230	18 (start), 24 (end)	1-3	80	None	KMH, MB
		April 8, 2023	1139-1445	8 (start), 11 (end)	2	5	None	HM
Snake Coverboard Placement and Checks	MNRF 2016a	April 29, 2022	1042-1400	9 (start), 17 (end)	2-3	0	None	NH, EAK
		May 11, 2022	0845-1605	15	2	30	None	SLH, MB
		May 17, 2022	1000-1700	11	3	35	None	TS, NLS
		June 2, 2022	0945-1300	15 (start), 19 (end)	4	60-100	None	SGB
		June 6, 2022	0900-1217	15	2	90	None	KMH, NLS
		June 17, 2022	0630-1000	21	2	20	None	MEG
		July 14, 2022	0818-1100	17.5	2	0	None	KMH, MA
		July 22, 2022	0730-1200	17	1	0	None	DKP, SG
		August 10, 2022	0800-1032	17	1	25	None	KMH, EEV
		August 26, 2022	0800-1351	21.5	1	90	None	AR, NG
		September 21, 2022	0800-1230	18	1	80	None	KMH, MB
Salamander Movement Surveys	n/a	April 7 (A.M.), 2022	0700-1145	4	0	100	None	LEH, DKP
		April 12 (A.M.), 2022	0715-0930	2	0	0	None	LEH, DKP
		April 12 (P.M.), 2022	1800-1954	18	2	100	None	JIM, PPA
		April 13 (A.M.), 2022	0700-1000	10	1	100	Drizzle	DKP, WK
		April 13 (P.M.), 2022	1810-2000	18	2	100	Light rain	LEH, SLM

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
		April 14 (A.M.), 2022	0720-1147	15	4	100	Light rain	TMB, LEH
		April 25 (A.M.), 2022	0710-1111	14	0	60	None	LEH, EEV
		May 27 (A.M.), 2022	0710-1145	18	2	100	None	LEH, JAS
		September 25 (A.M.), 2022	0745-1054	12	1	100	Light rain	LEH, AD
		September 25 (P.M.), 2022	1810-2006	15.5	2-3	80	None	JIM, SM
		September 26 (A.M.), 2022	0730-1108	9.5	1	80	None	JIM, EJ
Insect Surveys	Colla & Taylor-Pindar 2011	July 14, 2022	0815-1534	17-25	2	0	None	KMH, MA
		August 10, 2022	0800-1330	17-24	1	25	None	KMH, EEV
		September 21, 2022	0800-1230	18	1	90	None	KMH, MCB
Bat Habitat Assessment (leaf-off)	MNRF 2017a, MECP 2022	May 2, 2022	0813-1440	9	1	100	None	CLH, EAK
		May 26, 2022	n/a	n/a	n/a	n/a	n/a	CLH, JMT
		November 10, 2022	0825-1500	10	2	85	None	CLH, KN
		November 18, 2022	0815-1445	-1	2	65	None	CLH, SLM
		November 21, 2022	0830-1500	2	3	5	None	CLH, JBB
		November 22, 2022	0830-1500	-1	0	0	None	TMB, KC
		December 8, 2022	0900-1156	2	1	95	None	EMB, MP, HM, KC
Bat Acoustic Monitoring	MECP 2022, with additional guidance from MECP	May 26-July 6, 2022	n/a	n/a	n/a	n/a	n/a	n/a

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers[1]
Butternut Health Assessment	MECP 2021	July 22, 2022	0900-1000	n/a	n/a	n/a	n/a	SLM, JBB
Aquatic Habitat Assessment	n/a	June 2, 2022	n/a	20	4	50	None	SGB

[1] AD = Angela Demarse, AJT = Art Timmerman, AAR = Andrew Rutland, BDW = Brett Woodman, CLH = Christy Humphrey, DES = David Stephenson, DKP = Dorian Pomezanski, , EJ = Eloise Jones, EAK = Eve Krauss, EGM = Elizabeth Milne, EEV = Emma Voogjarv, EMB = Erin Bannon, HM = Hashveenah Manoharan, JBB = Jeremy Bannon, JEP = Jennifer Pedersen, JLR = Jack Richard, JMT = Jennifer Thompson, JIM = Jennifer McCarter, JAS = Jason Sousa, JW = Jackie Weber, KC = Katie Croutch, KJ = Kiah Jasper, KMH = Kathryn Hoo, KN = Kathryn Nicol, LEH = Laura Hockley, MA = Maria Alexandrou, MB = Meagan Beck, MEG = Elaine Gosnell, MP = Madison Potsma, NJG = Nathan Grant, NGH = Nyssa Hardie, NLS = Natasha Sawatzky, NS = Noelle Starling, PPA = Phil Anderson, SGB = Steve Burgin, SG = Sydney Gilmour, SLH = Shelby Hofstetter, SLM = Sophia Munoz, SM = Spenser Morouney, TMB = Tara Brenton, TS = Tara Sieg, WK = William Konze

Table 3. Aboud & Associates Field Program (2020)

Survey Type	Protocol	Date (2022)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Winter Wildlife	n/a	February 11	-1	3	100	None, snow previously	C.A. Ross, G. Sherman
		February 21	-5	4	0	None, snow previously	C.A. Ross, G. Sherman
		February 28	-7	5	100	Flurries, snow previously	C.A. Ross, G. Sherman
		March 7	-5	1	0	None, snow previously	C.A. Ross, G. Sherman
Nesting Raptors	OMNR 2011	March 19	4	1	100	None, rain previously	C.A. Ross, G. Sherman
		April 21	1	4	75	None, rain previously	C.A. Ross, G. Sherman
		May 6	21	1	0	None	C.A. Ross, G. Sherman

Survey Type	Protocol	Date (2022)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Vegetation Communities (ELC)	Lee et al. 1998, 2008	June 10	29	4	70	None, rain previously	M. Ross
Botanical Inventory	n/a	June 8	22	1	0	None	C.A. Ross, G. Sherman
		June 10	29	4	70	None	M. Ross, G. Sherman
		July 14	18	3	10	None	M. Ross
		September 15	2	1	75	None	M. Ross
Amphibian Call Surveys	BSC 2009	April 28	10	2	80	None, rain previously	C.A. Ross, G. Sherman
		May 28	23	2	80	None, rain previously	C. A. Ross, D. Bechard
		June 22	22	4	100	Rain	M. Ross, D. Bechard.
Pitfall Trap Checks	n/a	April 10	2	2	n/a	None, rain/sleep previously	C.A. Ross, G. Sherman
		April 21	1	5	n/a	None, rain previously	C.A. Ross, G. Sherman
		April 29	8	3	n/a	None, light rain previously	C.A. Ross, G. Sherman
		April 30	11	1	n/a	Rain	C.A. Ross, G. Sherman
		May 1	8	2	n/a	Rain	C.A. Ross, G. Sherman
		May 15	13	1	n/a	Rain	G. Sherman
		May 28	21	1	n/a	None, rain previously	G. Sherman
		June 2	17	3	n/a	None, rain previously	M. Ross
		June 9	22	3	n/a	None	M. Ross
		June 22	20	3	n/a	None	M. Ross, D. Bechard
		July 9	26	1	n/a	None	M. Ross
		July 17	24	1	n/a	None	M. Ross
		July 24	22	1	n/a	None	M. Ross
		August 6	23	1	n/a	None	G. Sherman
		August 14	20	1	n/a	None	M. Ross
		August 20	19	3	n/a	None	M. Ross
		September 4	15	1	n/a	None	M. Ross
Breeding Bird Surveys	BSC 2001	June 9	12	3	15	None	M. Ross
		June 22	17	1	90	None	M. Ross

Survey Type	Protocol	Date (2022)	Air Temp (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Bat Maternity Surveys	MNRF 2017a	February 11	1	2	40	None	C.A. Ross, G. Sherman

3.1 Terrestrial Field Surveys

3.1.1 Vegetation Surveys

Vegetation Community Mapping

The vegetation communities were updated (characterized and mapped) in 2022 by NRSI biologists using the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). This included details about the vegetation communities such as species composition, dominance, uncommon species or features, community age and structure. Aboud & Associates completed ELC mapping and characterization in 2020. Their ELC codes generally followed the 2nd ELC approximation (Lee et al. 2008). As NRSI completed ELC surveys on the entire property, Aboud & Associates' ELC mapping has not been incorporated.

The three unevaluated wetlands within the Subject Property were evaluated for complexing with the adjacent PSW, following Ontario Wetland Evaluation System (OWES) 3rd Edition, Version 3.3 protocols (MNRF 2014a). The 3rd edition states that wetlands may be complexed, or grouped together in their assessment, when they have similar or complementary biological, social, and/or hydrological functions, if they are within a specified distance (i.e., 750m) of each other (MNRF 2014a). The results of the complexing exercise were sent to the MNRF for review on September 13, 2022. Under the new 4th edition of the OWES manual, released in December 2022, the rules for complexing changed such that, along with changes to scoring methods, there is no complexing of wetland units (MNRF 2022c). The 2022 OWES specifies that wetlands within a woodland that are within 30m of each other could be considered a cluster of wetlands that could be evaluated together. Additionally, MNRF does not have a role in reviewing wetland evaluations under the updated protocols.

Vascular Flora Surveys

Multi-season vascular flora inventories were completed by NRSI in 2022 which included recording plant species in vegetation communities within the Subject Property in spring, summer, and fall. Vascular flora species were recorded by ELC polygon. Aboud & Associates (2020) completed a three-season inventory in 2020.

Boundary Delineation and Mapping

Significant feature boundaries in the proximity of the proposed development were flagged by NRSI in 2022 according to Official Plan designation criteria and policy then in place. They were then surveyed with a Trimble R10 GNSS receiver with Can-Net real-time corrections.

The boundaries of the wetlands in and adjacent to the proposed development on the Subject Property were delineated and flagged by NRSI's Certified Wetland Evaluators, using the OWES protocols (MNR 2014a). The flagged wetland boundaries were reviewed in the field with GRCA (Robert Messier) and City of Guelph (Leah Lefler).

Significant Woodland dripline boundaries were delineated and flagged by an NRSI biologist. The flagged boundaries were reviewed by City of Guelph (Leah Lefler).

Tree Inventory

Consistent with the City of Guelph's Tree By-law (2010) and Tree Technical Manual (2019), a comprehensive tree inventory was completed by Certified Arborists/Registered Foresters, accounting for trees ≥ 10cm Diameter-at-Breast-Height (DBH) that have the potential to be impacted by the proposed development. Each inventoried tree was marked with a numbered aluminum forestry tag and its location was recorded along with the following information:

- Tree tag number,
- Species,
- DBH measurement (cm),
- Crown radius (m),
- Number of stems,
- Overall health (excellent, good, fair, poor, very poor, dead),
- Potential for structural failure (improbable, possible, probable, imminent),
- Tree location (on-site, off-site, boundary), and
- General comments (i.e., disease, aesthetic quality, development constraints, sensitivity to development).

The large plantation feature within the Phase 1 development lands was not inventoried. All information gathered during the tree inventory was used to prepare a Tree Inventory and Protection Plan that is found in Appendix V, which summarizes the findings of the tree inventory, and compares the tree layout to the proposed development plan. The ownership of trees was also identified for trees within 6m of property lines.

During the tree inventory, a Butternut Health Assessment was completed by a certified Butternut Health Expert as defined by O. Reg 830/21 on four potential Butternuts (*Juglans cinerea*) within the Subject Property, following MECP (2021) guidelines. Hybridity testing was also completed following the same guidelines.

3.1.2 Bird Surveys

Raptor Wintering Surveys

Five raptor wintering surveys were completed by NRSI in 2022 between December-March following *Bird and Bird Habitats: Guidelines for Wind Power Projects* (OMNR 2011). Suitable treed habitats were surveyed for raptor nests and raptor observations were noted. Aboud & Associates (2020) completed nesting raptor surveys in late March 2020 by searching hedgerows and completing transects within the plantation feature for evidence of stick nests within their study area. In April 2020, potential nesting areas were revisited by Aboud & Associates to determine if the nests were active. Call-back surveys were used within the plantation where visibility was low and the possibility of identifying a nest was remote (Aboud & Associates 2020).

Breeding Bird Surveys

In accordance with OBBA methods (OBBA 2021a, OBBA 2021b), three breeding bird surveys were conducted at least 10 days apart between late May and early July, 2022. Species were documented through 10-minute point counts and recorded with standard breeding evidence. These surveys, along with habitat characterization, allowed for the identification of any SAR/SCC birds or SWH for birds present within or adjacent to the Subject Property. Aboud & Associates (2020) completed two surveys in June 2020 and mapped breeding territories that overlapped the plantation feature.

Marsh Breeding Bird Surveys

Two evening marsh breeding bird surveys were conducted in 2022 at least 10 days apart between late May and early July as per the Marsh Monitoring Protocol (BSC 2009a), 4 hours before sunset until 30 minutes after sunset. The surveys consisted of 15-minute call-playback point counts of common marsh bird species, completed where suitable marsh habitat is present within the Subject Property. All birds observed, as well as the highest level of breeding evidence exhibited for each species, was recorded.

Common Nighthawk Surveys

Two evening surveys were completed in 2022 in suitable habitat for Common Nighthawk (*Chordeiles minor*). Surveys occurred between June 15 and July 15, at least 10 days apart, 30 minutes before sunset until 1 hour after sunset. Six-minute point counts were completed, following the Ontario Breeding Bird Atlas Nightjar Survey protocol (Hannah 2021).

3.1.3 Herpetofauna Surveys

Anuran Call Surveys

Three anuran (frog and toad) point count surveys were completed by NRSI in 2022 following the Marsh Monitoring Program Protocol for Surveying Amphibians (BSC 2009b). Surveys were conducted at least one-half hour after sunset, and when the air temperatures were >5°C, >10°C and >17°C, respectively.

Aboud & Associates (2020) completed anuran call surveys on two wetlands within their study area following the same protocols in April-June 2020.

Egg Mass Surveys

Two egg mass surveys were completed by NRSI in 2022 to inform the presence of amphibian breeding habitat. Surveys included a visual scan of the edges of wetland habitats for egg masses. Species were identified where possible.

Turtle Basking Surveys

Five visual basking surveys for turtles were conducted by NRSI in 2022 to assess the presence of turtle species, with focus on Blanding's Turtle (*Emydoidea blandingii*). These surveys were consistent with the methods outlined in the *Occurrence Survey Protocol for Blanding's Turtle in Ontario* (MNRF 2015b) which is suitable for identifying all turtle species. Turtle Visual Encounter Surveys (VES) were also be completed in suitable habitats.

Snake Surveys

Snake Visual Encounter Surveys (VES) were completed by NRSI in 2022 and 2023 following the *Survey Protocol for Ontario's Species at Risk Snakes* (MNRF 2016a) during suitable weather conditions within suitable habitats (i.e., along woodland and wetland edges and within open natural areas). A Wildlife Scientific Collector's Authorization (WSCA) permit was obtained to allow for the handling of snakes and moving of cover objects. Cover objects such as logs, rocks, etc. were checked.

Snake coverboards were installed in April 2022 within suitable habitats on the Subject Property and were checked until late October. The boards have their upper surfaces painted black to absorb heat. They have been and will be checked in the morning or late evening when conditions are most appropriate to observe snakes basking underneath the boards.

Amphibian Movement Surveys

Temporary light-duty silt fences were installed on April 1, 2022 in key locations on the Subject Property to assess salamander and other small amphibian movement. The survey methodology was consistent with previous surveys conducted on the property by NRSI in 2010 which involved close consultation with MNRF staff at that time. These surveys were utilized to determine amphibian movement corridors and confirm the genetic makeup of the population in the Study Area. A WSCA permit was obtained to allow for the handling of herpetofauna and for tissue sample collection. 318 pitfall traps, consisting of unused 1-gallon paint cans, a drainage hole, plastic screen, wooden dowel, wet sponge, and leaf litter, were installed on either side of the fence, spaced approximately 10m apart. The top of each trap was installed flush with the ground surface and tight against the fence to prevent amphibians from moving between the trap and the fence.

A total of approximately 1.5km of silt fencing was installed in a maximum of 50m stretches with approximately 10m gaps in between to allow for movement between habitats when traps are not open/being checked. Pitfall traps remained closed until a suitable weather event was predicted (i.e., warm, rainy nights), at which point traps were opened in the evening and checked the following morning, within approximately 12 hours of each other. Five morning checks were completed in April 2022 to coincide with the typical migration period of amphibians to their breeding ponds. Additionally, one morning check was completed in May 2022, and two morning checks and one evening check were completed in September 2022. When wildlife was encountered in the pitfall traps, they were processed and then released on the other side of the fence. Selective DNA sampling was completed on *Ambystoma* sp. to determine exact species; this included obtaining a small tissue sample (3mm tail tip) and preserving in 70% ethanol for further testing at the University of Guelph. When possible, the following information was also recorded for each individual *Ambystoma* sp. that was trapped:

- Snout to vent length (mm)
- Total length (mm)
- Sex (male, female, unknown)
- Condition (alive, dead, injured)
- Age class (adult, juvenile, metamorph)

Aboud & Associates (2020) installed pitfall traps and silt fencing in 2020 to target movement around/between hedgerows and the plantation feature. Traps were checked between April 10 and June 22 a minimum of once per week when weather conditions were suitable. Between

July 9 and September 5, traps were checked once per week, regardless of weather conditions. Species and numbers were recorded by trap location.

3.1.4 Mammal Surveys

Winter Wildlife Movement Surveys

Three winter wildlife surveys occurred in 2022 during the winter months (December-March) within 24-48 hours of a fresh snow fall. The Subject Property was surveyed for wildlife tracks, travel corridors, and other evidence of use by wildlife, and mammal species in particular. Upon encountering tracks, the direction of movement, number of individuals, species, and behaviour was recorded where possible. Observations were mapped to identify wildlife movement patterns at a site-level scale.

Aboud & Associates (2020) completed four winter wildlife surveys between Feb-March, 2020. Wildlife sightings and evidence were recorded. Particular effort was focused on identifying raptors, mammal tracks, stick nests, raptor wintering areas, and deer congregation areas (Aboud & Associates 2020).

Wildlife Camera Surveys

To assess wildlife movement and gain information on movement patterns and appropriate ecological linkage locations, nine wildlife cameras were installed on February 23, 2022 by NRSI in key locations throughout the Subject Property. The cameras were set to motion-detection and take 3 photos in quick succession after they are triggered. Approximately once a month, the cameras were checked for battery life and SD cards were swapped. Photos from the wildlife cameras were analyzed to determine the direction of movement and behaviour of any wildlife observed. At the time of this EIS submission, the photos from February 23, 2022 – January 11, 2023 have been incorporated into the analysis. Aboud & Associates (2020) installed wildlife cameras in select locations at hedgerow connections between early April and September 2020.

Bat Habitat Assessment

In 2022, an assessment of isolated trees and hedgerows was completed by NRSI during the leaf-off period on May 4 following current protocols (MNRF 2017a; MECP 2022). Trees around the perimeter of Woodland 1 (FOD6-5; #33) near the proposed development were also assessed on May 26. In November and December, 2022, additional bat habitat assessments were completed by NRSI to further characterize woodlands that are proposed to be retained

and removed using the same protocols. A combination of area search and plot-based methods were utilized, which is described in more detail in Appendix VI.

The following information was collected by NRSI for each standing live or dead tree ≥10 cm DBH with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark to identify suitable maternity roost trees:

- Species;
- DBH (cm);
- Decay class (Watt & Caceres 1999);
- Canopy cover (%);
- Approximate tree height (m); and
- Roost tree attributes:
- Number, type, and height of cavities;
- Presence of loose bark; and
- Evidence of use by predators or other species.

Aboud & Associates (2020) completed a bat habitat assessment on February 11, 2020 within Woodland 2 following MNRF 2017a protocols, which includes the plantation (CUP3-2 #40) and adjacent woodland communities (CUW1 #43, FOD4 #39). Ten random plot locations were selected within the feature and surveyed for suitable snags >10cm DBH.

Bat Acoustic Monitoring

In consultation with MECP, the hedgerows, isolated trees, Woodland 1, and Woodland 2 on the Subject Property were monitored using our professional judgement, which included placing bat acoustic monitoring stations on the Subject Property near clusters of candidate roosting trees. A total of 23 bat acoustic monitoring stations were placed on the Subject Property. The full description of methods and maps showing acoustic monitoring locations are found in the Acoustic Monitoring Report in Appendix VI.

3.1.5 Insect Surveys

Three area searches designed specifically for the Yellow-banded Bumble Bee (*Bombus terricola*), a provincially and federally listed species of Special Concern with records in the City of Guelph, occurred in between late July and late September 2022. At the recommendation of the MNRF, surveys followed the Rusty-patched Bumble Bee Survey Protocol (see Appendix 3 in Colla and Taylor-Pindar 2011) and occurred during suitable survey conditions (i.e., warm, sunny, and little wind). These surveys occurred during suitable conditions for odonates and lepidoptera as well. Therefore, all other odonates and lepidoptera species encountered during

these surveys were documented, with a particular focus on SAR and SCC. All insect species observed were recorded.

3.2 Significant Landform Delineation

Significant portions of the Paris-Galt Moraine, as mapped by the City and shown on Schedule 4D of the OP (2022), are present within the Subject Property and the surrounding lands. The City identifies these areas as providing important environmental services and adding to the City's geologic and aesthetic uniqueness (Policy 4.1.3.8a i) and ii); City of Guelph 2022). As such, these areas are protected within the City's Natural Heritage System as Significant Natural Areas. The OP indicates that these areas are to be delineated, staked, and confirmed in the field by a qualified professional (Policies 4.1.1.17 and 4.1.3.8.9; City of Guelph 2022). Although these policies do not apply to the Subject Property pursuant to OPA 80, details regarding the delineation and characterization of this feature within the Subject Property have been included within this report to provide full context.

In accordance with the City's policies, Significant Portions of the Paris-Galt Moraine (Significant Landform) within the vicinity of NewCold's proposed development were assessed using desktop and field methods. The City's mapped Significant Landform boundary, as shown on Schedule 4D of the Official Plan (2022), was reviewed in the field in April 2022, during leaf-off conditions. The City's mapping was compared to existing conditions and topography by NRSI's Ecohydrologist (Nyssa Hardie) who has experience and qualifications to assess the feature. The initial field assessment involved walking the Subject Property to identify Significant Landform areas using the criteria and objectives outlined in the OP (2022). The revised boundary was flagged, where possible, and surveyed using a SxBlue II GNSS GPS for further review using desktop methods.

The initial boundary, as identified in April 2022, was digitized and compared to the 0.5m topographic survey contours that were generated as part of the 2012 EIR and the 0.5m Ontario digital terrain model (DTM; lidar derived) contours (MNRF 2019a). The topographic survey contours provided site specific context, while the MNRF lidar DTM contours provided context for the areas both within and outside of the Subject Property. A slope model was created using the DTM contours to identify and visualize where slopes of 20% or greater are concentrated, as well as identifying flatter areas, which may represent the top of landform ridges or the bottom of slopes (e.g. kettle features or low lying areas). The initial boundary, as identified in the field, was refined further using the slope concentration mapping to ensure consistency between site

observations and detailed topographic data. Slope and contour mapping that was used for the delineation of Significant Landform is provided in Appendix VII.

A site visit was conducted with City of Guelph Natural Heritage Planning staff (Leah Lefler and Jason Elliott) on August 23, 2022. Refinements to NRSI's proposed Significant Landform boundary (as identified in the field and refined through desktop slope analysis) were made in the field to provide a consistent approach to field identification, and a fulsome consideration of the City's policies. The site confirmation with City staff focused on the west side of a string of wetlands that extend through the Subject Property from northwest to southeast. Portions of the Significant Landform boundary were difficult to refine in the field, so a desktop assessment and confirmation occurred following the August site visit. The approach to the refinements was agreed upon in the field between NRSI staff (Nyssa Hardie and Laura Hockley), and City staff (Leah Lefler and Jason Elliott). The field confirmed line was surveyed in the field, where possible, on August 23, 2022 using a high accuracy Trimble R10 GNSS receiver with Can-Net Connections at sub-centimeter-level accuracy.

The field confirmed line was then digitized and overlain on the site specific topographic mapping and slope concentration mapping to refine the portions of Landform that required additional desktop analysis. The desktop refined boundary was provided to City staff for review and was discussed at a virtual meeting held on September 7, 2022. Minor revisions were requested by City staff. These revisions were completed and the final version of the confirmed Significant Landform boundary was sent to and approved by City staff on September 12, 2022 (Appendix VII) (prior to approval of OPA 80).

3.3 Aquatic Surveys

An aquatic habitat assessment was completed by an aquatic biologist on June 2, 2022 for open water habitats and drainage features within the Subject Property. This assessment included documenting and mapping aquatic habitat features, adjacent land uses, in-water habitat and cover, riparian and shoreline habitat and cover, aquatic vegetation, and important habitat features. The aquatic features were assessed in terms of their potential to provide fish habitat and the quality of habitat available. Headwater Drainage Feature assessments were not completed as part of this field program because all drainage features coincide with/are adjacent to wetlands, which are to be retained and will have water balance maintained. Additionally, the drainage features on this property would not meet the definition of a Headwater Drainage Feature, as defined in the Evaluation, Classification and Management of Headwater Drainage

Features Guidelines (CVC & TRCA 2014). There are no watercourses, ephemeral or intermittent channels on the Subject Property and the wetlands are unconnected.

4.0 Existing Conditions

The following sections provide a detailed characterization of the Study Area based on available background information, as described in Sections 1.1 and 1.2, original field surveys conducted by NRSI biologists in 2022, as well as previous studies by NRSI (2007, 2012) and Aboud & Associates (2020). Locally significant species are discussed, however, the City of Guelph policies (4.1.4.4) associated with these species do not apply pursuant to OPA 80.

4.1 Geology, Physiography, Topography, and Soils

The Subject Property is situated within the bedrock zone referred to as the Guelph Formation, which consists of sandstone, shale, dolostone, and siltstone (Barnett et al. 1991). Above the local bedrock is the Horseshoe Moraine physiographic region, including the Paris and Galt Moraines. The Subject Property sits within the Paris Moraine (Chapman and Putnam 1984), which is the northernmost moraine in the complex. The Paris Moraine is a southwest-to-northeast trending end-moraine, and was deposited at the end of the receding Wisconsinan Glacier. The glacial history of this area is complex, and is best summarized in the Clair-Maltby Secondary Plan and Master Environmental Servicing Plan (CMSP / MESP) Phase 1 and 2 Characterization Report (Wood 2022). In summary, as the Wisconsinan Glacier receded it deposited the Wentworth Till throughout the area. The maximum extent of the ice that deposited this till is marked by the Paris Moraine, where the retreat of the glacier halted for a period of time. Large volumes of sediment-rich meltwater were discharged in front of the ice, forming a board outwash plain (Karrow 1974; Wood 2022).

The moraine extends from Cambridge to Erin and is about 3 to 5 km wide, forming a linear belt of hummocky topography. The surface of the Paris Moraine is undulating with a variety of slopes ranging from steep sections, to more gentle slopes, and is generally characterized in the south Guelph area as hilly, hummocky terrain. Numerous kettle depressions occur within the low lying areas between steeply sided ridges, creating closed depressions with no surface water outlet (Chatman and Putnam 1984).

In the south end of Guelph, the Paris Moraine extends in an east-west direction from approximately Clair Road in the north down into Aberfoyle in the south (Chapman and Putnam 1984).

The dominant soil type found within the Study Area is well-drained Dumfries loam, which is derived from outwash sand and gravel, with smaller areas of well-drained Fox and Donnybrook

sandy loams (Hoffman 1963). Approximately 15m of highly permeable outwash sand and gravel topped by a thin layer of till lie beneath the Study Area, approximately 1m in depth (LGL 1998). Till samples have shown an average composition of 50% sand, 35% silt, and 15% clay (Chapman and Putnam 1984). In the geotechnical study from previous submissions, Peto MacCallum Ltd (2006) identified surficial topsoil underlain by variable cohesionless deposits of sand and sandy gravel with cobbles and boulders and local layers of silt near the ground surface.

Nearby well records also indicate the predominance of a surficial layer of till comprised of clay, gravel and stones generally extending approximately 12-13m below the surface (GM BluePan 2023). Below the till, there are interbedded layers of sand and gravel occurring 19-25m below the surface, followed by older till materials extending to the subcrop of bedrock at approximately 27-42m below the surface (GM BluePlan 2023).

4.2 Hydrology and Hydrogeology

There are no watercourses within the Subject Property. Surface water drainage is primarily internal, with runoff collecting within the wetlands which are described as closed kettle depressions (GM BluePlan 2023), and other low lying areas. Surface water that infiltrates the ground recharges the shallow groundwater aquifer. Due to the location of the Subject Property near the hydrologic divide separating the subwatersheds of Mill Creek, Hanlon Creek, and Irish Creek, recharge occurring on the Subject Property has the potential to contribute to baseflow to each of these streams.

Depending on water levels within the wetlands, there may be seasonal flow in a northerly direction between the kettles. The water levels in the wetlands fluctuate seasonally, and most of them have been identified to go dry for a portion of the year (GM BluePlan 2023). The larger, deeper wetlands in the northeast portion of the Subject Property sustain water for longer periods of time but have been reported to be dry during periods of drought (Anderson 2006).

As part of a hydrological assessment completed in 2010 by Anderson Geologic Limited, the lowest limit of the groundwater table below the Subject Property was no less than 4m below the ground surface, except near the large wetland corridor. The deepest groundwater levels were observed in the western half of the Subject Property. The lateral direction of groundwater flow on the Subject Property is expected to be generally toward the west-northwest (GM BluePlan 2023). Generally, the Subject Property exhibits recharge conditions based on groundwater level observations (GM BluePlan 2023).

4.3 Significant Landform

Significant Landform is a feature type identified in the City of Guelph Official Plan (2022) and is part of their Natural Heritage System. As previously noted, consideration of these features is included for context only as the subject Official Plan policies do not apply to the Subject Property pursuant to OPA 80. Significant portions of the Paris Moraine are present on the Subject Property and in the south end of Guelph. The field confirmed Significant Landform boundary, and City of Guelph mapped boundary is shown on Map 3. Within the Subject Property the Significant Landform consists of a variety of slope classes, including concentrations of 20% or greater slopes, and low lying kettle and groundwater recharge areas. Most of the landform feature overlaps with areas that are separately identified as other Significant Natural Areas, including wetlands, woodlands, SWH, and habitat for SAR. A large portion of the Significant Landform is vegetated with mixed deciduous and coniferous woodlands, scrubland (including cultural thicket and cultural savannah), and wetlands. The protected Significant Landform provides habitat for a variety of wildlife, as described in the following sections, and contributes to local and regional groundwater recharge, as well as coldwater groundwater discharge to the Mill Creek watershed. The topography within the Significant Landform provides unique vistas, with a high point located to the northwest that falls to the south and towards Maltby Road.

4.4 Vegetation

4.4.1 Vegetation Communities

The Subject Property is predominantly comprised of agricultural fields (45.34% of the property). Natural features include wetlands, woodlands, meadows, and savannah. The boundaries of woodland and wetland features have been surveyed by NRSI and confirmed by City of Guelph and GRCA staff. With the exception of the wetlands and forests on the Subject Property, many of the features have been anthropogenically influenced through agricultural activities, such as historic pasture use within what is now savannah or thicket habitats, residual hedgerow trees, and planting of plantation communities. A summary of Ecological Land Classification (ELC) communities identified within the Subject Property is provided in Table 4 and shown on Map 3. One rare vegetation community, Buttonbush Mineral Thicket Swamp (SWT2-4), ranked S3 by NHIC (OMNR 200), was observed within the Study Area.

Overall, the assemblage of communities found within the Subject Property is relatively diverse, with a total of seven natural (non-cultural) forest types and eight wetland vegetation types, in addition to culturally-influenced features such as plantations and thickets.

Table 4. Summary of Vegetation Communities within the Subject Property

ELC Ecosite Type	ELC Description	Environmental Characteristics
Forest		
FOC3-1 (#12) (Woodland 5)	Fresh-Moist Hemlock Coniferous Forest	This mid-age coniferous forest community is located in the northern part of the Subject Property, surrounded by other woodland and wetland features. Most of the species recorded were native (85.7%). No federally, provincially, or locally significant species were observed. Canopy: Eastern Hemlock (*Tsuga canadensis*) > Eastern White Pine (*Pinus strobus*) >> Sugar Maple (*Acer saccharum*). Height: 10-25m. Cover: >60% Sub-canopy: Eastern Hemlock > Eastern White Pine > Sugar Maple. Height: 2-10m. Cover: 10-25%. Understorey: White Ash (*Fraxinus americana)* > Eastern Hemlock > Sugar Maple. Height: 1-2m. Cover: 0-10% Groundcover: Long-stalked Sedge (*Carex pedunculata*) > Pennsylvania Sedge (*Carex pensylvanica*) > White Ash. Height: <0.2m. Cover: 10-25%.
FOD3-1 (#4) (Woodland 4)	Dry-Fresh Poplar Deciduous Forest	This young deciduous forest community is located along the eastern property boundary and is partially located off-property. It is surrounded by other woodland and thicket communities and an agricultural field off-property. Most of the species recorded were native (65.4%). No federally, provincially, or locally significant species were observed. Canopy: Trembling Aspen (*Populus tremuloides*). Height: 10-25m. Cover: >60%. Sub-canopy: Trembling Aspen = Black Cherry (*Prunus serotina*). Height: 2-10m. Cover: 25-60%. Understorey: Common Buckthorn (*Rhamnus cathartica*) >> Trembling Aspen. Height: 1-2m. Cover: >60% Groundcover: Thicket Creeper (*Parthenocissus vitacea*) > Goldenrod (*Solidago* sp.) > Woodland Strawberry (*Fragaria vesca*). Height: <0.2m. Cover: 25-60%.
FOD4 (#28) (Woodland 3)	Dry-Fresh Deciduous Forest	This mid-age deciduous forest community is present in the east along the edge of a deciduous swamp community. Most of the species recorded were native (69.2%). No federally, provincially, or locally significant species were observed. Canopy: Black Cherry > American Basswood (*Tilia americana*) > Sugar Maple. Height: 10-25m. Cover: >60% Sub-canopy: Black Cherry >> Sugar Maple. Height: 2-10m. Cover: 25-60%. Understorey: Glossy Buckthorn (*Frangula alnus*) = Common Buckthorn > Alternate-leaved Dogwood. Height: 1-2m. Cover: >60%. Groundcover: Avens (*Geum* sp.) > Broad-leaved Enchanter's Nightshade (*Circaea canadensis*) > Goldenrod. Height: <0.2m. Cover: >60%.
FOD4 (#39) (Woodland 2)	Dry-Fresh Deciduous Forest	This mid-age deciduous forest community is present around the western and northern edges of the White Pine plantation in the southwestern portion of the Subject Property. It was historically a narrow hedgerow and the plantation was planted around it; it has since succeeded to a wider feature. Most of the species recorded were native (81.3%). No federally, provincially, or locally significant species were observed.

		Canopy: Norway Maple (Acer platanoides) > Sugar Maple > Manitoba Maple (*Acer negundo*). Height: 10-25m. Cover: >60%. Sub-canopy: Glossy Buckthorn > American Basswood > Black Cherry. Height: 2-10m. Cover: 25-60%. Understorey: Glossy Buckthorn > Prickly Gooseberry (*Ribes cynosbati*) > White Ash. Height: 1-2m. Cover: 10-25%. Groundcover: Thicket Creeper (Parthenocissus vitacea) > Garlic Mustard (*Alliaria petiolate*) > Herb-Robert (*Geranium robertianum*). Height: 0.2-0.5m. Cover: 0-10%.
FOD5-1 (#11) (Woodland 5)	Dry-Fresh Sugar Maple Deciduous Forest	This mid-age deciduous forest community is present in the northern portion of the Subject Property, surrounded by woodland and wetland communities and agricultural fields. Most of the species recorded were native (88.6%). Bristly Buttercup (*Ranunculus hispidus*), an SCC, was observed within this community. Canopy: Sugar Maple >> American Beech. Height: 10-25m. Cover: >60%. Sub-canopy: Sugar Maple > Green Ash (*Fraxinus pennsylvanica*) > Common Buckthorn. Height: 2-10m. Cover: 25-60%. Understorey: Green Ash > Sugar Maple > Common Buckthorn. Height: 1-2m. Cover: 25-60%. Groundcover: Sedge species (*Carex* spp.) > Herb-Robert > Cut-leaved Toothwort (*Cardamine concatenate*). Height: <0.2m. Cover: >60%.
FOD6-5 (#33) (Woodland 1)	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest	This mid-age deciduous forest community is located within the central portion of the Subject Property. It is surrounded by agricultural fields and some small hedgerows. Most of the species recorded were native (79.2%). Some openings are present within this woodland as a result of logging under prior ownership in 2005/2006. One locally significant species, Ontario Aster (*Symphyotrichum ontarionis*) was observed in this community. Canopy: Sugar Maple > American Basswood. Height: 10-25m. Cover: >60%. Sub-canopy: Sugar Maple > American Basswood. Height: 2-10m. Cover: 25-60%. Understorey: Sugar Maple > Common Buckthorn > Bitternut Hickory (*Carya cordiformis*). Height: 1-2m. Cover: >60%. Groundcover: Goldenrod, Sedges, Thicket Creeper. Height: 0.2-0.5m. Cover: >60%.
FOM6-1 (#2) (Woodland 4)	Fresh-Moist Sugar Maple-Hemlock Mixed Forest	This small, mature mixed forest community is present along the eastern property boundary, surrounded by swamps and agricultural field. Most of the species recorded were native (84.0%). One locally significant species, Black Maple (*Acer nigrum*) was observed. Canopy: Eastern Hemlock = Sugar Maple > Paper Birch (*Betula papyrifera*). Height: 10-25m. Cover: >60%. Sub-canopy: Black Cherry > Freeman's Maple (*Acer x freemanii*) > Common Buckthorn. Height: 2-10m. Cover: 25-60%. Understorey: Common Buckthorn > Bitternut Hickory. Height: 1-2m. Cover: 25-60%. Groundcover: Large-leaved Aster (*Eurybia macrophylla*) = Bracken Fern (*Pteridium aquilinum*) > Goldenrod. Height: <0.2m. Cover: 25-60%.
Wetland		

MAM2-2 (#10) (WET-09)	Reed-canary Grass Mineral Meadow Marsh	This isolated meadow marsh community is present in the northern portion of the property, surrounded by agricultural fields, with deciduous and coniferous woodlands close by. Most of the species recorded were native (88.9%). No federally, provincially, or locally significant species were observed. Understorey: Reed Canary Grass (*Phalaris arundinacea var. arundinacea*) = Broad-leaved Cattail (*Typha latifolia*) > European Reed (*Phragmites australis ssp. australis*). Height: 1-2m. Cover: 25-60%. Groundcover: Blunt Spikerush (*Eleocharis obtuse*) > Northern Water-plantain (*Alisma triviale*) > *Carex* sp. Height: 0.2-0.5m. Cover: 25-60%.
MAM2-2 (#16) (WET-13)	Reed-canary Grass Mineral Meadow Marsh	This meadow marsh community is present in the very northern portion of the property, surrounded by savanna (off-property) and deciduous woodlands. Most of the species recorded were native (78.6%). No federally, provincially, or locally significant species were observed. Canopy: White Willow (*Salix alba*) = Peach-leaved Willow (*Salix amygdaloides*). Height: 10-25m. Cover: 0-10%. Sub-canopy: *Salix* sp. > American Basswood > White Ash. Height: 2-10m. Cover: 0-10%. Understorey: Glossy Buckthorn >> American Basswood. Height: 1-2m. Cover: 0-10%. Groundcover: Reed Canary Grass > Soft-stemmed Bulrush (*Schoenoplectus tabernaemontani*). Height: 0.2-0.5m. Cover: >60%.
MAM2-2/MAS3-2/SWT2-2 (#20) (WET-07/WET-12)	Reed-canary Grass Mineral Meadow Marsh/ Bulrush Organic Shallow Marsh/ Willow Mineral Thicket Swamp Type	This large marsh and thicket swamp wetland community is present within the central and northern portions of the property. It is a large complex of wetland communities that is surrounded by thicket, woodland, and savanna communities. Most of the species recorded were native (70.0%). No federally, provincially, or locally significant species were observed. Canopy: Crack Willow (*Salix* × *fragilis*) = Peach-leaved Willow. Height: 10-25m. Cover: 0-10%. Sub-canopy: Meadow Willow (*Salix petiolaris*). Height: 2-10m. Cover: 0-10%. Understorey: Meadow Willow > Heart-leaved Willow (*Salix eriocephala*) > Red-osier Dogwood (*Cornus sericea*). Height: 1-2m. Cover: 0-10%. Groundcover: Reed Canary Grass > Soft-stemmed Bulrush > Variegated Pond-lily (*Nuphar variegate*). Height: 0.2-0.5m. Cover: >60%.
MAM2-2 (#25) (WET-05)	Reed-canary Grass Mineral Meadow Marsh	This meadow marsh is present in the northeastern portion of the property, adjacent to agricultural fields and swamp. Most of the species recorded were native (64.3%). No federally, provincially, or locally significant species were observed. Understorey: Red-osier Dogwood >> Gray Dogwood (*Cornus racemosa*). Height: 1-2m. Cover: 10-25%. Groundcover: Reed Canary Grass >> Virginia Creeper (*Parthenocissus quinquefolia*) > Tuckerman's Sedge (*Carex tuckermanii*). Height: 0.2-0.5m. Cover: 10-25%.
MAM2-2/SWT2-5 (#34) (WET-02)	Reed-canary Grass Mineral Meadow Marsh/ Red-	This meadow marsh and thicket swamp community is present within the southcentral portion of the property, approximately 70m northwest of Maltby Road. It is surrounded by agricultural fields and hedgerow. About half of the species recorded were native (56.3%). No federally, provincially, or locally significant species were observed.

	osier Dogwood Mineral Thicket Swamp	<u>Canopy:</u> Sugar Maple. Height: 10-25m. Cover: 0-10%. <u>Sub-canopy:</u> Common Buckthorn > Manitoba Maple. Height: 2-10m. Cover: 0-10%. <u>Understorey:</u> Red-osier Dogwood >> Wild Red Raspberry (*Rubus idaeus ssp. strigosus*) > Riverbank Grape (*Vitis riparia*). Height: 1-2m. Cover: 25-60%. <u>Groundcover:</u> Reed Canary Grass > Tall Goldenrod (*Solidago altissima*). Height: 0.2-0.5m. Cover: >60%.
MAM2-2 (#46) (WET-10)	Reed-canary Grass Mineral Meadow Marsh	This small isolated meadow marsh community is present along the southeastern property boundary, approximately 3m from Maltby Road. It is located along a ditch and is surrounded by agricultural fields. A majority of the species recorded were native (82.4%). No federally, provincially, or locally significant species were observed. <u>Canopy:</u> Freeman's Maple. Height: 10-25m. Cover: 0-10%. <u>Sub-canopy:</u> Black Cherry. Height: 2-10m. Cover: 0-10%. <u>Understorey:</u> Dogwood (*Cornus* sp.) > Black Willow (*Salix nigra*). Height: 1-2m. Cover: 10-25%. <u>Groundcover:</u> Reed Canary Grass > Goldenrod (*Solidago* sp.) > Sensitive Fern (*Onoclea sensibilis*). Height: 0.5-1m. Cover: >60%.
MAM2-2 (#48) (WET-08)	Reed-canary Grass Mineral Meadow Marsh	This small meadow marsh community is present in the central portion of the property. It is a small isolated depression, surrounded by cultural thicket. About half of the species recorded were native (58.3%). No federally, provincially, or locally significant species were observed. <u>Groundcover:</u> Reed Canary Grass > Goldenron (*Solidago* sp.) > Canada Mint (*Mentha canadensis*). Height: 1-2m. Cover: >60%.
MAS3-10/MAM2-2/SWT2-5 (#23) (WET-06)	Forb Organic Shallow Marsh/ Reed-canary Grass Mineral Meadow Marsh/ Red-osier Dogwood Mineral Thicket Swamp	This marsh and thicket community is present in the north-central portion of the property, surrounded by agricultural fields and cultural thicket/savannah. It is hydrologically connected to WE-07 through a narrow wetland community that has been used as a tractor path. A majority of the species recorded were native (87.9%). One locally significant species, Boreal Mannagrass (*Glyceria borealis*), was observed. <u>Canopy:</u> Willow (*Salix* sp.). Height: 10-25m. Cover: 0-10%. <u>Sub-canopy:</u> Willow (*Salix* sp.) > Common Apple (*Malus pumila*). Height: 2-10m. Cover: 0-10%. <u>Understorey:</u> Willow (*Salix* sp.) > Nannyberry (*Viburnum lentago*) = Glossy Buckthorn. Height: 1-2m. Cover: 10-25%. <u>Groundcover:</u> Reed Canary Grass > Sedge (*Carex* sp.) > Variegated Pond-lily. Height: 0.2-0.5m. Cover: >60%.
SWD3-3 (#1) (WET-04/ Woodland 4)	Swamp Maple Mineral Deciduous Swamp Type	This deciduous swamp community is present in the northeastern corner of the property, along Maltby Road. A wildlife culvert is present at the property boundary. The wetland is surrounded by deciduous and mixed woodland. A majority of the species recorded were native (89.4%). Two locally significant species, Eastern Buttonbush (*Cephalanthus occidentalis*) and Hop Sedge (*Carex lupulina*), were observed.

		Canopy: Freeman's Maple >> Red Maple (*Acer rubrum*) > Eastern White Cedar (*Thuja occidentalis*). Height: 10-25m. Cover: >60%. Sub-canopy: Freeman's Maple >> Red Maple. Height: 2-10m. Cover: 25-60%. Understorey: Glossy Buckthorn >> Common Winterberry (*Ilex verticillate*). Height: 1-2m. Cover: 25-60%. Groundcover: Sedge (*Carex*) sp. > Sensitive Fern. Height: <0.2m. Cover: 25-60%.
SWD3-3 (#42) (WET-01)	Swamp Maple Mineral Deciduous Swamp Type	This deciduous swamp community is present along the eastern property line in the southern portion of the property. It is surrounded by agricultural fields. It is directly adjacent to Maltby Road (within 2.5m) where there is a significant drop in topography to the wetland. Dumping was observed within this wetland (garbage, furniture, etc.). A majority of the species recorded were native (75.0%). One locally significant species, Marsh Horsetail (*Equisetum palustre*), was observed. Canopy: Freeman's Maple > Silver Maple > Sugar Maple. Height: >25m. Cover: >60%. Sub-canopy: Freeman's Maple > Glossy Buckthorn. Height: 10-25m. Cover: 25-60%. Understorey: Dogwood (*Cornus* sp.) > Glossy Buckthorn. Height: 0.5-1m. Cover: 10-25%. Groundcover: Riverbank Grape > Goldenrod (*Solidago* sp.) > Bloodroot (*Sanguinaria canadensis*). Height: 0.2-0.5m. Cover: 0-10%.
SWD4-1 (#27) (WET-03/ Woodland 3)	Willow Mineral Deciduous Swamp	This deciduous swamp community is present in the southeastern portion of the property, surrounded by deciduous woodland and agricultural fields. A majority of the species recorded were native (73.1%). Two locally significant species, Black Maple and Ontario Aster (*Symphyotrichum ontarionis*), were observed. Canopy: Crack Willow > Peach-leaved Willow. Height: 10-25m. Cover: 25-60%. Sub-canopy: Crack Willow > White Willow > Pussy Willow (*Salix discolor*). Height: 2-10m. Cover: 25-60%. Understorey: White Willow > Common Winterberry. Height: 1-2m. Cover: >60%. Groundcover: Reed Canary Grass > Bittersweet Nightshade (*Solanum dulcamara*) > Sensitive Fern. Height: 0.2-0.5m. Cover: >60%.
SWT2-4 (#3) (WET-11)	Buttonbush Mineral Thicket Swamp	This thicket swamp community is present along the northeastern property boundary and is surrounded by deciduous swamp, deciduous forest, and agricultural fields. A majority of the species recorded were native (76.5%). It is dominated by the locally significant species Eastern Buttonbush and is a provincially rare vegetation community (S3). Canopy: Paper Birch > Freeman's Maple. Height: 10-25m. Cover: 0-10%. Sub-canopy: Freeman's Maple > Paper Birch. Height: 2-10m. Cover: 10-25%. Understorey: Eastern Buttonbush >> Glossy Buckthorn > Pale Dogwood (*Cornus obliqua*). Height: 1-2m. Cover: >60%. Groundcover: Eastern Buttonbush >> Reed Canary Grass. Height: 0.2-0.5m. Cover: >60%.
Open/Cultural Communities		
CUM (#49)	Cultural Meadow	A large cultural meadow community is present in the north-central portion of the Subject Property, continuing off-property northeast of Southgate Dr. Much of this community has been disturbed by the placement of a fill piles. It is mostly dominated by non-native species, such as Smooth Brome (*Bromus inermis*), Orchard Grass

		(*Dactylis glomerata*), and Common Buckthorn. No federally, provincially, or locally significant species were observed.
CUM1 (#14)	Mineral Cultural Meadow	This cultural meadow is present in the northern portion of the property, surrounded by deciduous forest and cultural savannah. It is mostly dominated by non-native species. The groundcover is dominated by Smooth Brome, Goldenrod (*Solidago* sp.), and Hawkweed Oxtongue (*Picris hieracioides*). No federally, provincially, or locally significant species were observed.
CUP3-2 (#15)	White Pine Coniferous Plantation	This mid-aged White Pine plantation is present in the northern portion of the property, surrounded by deciduous forest and cultural meadow. A majority of the species recorded were native (70.0%). No federally, provincially, or locally significant species were observed. Canopy: White Pine >> White Spruce (*Picea glauca*). Height: 10-25m. Cover: >60%. Sub-canopy: Sugar Maple >> American Basswood. Height: 2-10m. Cover: 25-60%. Understorey: American Basswood > Red Oak (*Quercus rubra*). Height: 1-2m. Cover: 10-25%. Groundcover: Sugar Maple > Common Dandelion (*Taraxacum officinale*). Height: <0.2m. Cover: 0-10%.
CUP3-2 (#40) (Woodland 2)	White Pine Coniferous Plantation	This mid-aged White Pine plantation is present within the southwestern portion of the property, near Crawley Road. It is surrounded by hedgerows/hedgerow-like features and agricultural fields. There is very little groundcover or habitat features. A majority of the species recorded were native (65.0%), however it is dominated mostly by a few species. Two main compartments have been identified for this plantation by Williams & Associates (2018), which includes an area planted around 1980 that is more dominated by Red Pine (*Pinus resinosa*), Norway Spruce (*Picea abies*), and White Pine in the northeast and an area planted around 1990 more dominated by Scots Pine, mixed White Spruce/White Pine, and some European Larch (*Larix decidua*), Red Pine, and Eastern White Cedar (Williams & Associates 2018). Through the centre of the plantation and along the southeastern edge, a more mature row of deciduous trees is present, consisting of Sugar Maple and American Basswood. No federally, provincially, or locally significant species were observed.
CUS1 (#17)	Mineral Cultural Savannah	This large cultural savannah is present along the northwestern property boundary, adjacent to cultural thicket, meadow, and wetland communities. About half of the species recorded were native (52.6%). One locally significant species, Heart-leaved Aster (*Symphyotrichum cordifolium*) was observed. Canopy: Black Cherry = Sugar Maple. Height: 10-25m. Cover: 0-10%. Sub-canopy: Scots Pine = Common Apple. Height: 2-10m. Cover: 25-60%. Understorey: Common Apple = Scots Pine > Lonicera × bella. Height: 1-2m. Cover: 25-60%. Groundcover: Orchard Grass (*Dactylis glomerata*) = Smooth Brome > Tall Hawkweed (*Pilosella piloselloides*). Height: 0.2-0.5m. Cover: >60%.
CUS1 (#24)	Mineral Cultural Savannah	This cultural savannah community is present in between two wetland communities and agricultural fields in the central portion of the property. A majority of the species recorded were native (61.9%). No federally, provincially, or locally significant species were observed. Canopy: Freeman's Maple > Black Cherry > Peach-leaved Willow. Height: 10-25m. Cover: 0-10%. Sub-canopy: Black Cherry = Manitoba Maple > Trembling Aspen. Height: 2-10m. Cover: 25-60%.

		Understorey: Common Buckthorn > Manitoba Maple > Black Cherry. Height: 1-2m. Cover: >60%. Groundcover: Goldenrod (*Solidago*) sp. > Thicket Creeper (*Parthenocissus vitacea*). Height: 0.2-0.5m. Cover: >60%.
CUS1 (#43)	Mineral Cultural Savannah	This cultural savannah community is present along the western property boundary, adjacent to Crawley Rd. It is an area of sporadic trees, dominated by Black Locust (*Robinia pseudoacacia*), Scots Pine, and dying American Elm (*Ulmus americana*). No federally, provincially, or locally significant species were observed. This polygon was previously lumped in with a CUW1 polygon prior to woodland dripline surveys, and as such, stand descriptions are not provided.
CUT1 (#6)	Mineral Cultural Thicket	This mid-age cultural thicket community is present in the northeastern portion of the property, surrounded by agricultural fields and deciduous woodland. It extends off-property. A majority of the species recorded were non-native (58.6%). No federally, provincially, or locally significant species were observed. Canopy: Sugar Maple > American Basswood. Height: 10-25m. Cover: 25-60%. Sub-canopy: Common Apple > Sugar Maple. Height: 2-10m. Cover: 25-60%. Understorey: Common Buckthorn > Lonicera x bella. Height: 1-2m. Cover: 25-60%. Groundcover: Smooth Brome > Goldenrod (*Solidago* sp.) > Riverbank Grape. Height: 0.2-0.5m. Cover: >60%.
CUT1 (#19)	Mineral Cultural Thicket	This young cultural thicket community is present in the northern portion of the property, surrounded by wetlands, deciduous and coniferous forest, and agricultural fields. A majority of the species recorded were native (81.8%). No federally, provincially, or locally significant species were observed. Canopy: Black Cherry = Sugar Maple. Height: 10-25m. Cover: 0-10%. Sub-canopy: Black Cherry > Sugar Maple. Height: 2-10m. Cover: 10-25%. Understorey: Common Buckthorn > Green Ash. Height: 1-2m. Cover: >60%. Groundcover: Common Buckthorn >> Thicket Creeper > Garlic Mustard. Height: <0.2m. Cover: >60%.
CUT1 (#21)	Mineral Cultural Thicket	This young cultural thicket community is present in the northern portion of the property, adjacent to cultural woodlands, wetlands, and agricultural fields. It has rolling topography. About half of the species recorded were non-native (51.5%). No federally, provincially, or locally significant species were observed. Canopy: American Elm >> White Willow = Black Cherry. Height: 10-25m. Cover: 1-10%. Sub-canopy: Common Apple >> Black Cherry = Manitoba Maple. 2-10m. Cover: 10-25% Understorey: Common Apple > Lonicera x bella > Common Buckthorn. Height: 1-2m. Cover: 25-60%. Groundcover: Orchard Grass >> Tall Hawkweed > Gray-stemmed Goldenrod (*Solidago nemoralis*). Height: 0.2-0.5m. Cover: >60%.
CUW1 (#22)	Mineral Cultural Woodland	This young cultural woodland community is present along the northwestern property line, adjacent to cultural meadow, wetlands, and cultural savannah. About half of the species recorded were native (53.1%). No federally, provincially, or locally significant species were observed. Canopy: Black Cherry > Trembling Aspen >> Sugar Maple. Height: 10-25m. Cover: 25-60%. Sub-canopy: Common Buckthorn >> American Beech > Eastern Hop-Hornbeam (*Ostrya virginiana*). Height: 2-10m. Cover: >60%.

		Understorey: Common Buckthorn >> Lonicera x bella. Height: 1-2m. Cover: 25-60%. Groundcover: Spiked Sedge (*Carex spicata*) >> Woodland Strawberry (*Fragaria vesca*) > Broad-leaved Enchanter's Nightshade. Height: <0.2m. Cover: 25-60%.
CUW1 (#26)	Mineral Cultural Woodland	This small young cultural woodland community is present in the eastern portion of the property, in between a deciduous swamp and agricultural fields. A majority if the species recorded were native (64.3%). No federally, provincially, or locally significant species were observed. Canopy: Trembling Aspen. Height: 10-25m. Cover: 25-60%. Sub-canopy: Common Buckthorn. Height: 2-10m. Cover: >60%. Understorey: Common Buckthorn >> Choke Cherry (*Prunus virginiana*) > Alternate-leaved Dogwood. Height: 1-2m. Cover: >60%. Groundcover: Common Buckthorn >> Canada Goldenrod (*Solidago canadensis*) > Thicket Creeper. Height: 0.2-0.5m. Cover: >60%.
CUW1 (#29)	Mineral Cultural Woodland	This small young cultural woodland community is present along the southeastern property boundary, adjacent to Maltby Rd and near the existing tractor entrance. It is surrounded by agricultural fields. About half of the species recorded were non-native (52.5%). No federally, provincially, or locally significant species were observed. Canopy: White Pine = Sugar Maple. Height: 10-25m. Cover: 25-60%. Sub-canopy: White Pine > Scots Pine. Height: 2-10m. Cover: 25-60%. Understorey: Common Buckthorn > Common Apple. Height: 1-2m. Cover: 25-60%. Groundcover: Goldenrod (*Solidago* sp.) > Smooth Brome. Height: 0.2-0.5m. Cover: >60%.
CUW1 (#43) (Woodland 2)	Mineral Cultural Woodland	This young cultural woodland community is located along the southwestern property boundary, adjacent to Crawley Road. It is surrounded by cultural plantation, cultural savannah, and agricultural fields. Most of the species recorded were non-native (70.8%). No federally, provincially, or locally significant species were observed. Canopy: Black Locust > Scots Pine > American Elm. Height: 10-25m. Cover: 25-60%. Sub-canopy: Glossy Buckthorn > Black Cherry > American Elm. Height: 2-10m. Cover: 25-60%. Understorey: Glossy Buckthorn > White Ash > Tartarian Honeysuckle (*Lonicera tatarica*). Height: 0.5-1m. Cover: 10-25%. Groundcover: Smooth Brome > Riverbank Grape > Goldenrod (*Solidago*) sp. Height: 0.2-0.5m. Cover: 10-25%.
CUW1 (#44)	Mineral Cultural Woodland	This mid-age cultural woodland community is present along the western property boundary, adjacent to where a parking lot used to be. A number of trees associated with this feature form part of a hedgerow along the driveway of the adjacent property. A majority of the species recorded were non-native (78.6%). No federally, provincially, or locally significant species were observed. Canopy: Black Cherry. Height: 10-25m. Cover: 0-10%. Sub-canopy: Common Apple >> Black Cherry > Black Locust. Height: 2-10m. Cover: 25-60%. Understorey: Common Buckthorn > Black Locust > Manitoba Maple. Height: 1-2m. Cover: 10-25%.

		Groundcover: Smooth Brome > Orchard Grass > Goldenrod (*Solidago* sp.). Height: 0.2-0.5m. Cover: >60%.
H	Hedgerow	There are 10 deciduous hedgerow features within the Subject Property. They are mostly dominated by a combination of American Basswood, Sugar Maple, Black Cherry, Manitoba Maple, and American Beech, with other common species mixed in. Common Buckthorn was observed to be very dense within many of the hedgerows. They are located generally throughout the agricultural fields with varying topography. No federally, provincially, or locally significant species were observed within these features.

Summary of Wetland Conditions

Ten wetland communities are present within the Subject Property, including eight different ELC vegetation communities within seven distinct features (Map 3). Some wetland communities that are part of a larger contiguous wetland have been identified with a separate wetland ID, however, they are not considered a distinct unit (i.e., WET-03/WET-05 and WET-04/WET-11 are each considered one unit). This includes three unevaluated marsh communities that have been assessed for complexing within the Mill Creek Puslinch PSW complex using the 3rd edition of the OWES (MNRF 2014a). The significance of these three wetlands is discussed further in Section 5.1.

The relationship between the regional groundwater table and surface water within the wetlands, a described by GM BluePlan (2023) is as follows:

- WET-06, WET-07, WET-12:
  - Groundwater seepage occurs in a west-northwest direction, indicating that these are “flow-through wetlands”: these wetlands receive seasonal groundwater discharge from upgradient lands to the east during high water table conditions.;
  - Seepage occurs in a west to northwest direction;
  - “flow-through” wetlands;
  - Surface runoff and direct precipitation are still strong contributors to sustaining surface water levels.
- WET-01 to WET-05, WET-08, WET-09:
  - Perennially disconnected from the groundwater table;
  - Sustained strictly by surface runoff and direct precipitation;
  - Mounding of the regional groundwater table may occur in the vicinity of some of these wetlands due to recharge.

The groundwater levels in the vicinity of the wetlands, as reported by GM BluePlan (2023), was observed to be lower than surface water levels in the wetlands, which indicates that surface water provides recharge to the groundwater table. Due to the perched nature of many of the wetlands, a majority of the moisture supply is via precipitation on the wetland itself and runoff from the immediate catchment area (GM BluePlan 2023).

Detailed descriptions of wildlife habitats found within the wetlands are found in Section 5.4 and 5.5.

Summary of Woodland Conditions

A number of naturally occurring woodlands are present on the Subject Property. This includes the FOC3-1, FOD3-1, FOD5-1, FOD6-5, and FOM6-1 communities (Map 3). These woodlands

are generally mid-age to mature, containing mostly native species. Woodland 1 has been studied extensively through previous environmental studies, including a full tree inventory in 2006 (NRSI 2007). Many of the forest communities contain glacial erratics and have varying topography. Some smaller forest communities occur as fringes around wetland communities. Non-naturally occurring (i.e., culturally influenced) communities include hedgerows (H), FOD4 (remnant hedgerows that have succeeded to larger woodland features), cultural woodlands (CUW), and cultural plantations (CUP).

The White Pine Coniferous Plantation (CUP3-2; #40), which is the predominant community within Woodland 2, was established by the MNRF for commercial purposes in an old pasture in two stages, occurring around 1980 and 1990, following the cessation of farming use of this area (Williams & Associates 2018). This plantation feature is isolated from other wetland and woodland communities, with the exception of a small cultural woodland where deciduous trees dominate near Crawley Road and the FOD4 feature mentioned above that was previously a hedgerow. Based on current conditions within the stand, it is clear that no forest management practices, such as thinning or stand-tending have been applied within the feature. As a result, this feature is in poor condition and is representative of an unmanaged plantation in which existing trees are overstocked and beginning to decline, and little natural regeneration has established in the understorey. The majority of the stand consists of closed crown conditions in which there is little light availability to allow for natural recruitment and the establishment of native regeneration, limiting the ability of this feature to transition from a conifer-dominant plantation to a mixedwood woodland. Where gaps in the canopy do occur, this has come as a result of clusters of suppressed trees in poor conditions dying off. This is common in unmanaged plantations, in which overcrowded trees begin to deteriorate and become susceptible to blow-down, as well as breakage from ice and snow (LandOwner Resource Centre 1999). Within the existing gaps of this feature, non-native invasive species such as Common Buckthorn have capitalized on these openings and rapidly established. As a result, this species is now outcompeting native vegetation and is likely to continue to spread within the plantation as overcrowded trees die off, resulting in this species becoming the dominant understory species and suppressing native regeneration, thereby limiting the viability of this feature as a native woodland.

Typically, Pine plantations must be managed on an ongoing basis in order to maintain their viability or ensure their transition into a mixedwood woodland. Thinning is a primary tool to accomplish this objective and allows for stand density and resource availability within the stand

to be controlled. In addition to improving growth and yield of trees within a plantation, thinning allows light conditions within a plantation to be controlled in order to create favorable growing conditions and promote the regeneration of desirable species. In Ontario, it is common to thin a coniferous plantation by removing every fourth or third row, increasing space for the retained trees to grow and better develop as well as increasing sunlight to the understory layer to support regeneration and natural recruitment.

In addition to the benefits described above, thinning also minimizes risks from wildfires and pests (LandOwner Resource Centre 1999). Other plantation management activities typically include cleaning (i.e., removing undesirable or competitor species), pruning, the release of crop trees, and amelioration (i.e., changing abiotic factors through fertilization and/or drainage improvements) (MNRF 2019b). Figures 1-4 below show the dense stocking of the plantation on the Subject Property and general lack of understorey species. Unthinned stands typically begin to deteriorate at the 45–50-year mark due to the spindly, small live crowns that develop in overstocked conditions in which tree growth is suppressed as a result of a lack of space and light availability (LandOwner Resource Centre 1999). They then become more susceptible to blow-down or breakage by wind, ice and snow, creating potential hazards (LandOwner Resource Centre 1999). Thinning at this time, at which point the condition of the trees has declined, can further increase the risk of wind damage (LandOwner Resource Centre 1999). Plantations with minimal or lack of groundcover are also drier, with pine needles and dead branches encompassing most of the forest floor. With changes in temperature and precipitation that are expected as a result of climate change, this could lead to an increase in the potential for lightning and human caused fires to start and spread (MNRF 2019b). Much of the plantation on the Subject Property is dominated by Red Pine. In Southern Ontario, the extent of this species is as a result of planting for plantation purposes and is not typically found in this area (University of Guelph 2012).

Detailed descriptions of wildlife habitats found within the woodlands are found in Section 5.4, 5.5, and 5.6.

Figure 1. Rows of Red Pine within Plantation Community

Figure 2. Rows of Norway Spruce within Plantation Community

Figure 3. Lack of Groundcover within Plantation Community

Wildland Fire

Section 3.1.8 of the PPS includes policies relating to wildlife fire risk in land use planning. It states that (OMMAH 2020):

> *"Development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire.*
>
> *Development may however be permitted in lands with hazardous forest types for wildland fire where the risk is mitigated in accordance with wildland fire assessment and mitigation standards."*

Hazardous forest types for wildlife fire include (OMMAH 2020):

> "*Forest types assessed as being associated with the risk of high to extreme wildland fire using risk assessment tools established by the Ontario Ministry of Natural Resources and Forestry, as amended from time to time."*

Mapping of province-wide generalized wildlife fire hazard data is available on Land Information Ontario (LIO). This mapping shows that portions of the Subject Property contain low risk, however, there is nothing identified for the plantation areas. With the current species

assemblage, lack of plantation management, tight spacing, and presence of needle litter and branches on the ground, the plantation within Woodland 2 would likely be a high wildland fire risk level, according to Table 4-1 of the Wildland Fire Risk Assessment and Mitigation Reference Manual (MNRF 2017b). An in-depth assessment of fire risk and mitigation has not been undertaken as part of this project as this plantation is proposed for removal and development is proposed away from natural woodlands which are lower risk.

4.4.2 Vascular Flora

In total, 314 plant species were observed by NRSI biologists in 2022 during the vascular flora inventories, ELC surveys, and tree inventories. Of the 314 species identified, 207 (65.92%) species are native and 107 (34.08%) are non-native. A complete list of species observed within each vegetation community is provided in Appendix VIII.

One SCC, Bristly Buttercup (*Ranunculus hispidus*), was observed within the Subject Property. It was observed in the FOD5-1 (#11) community in Woodland 5 (Map 4). Aboud & Associates also documented Soft-stemmed Spikerush (*Eleocharis mamillata*), ranked S1? (MNRF 2022b), within the Red-osier Dogwood Mineral Thicket Swamp (STW2-5, #34), however it is unlikely to be this species because of its relative rarity within Canada and the often misidentification with others in the same genus. NRSI botanists observed other *Eleocharis* ssp. within this community and did not find Soft-stemmed Spikerush. No other SAR/SCC were observed.

Certain species inventoried within the natural features were indicative of good quality habitat conditions. The coefficient of conservatism (CC) is a value ranging from 0 (low) to 10 (high), which is based on a species' tolerance of disturbance and fidelity to a specific habitat integrity (Oldham et al. 1995). Species with values of 0-3 indicate that they have little fidelity to remnant natural habitats and will likely occupy disturbed areas. Values of 7-10 are assigned to species that have very specific environmental growing requirements and are much less tolerant of disturbance. The presence of species with values of 4-6 typically indicates an intact natural community. The average CC value for the entire site is 2.8, demonstrating an overall level of disturbance. Twenty-nine (9.21%) of the inventoried species have relatively high CC values (≥7), indicating fidelity to specific habitat conditions that are currently provided on-site. A majority of the wetland and forest features have average CC values between 0-3. It should be noted, however, that not all communities were extensively searched if they were not in the vicinity of the proposed development.

Butternut

Four potential Butternuts were observed on the Subject Property by NRSI (Map 3). This included one large, multi-stem tree (JUG-001) with the three largest stems measuring 55, 45, and 35 cm DBH as well as three young trees measuring up to 5 cm DBH approximately within JUG-001's dripline. Butternut is ranked Endangered both Provincially (MECP 2023) and Federally (Government of Canada 2022a). It was determined through the field hybridity testing that the four individuals are hybrids and therefore not protected by the *ESA,* 2007. Field hybridity tests are the standard method for determining hybridity and genetic testing is only recommended when there is uncertainty with the field tests (MECP 2021), therefore genetic testing was not deemed necessary. The Butternut Health Assessment was submitted to MECP on September 19, 2022, with no comments.

Locally Significant Plant Species

During vascular flora surveys completed by NRSI in 2022, the following locally significant plant species (City of Guelph 2012) were observed:

- Marsh Horsetail;
- Black Maple;
- Heart-leaved Aster;
- Ontario Aster;
- Eastern Buttonbush;
- Common Hackberry;
- Hop Sedge; and
- Boreal Mannagrass.

The locations of these observations are shown on Map 4.

4.4.3 Tree Inventory

A total of 2,131 trees were assessed during the tree inventory, including 47 species. In addition to those individually inventoried by NRSI, the CUP3-2 (#40) which is located within the development footprint contains approximately 7,267 trees (Appendix V). This includes both plantation trees (i.e., Pines and Spruce, etc.), deciduous trees that were part of remnant hedgerows, and other naturally occurring species throughout the plantation. No rare tree species were identified in the tree inventory. A summary of inventory findings, tree retention and removal analysis, mitigation and protection measures, as well as compensation requirements, are included in the TIPP in Appendix V.

4.5 Wildlife

4.5.1 Birds

In total, 114 bird species are reported from the vicinity of the Study Area based on the five 10x10 km OBBA squares that overlap the Study Area (BSC et al. 2006). This includes those species that have exhibited some evidence of breeding in the area. A total of 133 species are known when all background sources are taken into account, including previous surveys conducted by NRSI (2007) and Aboud & Associates (2020). Sixty-nine species were documented within the Subject Property during 2022 field surveys, of which 51 exhibited signs of breeding, such as males singing, females carrying food or nest materials, and the presence of fledged young. Osprey (*Pandion haliaetus*) and Blackburnian Warbler (*Setophaga fusca*) were not previously found within OBBA records within the Study Area and were documented with breeding evidence within the Subject Property by NRSI. A complete list of bird species, along with breeding evidence, is provided in Appendix VIII.

A total of 7 SAR or SCC bird species are reported from the vicinity of the Study Area based on the SAR screening, OBBA records and other background data (BSC et al. 2009, MNRF 2022) and have potentially suitable habitat, which includes:

- Grasshopper Sparrow (*Ammodramus savannarum*);
- Common Nighthawk (*Chordeiles minor*);
- Eastern Wood-Pewee (*Contopus virens*);
- Wood Thrush (*Hylocichla mustelina*);
- Red-headed Woodpecker (*Melanerpes erythrocephalus*);
- Chimney Swift (*Chaetura pelagica*);
- Barn Swallow (*Hirundo rustica*); and
- Eastern Meadowlark (*Sturnella magna*).

Three of these species, Barn Swallow, Eastern Meadowlark and Eastern Wood Pewee, were observed by NRSI in 2022 exhibiting breeding behaviours within the Subject Property during field surveys, and are shown on Map 4. Aboud & Associates (2020) also observed Barn Swallow foraging within the agricultural fields and Chimney Swift incidentally (Map 4).

Aboud & Associates (2020) identified 12 species that can be presumed to have been breeding in or within 50m of the Subject Property; the species identified are ranked as common and abundant (S-Rank 4-5). Most of the species observed during their study are generalists that can use a variety of habitat types (Aboud & Associates 2020).

Pileated Woodpecker (*Dryocopus pileatus*) and Green Heron (*Butorides virescens*) are species with additional protections of their nests afforded by the *Migratory Bird Regulations,* 2022 (Government of Ontario 2022b). Their nests are protected from being damaged, destroyed, removed, or disturbed for a period of 36 months and 24 months, respectively, after which time the nest may be deemed abandoned (Government of Ontario 2022b). Breeding evidence for these species was not observed within the Subject Property and nests were not found.

Eastern Meadowlark

Eastern Meadowlark is ranked both provincially and federally as Threatened (MECP 2023, Government of Canada 2022a). A male was recorded singing during breeding bird season at marsh breeding bird survey station MBB-003, indicating Possible 'PO' breeding evidence. One individual was also observed incidentally off-property, within 1080 Southgate Drive. This species was confirmed breeding in 2006 on the Subject Property, within the CUW1 (#22) community and a portion of the CUS1 (#17) community. The lack of strong breeding evidence from 2022 surveys suggests that open communities within the Subject Property are no longer suitable, potentially from changes in adjacent land uses reducing overall habitat cover, or from successional habitat changes (i.e., higher tree density).

Eastern Wood-Pewee

Eastern Wood-Pewee, ranked both provincially and federally as Special Concern (MECP 2023, Government of Canada 2022a), was recorded with breeding evidence during breeding bird surveys at stations BMB-001 (PO) and BMB-004 (PR), as well as at marsh breeding bird stations MBB-003 (OB) and MBB-004 (PO). This is evidence of Probable 'PR' breeding of this species within the Study Area. Approximately 4 individuals were observed during bird surveys in 2022. Aboud & Associates (2020) also recorded Eastern Wood-Pewee with Probable 'PR' evidence within the FOD6-5 (#33) community.

Barn Swallow

Barn Swallow was recently downlisted from Threatened to Special Concern (MECP 2023) and is ranked federally as Threatened (Government of Canada 2022a). It was recorded with 'Possible' (PO) breeding evidence during marsh breeding bird surveys at stations MBB-001, MBB-002, MBB-003 and MBB-004. This species was also Observed 'OB' at several breeding bird stations during breeding bird surveys (BMB-005, BMB-006, BMB-007). Approximately 18 individuals were observed during bird surveys, in addition to multiple incidental observations. Aboud & Associates (2020) observed Barn Swallow foraging within the agricultural fields. There

is no suitable nesting habitat (e.g., barns, buildings) on the Subject Property, therefore this species is not further considered within the EIS.

Marsh Birds

Many birds were displaying breeding evidence during the marsh breeding bird surveys, but Sora (*Porzana carolina*) was the only observed marsh species displaying Possible 'PO' breeding evidence. It was recorded at marsh breeding bird station MBB-003, within WET-12.

Raptor Nesting

Raptor wintering surveys revealed eight potential stick nests throughout the Subject Property (Map 4), however, none were observed to be active. Two of the nests, within Woodland 1, likely belonged to a species in the Crow family. Two raptor species were observed in 2022 with 'Possible' breeding evidence: Osprey (*Pandion haliaetus*) and Red-tailed Hawk (*Buteo jamaicensis*). Aboud & Associates (2020) found 13 suspected stick nests within their Study Area, which were suspected to belong to American Crow (*Corvus brachyrhynchos*) and a squirrel. They did not find any stick nests in use and did not observe regular presence of raptor species within their Study Area (Aboud & Associates 2020).

Locally Significant Species

In total, 25 locally significant bird species (City of Guelph 2012) were observed within the Subject Property in 2022. Of these species, 11 exhibited Possible 'PO' or Probable 'PR' breeding evidence (Table 5).

Table 5. Locally Significant Bird Species Observations

Scientific Name	Common Name	Highest Breeding Evidence	Total Number of Individuals Observed During Bird Surveys	Abundant/Widespread in Guelph[1]
Colaptes auratus	Northern Flicker	PO	4	Yes
Melanerpes carolinus	Red-bellied Woodpecker	PR	2	Yes
Tyrannus tyrannus	Eastern Kingbird	PR	16	Yes
Catharus fuscescens	Veery	PO	3	No
Toxostoma rufum	Brown Thrasher	PO	2	No
Pipilo erythrophthalmus	Eastern Towhee	PO	2	No
Icterus galbula	Baltimore Oriole	PR	13	Yes
Setophaga fusca	Blackburnian Warbler	PO	1	No
Setophaga pinus	Pine Warbler	PR[2]	1	No
Setophaga ruticilla	American Redstart	PR	6	Yes

Scientific Name	Common Name	Highest Breeding Evidence	Total Number of Individuals Observed During Bird Surveys	Abundant/Widespread in Guelph[1]
Pheucticus ludovicianus	Rose-breasted Grosbeak	PO	2	Yes

[1]Species are abundant and widespread breeding birds within Guelph based on June-July records within the eBird database (2022). Species were considered as such if observations were widely distributed across the City in areas where suitable habitat was present and are regular breeding species (breeding within the City in nearly all years).
[2]Aboud & Associates (2020).

Locally significant bird species observations with Probable 'PR' breeding evidence are shown on Map 4. Exact locations of these species were not identified during field surveys so the observation location is shown in the vicinity of the breeding bird station near which it was observed.

4.5.2 Herpetofauna

According to the background information, 27 species of herpetofauna are reported from within 10 km of the Study Area (Ontario Nature 2020). NRSI field investigations confirmed the presence of a total of 17 species, including 7 reptile and 10 amphibians, that were recorded within the Subject Property in 2022. A complete list of species observed is provided in Appendix VIII.

A total of 8 SAR or SCC reptile species are reported from the vicinity of the Study Area based on SAR screening, ORRA records (Ontario Nature 2020) and other background data (MNRF 2022a), of which the following have suitable habitat:

- Snapping Turtle (*Chelydra serpentina*);
- Blanding's Turtle (*Emydoidea blandingii*);
- Northern Ribbonsnake (*Thamnophis sauritus septentrionalis*);
- Jefferson Salamander (*Ambystoma jeffersonianum*); and
- Unisexual Ambystoma (Jefferson Salamander-dependent population) (*Ambystoma laterale – (2) jeffersonianum*).

Two of these species were observed within the Subject Property by NRSI in 2022: Northern Ribbonsnake and Snapping Turtle. The results of species-specific surveys are detailed in the following sections.

Amphibian Movement

During amphibian movement surveys, a total of 164 individuals from 10 different species were captured (Figure 4). Two locally significant species (City of Guelph 2012) were captured during

amphibian movement surveys, but neither have status provincially or federally. These include Unisexual *Ambystoma* (Blue-spotted Salamander-dependent population) (*Ambystoma (2) laterale – jeffersonianum*) and Red-spotted Newt (*Notophthalmus viridescens viridescens*).

Full results of the movement surveys, including species, sex, age, size, and DNA results are found in Appendix IX. All pitfall trap observations are shown on Map 5. Most of the surveys completed were during the spring movement, when amphibians are moving from their overwintering habitats (i.e., woodlands) to breeding habitats (i.e., wetlands). Movements by anurans and salamanders are described further below.

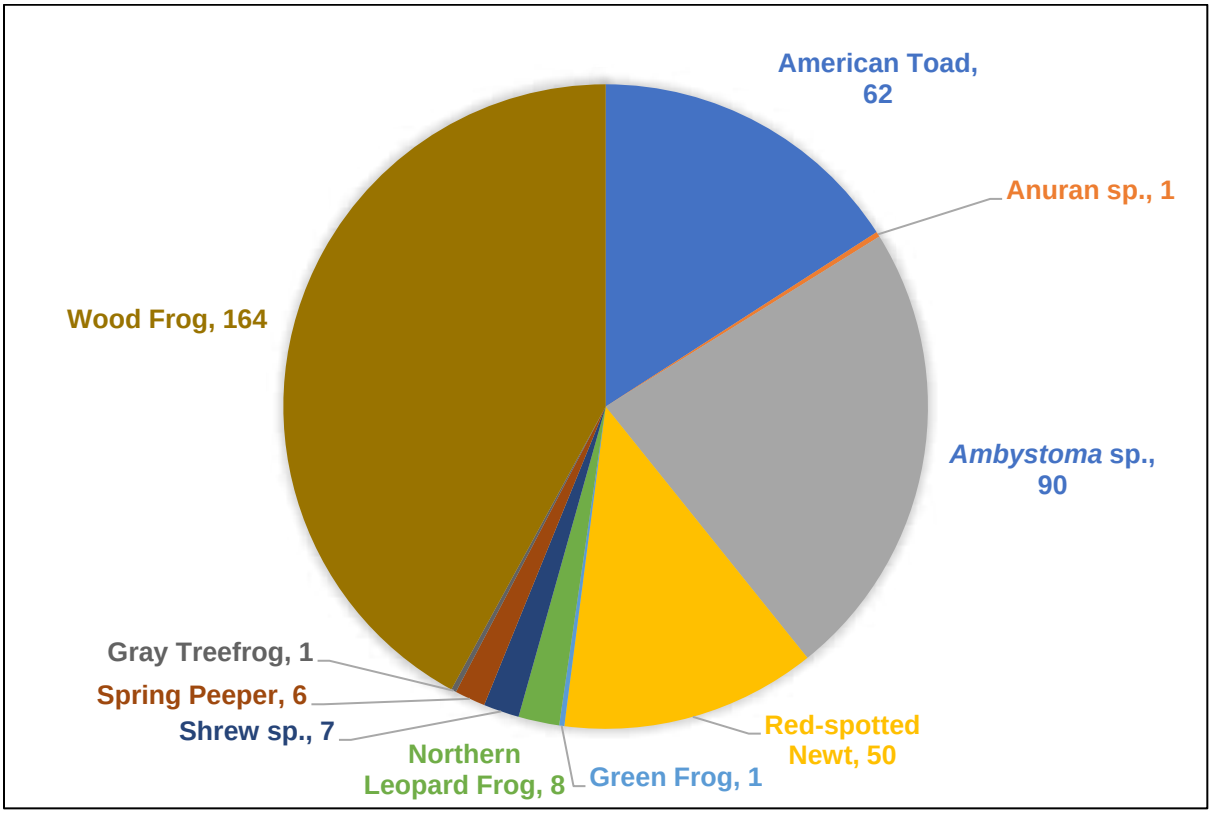


Figure 4. Number of Individuals Captured within Pitfall Traps (2022)

Anurans (Frogs and Toads)

Anuran call surveys detected 6 species that are all ranked common and secure in Ontario (Appendix VIII). The results of anuran call surveys completed in 2022 (NRSI) and 2020 (Aboud & Associates) are presented in Table 6 & 7 below.

Table 6. Anuran Call Survey Results (2022)

Survey Station	April 30th	May 25th	June 21st
ANR-01 (WET-01)	WOFR 1(1) SPPE 3*	GRTR 2(7)	GRTR 1(1)
ANR-02 (WET-02)	SPPE 3 WOFR 1(1)	GRTR 2(5) GRFR 1(1)	GRTR 3
ANR-03 (WET-03)	SPPE 1(2) WOFR 1(1) WOFR 1(4)*	-	-
ANR-04 (WET-04)	WOFR 1(6)	-	-
ANR-05 (WET-05)	SPPE 1(1) WOFR 1(1)	-	-
ANR-06 (WET-06)	SPPE 3	GRTR 3	GRTR 1(2)*
ANR-07 (WET-07)	SPPE 3 WOFR 1(3)	GRTR 3 SPPE 1(1)	GRFR 2(5)*
ANR-08 (WET-12)	SPPE 2(11) NLFR 1(2)	GRTR 3	GRFR 2(5)
ANR-09 (WET-13)	SPPE 2(9)	GRTR 2(11) GRFR 1(1)	GRFR 1(3)

SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green Frog, WOFR = Wood Frog, AMTO = American Toad, NLFR = Northern Leopard Frog
Code 1 = Individuals can be counted; calls not simultaneous. Estimated number of individuals in brackets.
Code 2 = Calls distinguishable; some simultaneous calling. Estimated number of individuals in brackets.
Code 3 = Full chorus; calls continuous and overlapping.
*Calling heard outside of survey station radius.

Table 7. Anuran Call Survey Results (Aboud & Associates 2020)

Survey Station	April 28, 2020	May 28, 2020	June 22, 2020
01 (WET-02)	SPPE 1(1)*	GRTR 1(1)	GRFR 1(1)
02 (WET-01)	SPPE 3*	SPPE 1(2) GRTR 1(1)	GRFR 1(1)

SPPE = Spring Peeper, GRTR = Gray Treefrog, GRFR = Green Frog
Code 1 = Individuals can be counted; calls not simultaneous. Estimated number of individuals in brackets.
Code 3 = Full chorus; calls continuous and overlapping.
*Calling heard outside of survey station radius.

No egg masses were observed during the egg mass surveys in 2022. During amphibian movement surveys in 2022, 57.9% of all movement observed within the Study Area was by Wood Frogs (*Lithobates sylvaticus*) and American Toads (*Anaxyrus americanus*). The highest number of Wood Frogs were observed on the agricultural field side of WET-01 and WET-03 (Figure 5). American Toad was observed in higher numbers at WET-09 and WET-04 (Figure 5). Both of these species are known to have large spring migrations in early and late spring, respectively. Pitfall trap observations from 2022 are shown on Map 5. Aboud & Associates (2020) found the highest amount of movement occurred in mid to late July with later breeding species.

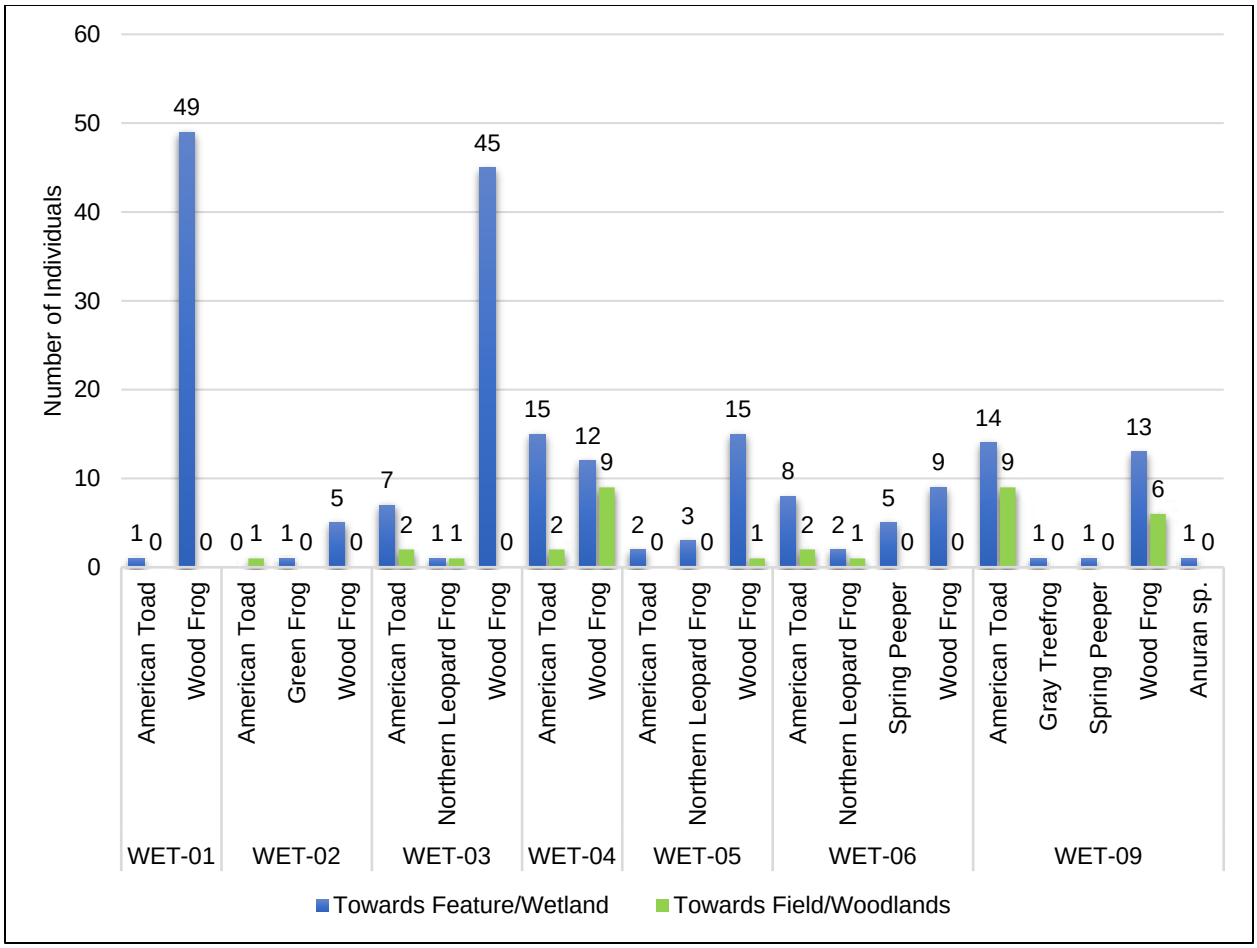


Figure 5. Anuran Movement by Feature (2022)

Salamanders

All *Ambystoma* sp. that were DNA tested were confirmed to be Unisexual *Ambystoma* (Blue-spotted Salamander-dependent population) (*Ambystoma (2) laterale – jeffersonianum*), consistent with previous studies. The provincially (MECP 2023) and federally (Government of Canada 2022a) Endangered Jefferson Salamander (*Ambystoma jeffersonianum*) has a range overlapping the Study Area but was not recorded during the 2022 or earlier surveys. According to the Jefferson Salamander Recovery Strategy (Jefferson Salamander Recovery Team 2010), polyploids dominated by the blue-spotted salamander genome are not indicative of the Jefferson salamander. 90 Unisexual *Ambystomas* were captured during pitfall trapping. All individuals where sex could be determined were female. 71 (78.89%) were adults, 7 (7.78%) were juveniles, 10 (11.11%) were metamorphs, and 2 (2.22%) were unknown age. The overall movement of salamanders (including Unisexual *Ambystomas* and Red-spotted Newt) by feature

is shown in Figure 6. WET-06 and WET-09 had the most overall movement. All pitfall trap observations are shown on Map 5.

Previous movement surveys conducted by NRSI found similar movement patterns, with the majority of captures occurring along the northeastern property line, where fences were installed to capture movement between wetlands and woodlands. At that time, egg masses belonging to Unisexual *Ambystoma* were observed within wetlands on 2187 Gordon Street in close proximity to the Subject Property. No egg masses were observed within the wetlands on the Subject Property, however, these would be difficult to observe as they are laid individually on vegetation at the bottom of ponds.

For wetlands to be suitable for salamander breeding, they must have the following characteristics:

- Adequate hydro period (i.e., water until the end of August) at least once in three years;
- Contain other breeding amphibians;
- Does not contain predatory fish; and
- Contain suitable vegetation for egg attachment.

It is unknown if the wetlands near where salamanders were observed would contain water until the end of August for three consecutive years, as this monitoring has not been completed. However, all other characteristics are likely suitable for breeding within the wetlands. Additionally, the presence of many adults in the spring and some metamorphs in the fall is a strong indicator that they are breeding on the Subject Property. A majority of the adults and all metamorphs were captured surrounding WET-06. WET-09 is unlikely to have an adequate hydro period for breeding; the captures in the vicinity of this wetland are most likely due to salamanders moving from breeding ponds to nearby forest habitats.

Aboud & Associates (2020) only documented two Red-spotted Newts in the pitfall traps within their Study Area.

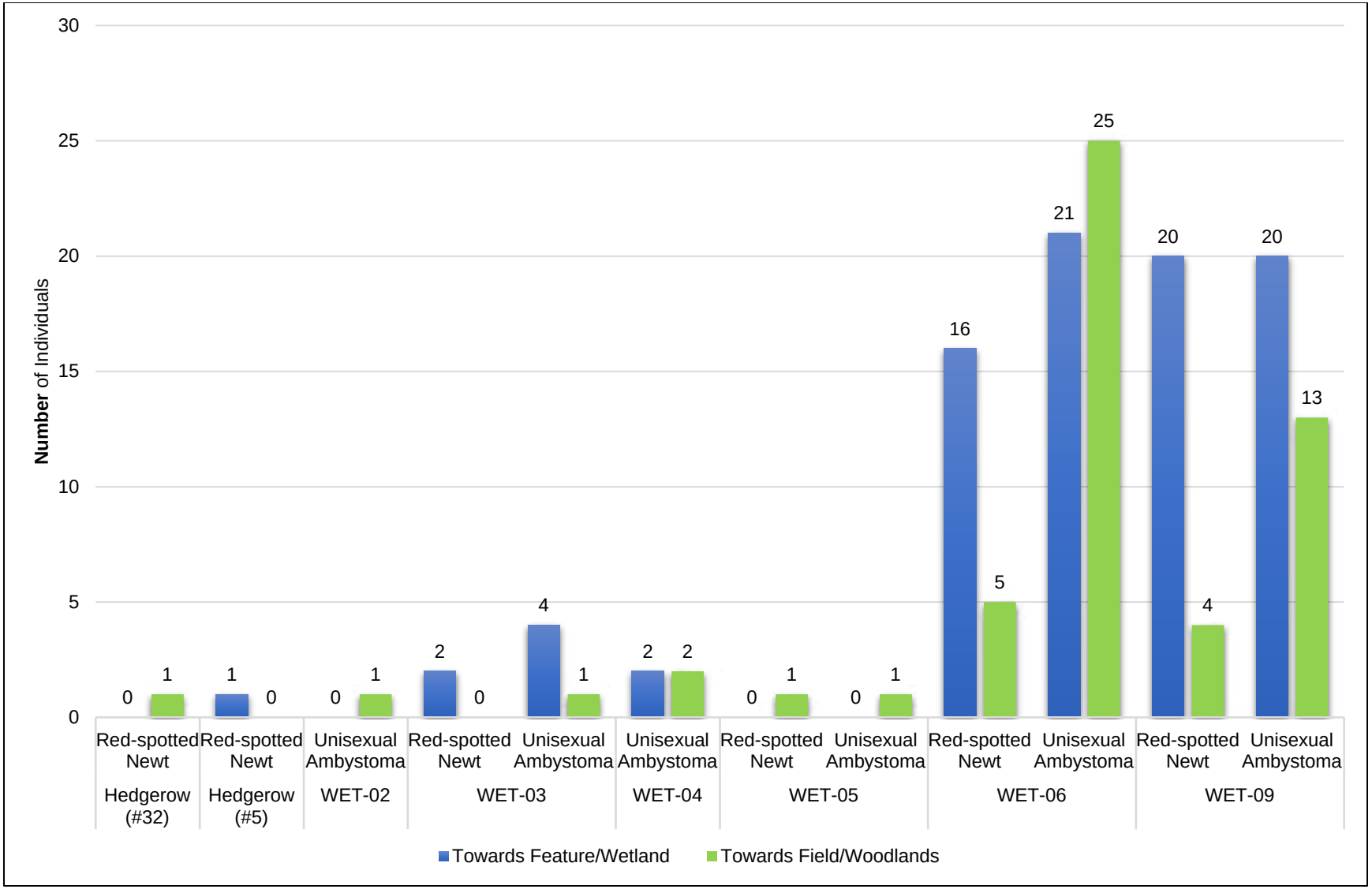


Figure 6. Salamander Movement by Feature (2022).

Turtles

Two turtle species were observed during field surveys: Snapping Turtle and Midland Painted Turtle (*Chrysemys picta marginate*). Snapping Turtle is ranked provincially (MECP 2023) and federally (Government of Canada 2022a) as Special Concern, while Midland Painted Turtle is common and secure in Ontario (MNRF 2022b). These species were observed during turtle basking surveys in multiple wetlands and incidentally during other surveys (Map 6). A majority of observations were made between April-May, suggesting the use of the wetlands as overwintering habitat for both species (Figure 7). WET-13 had the most turtle observations (Figure 8).

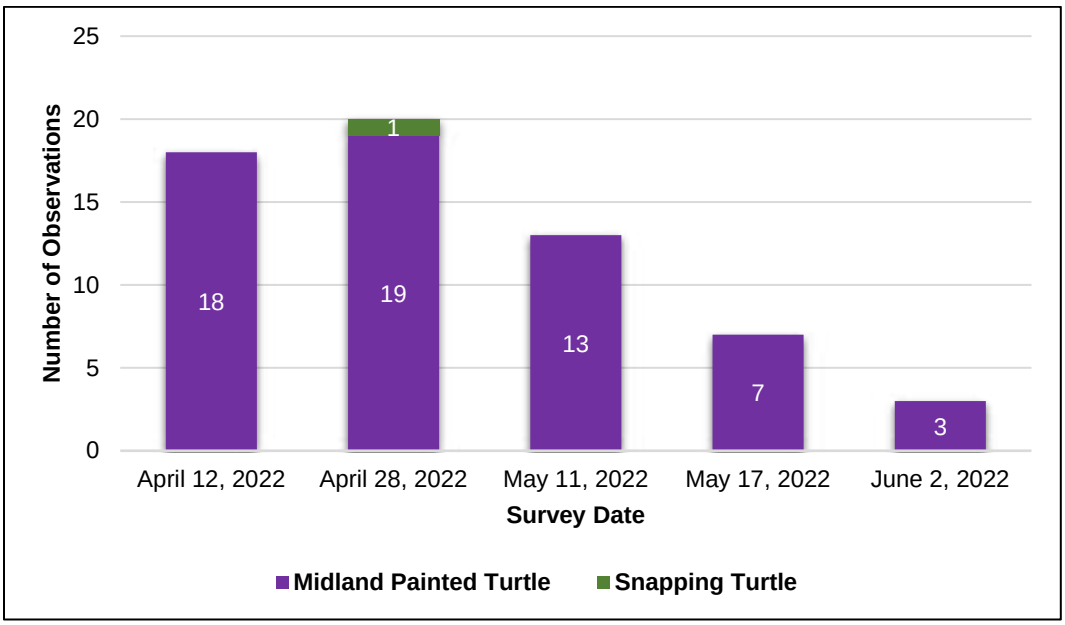


Figure 7. Number of Turtle Observations by Survey

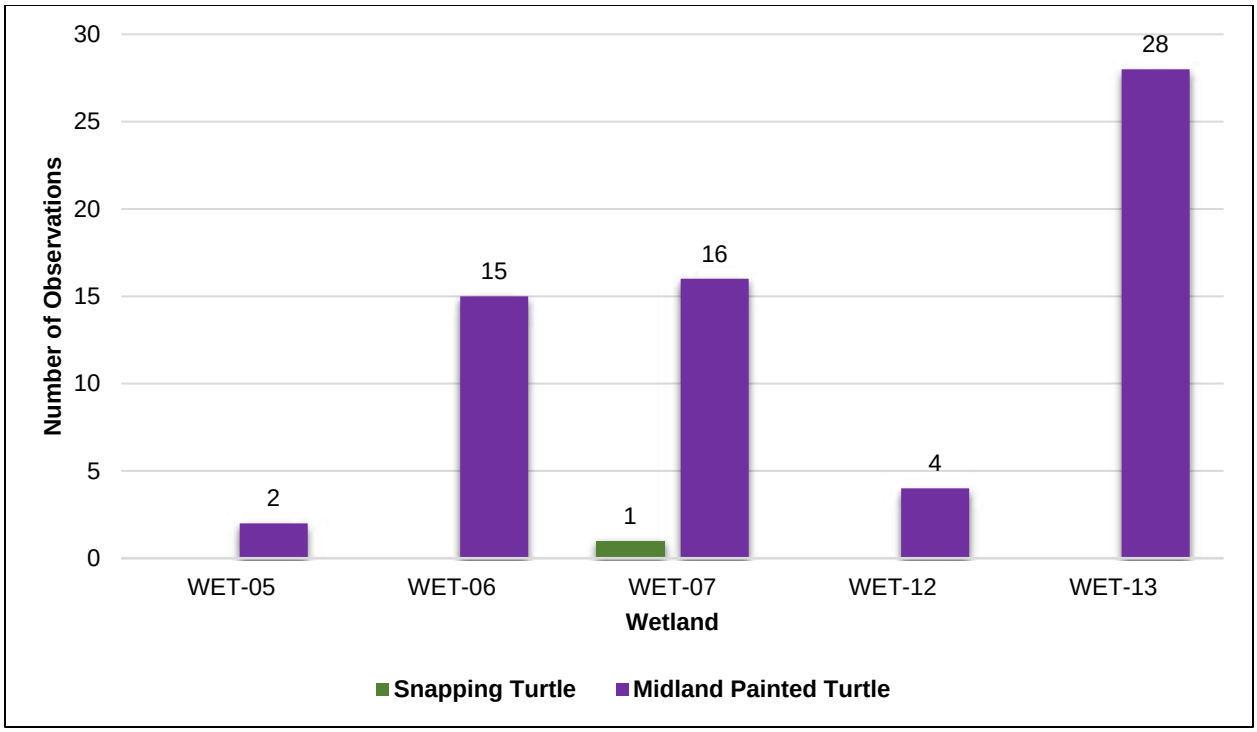


Figure 8. Turtle Observations by Wetland

Snakes

Snake VES and coverboard surveys resulted in the observation of five snake species, including Eastern Gartersnake (*Thamnophis sirtalis sirtalis*), Northern Ribbonsnake, Red-bellied Snake (*Storeria occipitomaculata*), Milksnake (*Lampropeltis Triangulum*), and Dekay's Brownsnake (*Storeria dekayi*). Eastern Garternsnake is common and secure in Ontario (MNRF 2022b); it was observed a total of 18 times during snake coverboard surveys and 17 times during VES. Northern Ribbonsnake, which is ranked provincially (MECP 2023) and federally (Government of Canada 2022a) as Special Concern, was observed under snake coverboard SNK-004, twice during VES, and once incidentally during pitfall trap opening. Dekay's Brownsnake and Red-bellied Snake are locally significant species (Cit of Guelph 2012). Two individuals of Dekay's Brownsnake were observed under SNK-004 and one Red-bellied Snake was observed during a snake VES near a hedgerow. A targeted emergence survey was completed in April 2023 whereby potential hibernaculum were assessed. No snakes were observed on this survey. All snake observations are shown on Map 7.

4.5.3 Mammals

According to the Mammal Atlas of Ontario (Dobbyn 1994), 46 mammal species are reported from within 10 km of the Study Area. A total of 18 mammal species were observed within the Subject Property.

Background information and SAR screening indicates potential for American Badger (*Taxidea taxus*), Woodland Vole (*Microtus pinetorum*), and four bat species (discussed further below) within the Study Area. American Badger nor Woodland Vole were observed.

Appendix VIII provides a full list of the mammal species reported from the Study Area and observed in the Subject Property.

Mammal Movement

Wildlife movement camera photos have been reviewed for the period of February 23, 2022 to January 11, 2023, which equates to a 323 day monitoring period. On May 27, CAM-001 was rotated 90 degrees to avoid dense vegetation blocking the view. CAM-003 was taken down on June 22, 2022 due to extensive vegetation cover that blocked the camera's view in all directions. In total, approximately 298 individuals were observed in the photos from 11 different species/species groups (Figure 9). This excludes observations of birds flying within view that were foraging within agricultural fields or adjacent habitats. The observations by wildlife camera are shown in Figure 10. A complete list of species observed, date, and direction of movement is found in Appendix X. When feasible, the direction of movement for each individual observed on camera was estimated. Results indicate that wildlife movement occurred throughout the Subject Property. In general, wildlife movement was concentrated along the edges of the forested areas and hedgerows. White-tailed Deer (*Odocoileus virginianus*) was the most common mammal captured by wildlife cameras and was captured on all cameras. CAM-007, located along the edge of CUT1 (#21) overlooking the agricultural field and hedgerow, had the most species, with 41 White-tailed Deer, 14 Coyote (*Canis latrans*), 6 domesticated dogs, 3 squirrels, 3 Eastern Cottontail (*Sylvilagus floridanus*), 2 Northern Raccoon (*Procyon lotor*), and 1 Wild Turkey (*Meleagris gallopavo).* For the cameras placed near the proposed Ecological Linkage (CAM-006, CAM-007, CAM-008), movement was concentrated in the northern, southeastern, and southwestern directions, with wildlife moving from Woodland 1 to the CUT1 (#21). Higher volumes of wildlife movement were also observed along the northern edge of Woodland 2 where a camera was placed along the dripline edge adjacent to a hedgerow feature.

Aboud & Associates (2020) also found that the majority of their cameras picked up birds utilizing the agricultural fields to forage. Similar mammal species were observed. The highest number of observations occurred at Camera #4 (Aboud & Associates 2020).

A number of wildlife were observed during winter wildlife surveys completed by NRSI in 2022. This included signs such as scat, deer beds, tracks, etc., as well as direct observations. Tracks of Eastern Cottontail, White-tailed Deer, Eastern Gray Squirrel (*Sciurus carolinensis*), Red Squirrel (*Tamiasciurus hudsonicus*), Deer Mouse (*Peromyscus maniculatus*), Coyote, Red Fox (*Vulpes vulpes*), and Northern Raccoon were observed during winter wildlife surveys. Deer beds were also observed within forest communities. The overall movement pattern is shown on Map 8, which shows the highest concentration of movement through and around the retained natural features. While there was some movement along the existing hedgerows, the highest traffic areas were noted in the northern and eastern portions of the Subject Property. Extensive White-tailed Deer and Coyote tracks indicated several well used travel corridors between areas of high activity.

Aboud & Associates (2020) also found common species during their winter wildlife surveys, however, they did not map wildlife movement patterns.

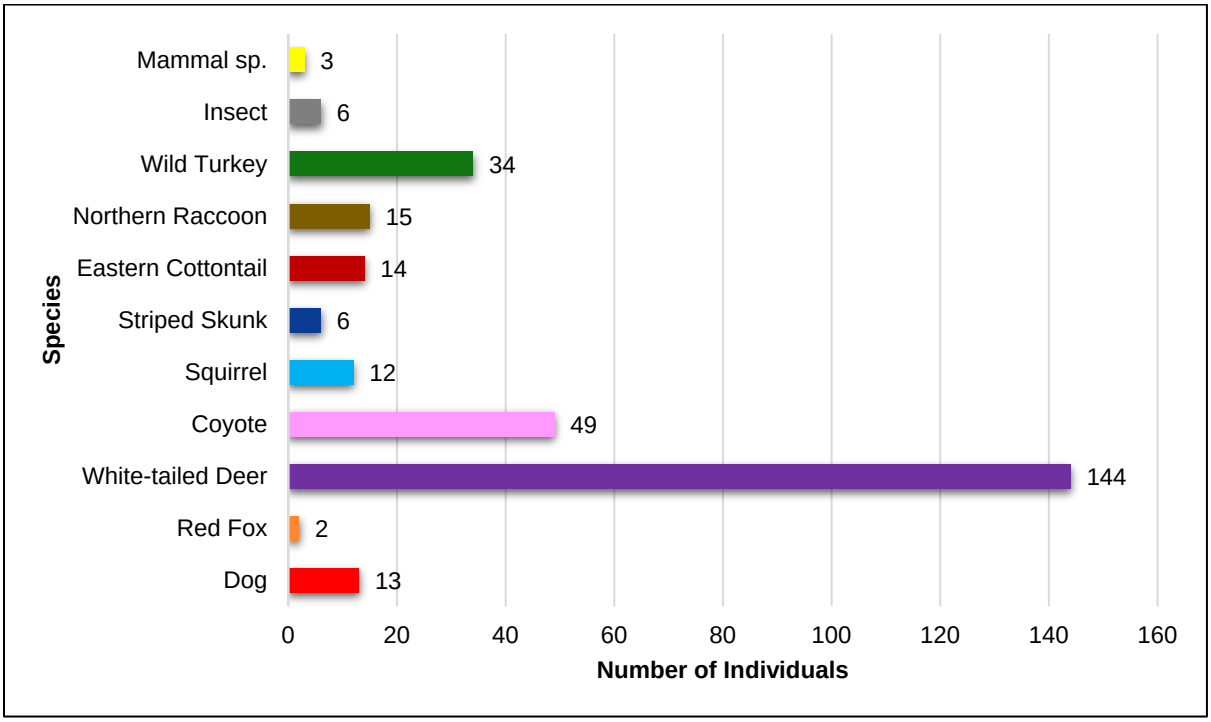
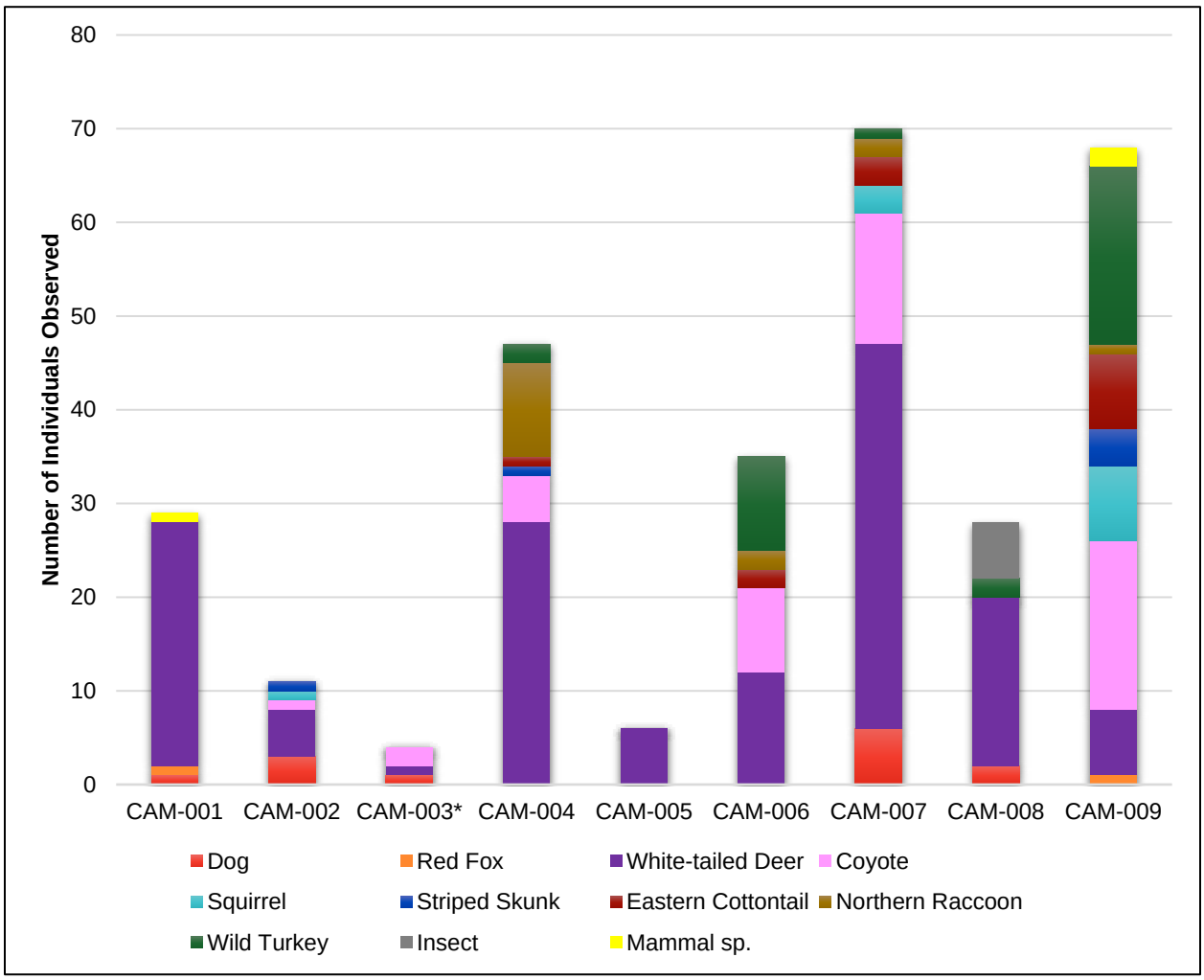


Figure 9. Species Observed on Wildlife Camera Photos (2022-2023)



*CAM-003 was decommissioned on June 22, 2022

Figure 10. Individuals Observed by Wildlife Camera (2022-2023)

Bat Habitat Assessment

Background information and SAR screening indicates that Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) are reported from within 1 km of the Study Area (Dobbyn 1994). Aboud & Associates (2020) found 2 candidate bat roosting trees within the plantation feature using a plot-based assessment. They concluded that the plantation feature does not constitute high quality bat habitat or Bat Maternity Colony SWH (Aboud & Associates 2020). Subsequently, thirty-six candidate bat roosting trees were identified by NRSI staff during the bat habitat assessments in 2022 within the hedgerows and other woodland features within or

adjacent to the proposed development. Then, in November and December, 2022, additional candidate bat roosting trees were identified by NRSI (See Map 10 or Map 1 of Appendix VI). These trees contain suitable cavities, areas of peeling bark, or cracks/crevices that may be utilized by Little Brown Myotis and/or Northern Myotis. A full description of the candidate roost trees identified by NRSI is found in the Acoustic Monitoring Report in Appendix VI. A woodland community is considered high quality maternity roost habitat when it contains ≥10 candidate roost trees/ha. Based on all bat habitat assessments completed, a number of woodland and wetland communities within the Subject Property are considered to be high quality; this includes WET-01, Woodland 1, the FOD4 (#39) portion of Woodland 2 and the adjacent CUS1 (#43), Woodland 3/WET-03, Woodland 4/WET-04, and Woodland 5. High quality bat habitat is shown on Map 10 or Map 2 of Appendix VI.

Bat Acoustic Monitoring

A total of seven bat species were documented as present during passive acoustic monitoring within the Subject Property. Three of these species, Little Brown Myotis, Tri-colored Bat, and Eastern Small-footed Myotis are listed as SAR in Ontario (MECP 2023). For full results of acoustic monitoring, and interpretation of results, see Appendix VI. A majority of the treed features surveyed were found to contain candidate habitats for bat SAR, including candidate maternity roosting (Little Brown Myotis), candidate male/non-reproductive female day roosting (Little Brown Myotis), and candidate flyway/foraging habitats (Little Brown Myotis & Eastern Small-footed Myotis). Only a single bat pass sequence was classified as Tr-colored Bat along the edge of Woodland 1; this individual was likely moving through the Subject Property rather than utilizing the habitats present.

4.5.4 Insects

Butterflies

The Ontario Butterfly Atlas has records of 58 butterfly species in the vicinity of the Study Area (Macnaughton et al. 2022). Two SCC Butterflies have been identified as having potential habitat within the Subject Property: Tawny Emperor (*Asterocampa clyton*) and Monarch (*Danaus plexippus*). A total of 23 species of butterflies were observed in the Subject Property by NRSI biologists in 2022. A complete list of butterfly species observed is provided in Appendix VIII.

<u>Monarch</u>

Monarch butterfly, listed as Special Concern provincially (MECP 2023), was observed within the

Subject Property within the agricultural fields, hedgerows, meadows, savannahs, woodlands, and wetlands. Due to the overall presence of Monarch within the retained habitats within the Subject Property, detailed mapping of observations is not provided. Both larvae and adults were documented. The species' larval host plant, Milkweed (*Asclepias* sp.), was documented by NRSI occasionally during ELC and vascular plant surveys within the nine different vegetation communities, including hedgerows, woodlands, and savannahs. No other SAR or SCC butterfly species were observed. Aboud & Associates (2020) also assessed Monarch and Common Milkweed presence. There were no substantial patches of Milkweed observed within the Subject Property that would constitute significant habitat.

Tawny Emperor

The host plant for Tawny Emperor is Hackberry (*Celtis* spp.). Four Common Hackberry (*Celtis occidentalis*) trees were inventoried along Maltby Road, close to the road right-of-way. No other Hackberry were observed onsite and Tawny Emperor was not observed during insect surveys or incidentally.

Delaware Skipper

Delaware Skipper (*Anatrytone logan*) is a locally significant species that was observed by Aboud & Associates (2020) within a hedgerow (#30). Its host plants include grasses such as Old Switch Panicgrass (*Panicum virgatum*) and Big Bluestem (*Andropogon gerardi*). These plant species were not observed on the Subject Property.

Odonata

The Ontario Odonate Atlas (OOAD 2022) reports 63 dragonfly and damselfly species in the vicinity of the Study Area. NRSI observed 19 species of dragonfly within the Subject Property during 2022 surveys. A complete list of odonate species observed is provided in Appendix VIII. No significant species were observed.

Other Insects

A few of other insect species were observed within the Subject Property in 2022, including six Bumble Bee (*Bombus*) species. Lemon Cuckoo Bumble Bee (*Bombus citrinus*), an SCC ranked S3S4 (MNRF 2022b), was observed near the remnant parking lot by Crawley Road (Map 4). A complete list of other insect species observed is provided in Appendix VIII.

Lemon Cuckoo Bumble Bee

Lemon Cuckoo Bumble Bee is a nest parasite of the Common Eastern Bumble Bee (*Bombus*

impatiens), the Two-spotted Bumble Bee (*Bombus bimaculatus*), and the Half-black Bumble Bee (*Bombus hortorum*). Lemon Cuckoo Bumble Bee will locate and infiltrate the host nest, where it will kill the host species' queen, egg, and larvae. Two-spotted Bumble Bee was observed within hedgerows and the CUT1 while Half-black Bumble Bee was observed within the agricultural fields. Nests of these species were not observed, therefore, habitat for Lemon Cuckoo Bumble Bee is likely not present or likely found within habitats to be retained, which were not extensively searched.

4.6 Aquatic and Fish Habitat

No fish habitat is present within the Subject Property due to the lack of permanent or intermittent streams. The wetland habitats were studied in 2006 as part of the EIS by NRSI and at that time, it was confirmed that fish were not present. In June 2022, the wetlands were reviewed again to document potential fish habitat and overall aquatic conditions. The results of this assessment are summarized in Table 8 below.

Table 8. Summary of Aquatic Conditions

Wetland	Habitat Conditions
WET-01	No fish habitat. Dry at the time of assessment.
WET-02	No fish habitat. Isolated; pond heavily vegetated with terrestrial grasses and aquatic vegetation. Water depth at 0.75m at deepest point.
WET-03/-05	No connection to fish-bearing waters. Shallow, heavily vegetated pond with primarily terrestrial grasses.
WET-04/-11	No fish habitat. Very shallow pond, likely to dry up in summer. Heavily overgrown with shrubs.
WET-06	No connection to fish-bearing waters. Shallow, open-water pond. Densely vegetation with emergent vegetation around perimeter and primarily floating vegetation throughout middle. Depth >1m. No apparent connection through WET-07 through culvert.
WET-07	No connection to fish-bearing waters. May support fish if stocked, but no indication of fish being present. Large, relatively deep pond with open water (>1m deep). Heavily-vegetated with emergent, submergent and floating aquatic vegetation. No inflow observed from WET-12, but channel is present. Channel is blocked by rock weir. Channel with water flowing very slowly to WET-06. No direct connection observed between the two; tractor lane built at northwestern extent of WET-06.
WET-12	No connection to fish-bearing waters. Shallow, open water pond with several isolated pockets of open water. Disconnected from WET-07. Densely

	vegetated with terrestrial grasses and aquatic vegetation. Deepest point is approximately 1m.
WET-13	No connection to fish-bearing waters. Shallow, open-water pond. Densely vegetated with terrestrial grasses and aquatic vegetation.

5.0 Significance and Sensitivity of Natural Features

The identification of significant and sensitive natural features is required to understand what areas need to be protected and what areas present opportunities for development. Natural features that are sensitive to disturbance are identified based on the rarity or significance of the feature in the context of the natural heritage policies governing their protection.

Many of the natural features on the Subject Property would be considered part of the City of Guelph Natural Heritage System, including the PSWs, Significant Woodlands, Significant Wildlife Habitat and Ecological Linkages, and Significant Landform. These features are considered Significant Natural Areas within the Natural Heritage System (City of Guelph 2022). Additionally, locally significant species habitats are present, which would be considered Natural Areas. The City of Guelph (2022) has also identified Restoration Areas within the Subject Property, coinciding with the SWM block adjacent to WET-02. These designated areas are described in more detail below, however, with the modifications from OPA 80, the OP policies would not apply to these aforementioned features. Consequently, the policy requirements considered are from the Provincial Policy Statement, which is described further in the following sections. Discussion of designations under the City's Official Plan (2022) are included to provide a full characterization of the Subject Property, however, these designations do not constitute development constraints unless otherwise specifically stated, based on our professional judgement (including consideration of OPA 80).

5.1 Significant Wetlands

Wetlands provide valuable ecological functions within the landscape because of their ability to collect and store surface water and groundwater, as well as for their provision of habitat for wildlife, plants, and fish. There are 11 distinct wetland units within the Subject Property, which includes small isolated wetlands and large strings of contiguous wetlands (Map 9). All of these wetlands, with the exception of WET-08, WET-09, and WET-10, have been identified by MNRF as PSWs within the Mill Creek Puslinch PSW Complex. Development and site alteration is not permitted within PSWs (OMMAH 2020) and permitting must be obtained from GRCA to develop within wetland regulated areas. Development within adjacent lands to wetlands must demonstrate that there will be no negative impacts to the features or their ecological functions (OMMAH 2020; GRCA 2015).

The three unevaluated wetlands have been assessed by NRSI in 2022 for complexing into the PSW complex (Appendix XI). Based on this assessment, WET-08 and WET-09 were

recommended to be complexed as PSW based on the ecological benefits they provide (i.e., important species habitats) and location within the broader Natural Heritage System as stepping-stone habitats, using the methods of the 3rd edition of the OWES manual (MNRF 2014a). WET-10, however, is not recommended to be complexed as PSW due to its small size, lack of habitat function, and isolation from other natural features. The wetland complexing memo in Appendix XI was sent to MNRF for their review on September 13, 2022. MNRF agreed with this assessment; their comments are provided in Appendix XI. Therefore, WET-08 and WET-09 are now considered PSW while WET-10 is considered 'Other Wetland (Non-PSW)' (Map 9). On December 22, 2022, the Province of Ontario released an updated OWES Southern Manual (4th Edition), which introduces new requirements for wetland complexing to better recognize the professional opinion of wetland evaluators and includes updated methods for scoring wetlands. The wetlands on the Subject Property have not been reassessed using the new OWES manual but may be for subsequent phases of development.

NRSI has also submitted a policy assessment for WET-10 to GRCA that concludes that this wetland meets GRCA's policies in Section 8.4.4 for removal of naturally-occurring wetlands less than 0.5ha. GRCA agreed with this assessment, which is documented in Appendix XI.

The hydrologic conditions affecting water balance in the wetlands on the Subject Property are important to consider in the context of the proposed development. WET-06, WET-07, WET-12, and WET-13 have been recorded to intersect the groundwater table at certain points in the year, which allows them to receive groundwater discharge (GM BluePlan 2023). Groundwater discharge conditions are more likely in the east side of this wetland corridor. The other wetlands identified within the Subject Property do not appear to intersect the groundwater table and are understood to be reliant on runoff and evapotranspiration (GM BluePlan 2023).

All wetlands on the Subject Property have been assessed using the Toronto Region Conservation Authority (TRCA)'s Wetland Water Balance Risk Evaluation (2017) to inform GM BluePlan's monitoring program and water balance assessment. Based on the vegetation communities present, species observed, and habitats present or potentially present, all wetlands, with the exception of WET-10, have been determined to have a high sensitivity.

5.2 Significant Woodlands

Woodlands provide a variety of benefits including soil erosion prevention, nutrient and hydrological cycling, flood and erosion reduction, mitigation of effects of poor air quality, the

long-term storage of carbon, and the provision of wildlife habitat (OMNR 2010). They can also provide outdoor recreation opportunities (OMNR 2010). Development and site alteration shall not be permitted within Significant Woodlands unless it can be demonstrated that there will be no negative impacts on the feature or its ecological function (OMMAH 2020).

Many of the woodlands on the Subject Property would be considered Significant based on the City's designation criteria in the Official Plan (2022), however these policies and criteria do not apply to the Subject Property pursuant to OPA 80. Therefore, provincial criteria have been utilized to assess woodlands within the Subject Property. The Provincial Policy Statement defines "Significant" to mean *"in regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources and Forestry*" (OMMAH 2020).

The recommended defining criteria have been provided within the Natural Heritage Reference Manual (OMNR 2010) which "*represents the Province's recommended technical criteria and approach for being consistent with the PPS in protecting natural heritage features and areas and natural heritage systems in Ontario*". According to the Natural Heritage Reference Manual (OMNR 2010), there are four main criteria to consider for assessing woodland significance:

1. Woodland size
2. Ecological functions, which have 5 sub-criteria:
    a. Woodland interior
    b. Proximity to other woodlands or other habitats
    c. Linkages
    d. Water protection
    e. Woodland diversity
3. Uncommon characteristics
4. Economic and social function values

The Manual states that for a woodland to be considered Significant, it needs to meet the minimum standard for any one of the criteria. An assessment of each woodland within the Subject Property is provided in Table 9. Hedgerows extending off of woodland features being

assessed have been excluded due to their narrow width. Additionally, the FOD4 (#28) surrounding WET-03 is considered part of Woodland 3 because it is contiguous with a treed wetland (SWD4-1) and the total size is 1.40ha. The trees extending along the western edge of WET-03 are considered a hedgerow feature and not part of the woodland patch due to the narrow width between the hedgerow dripline edge and the edge of the SWD4-1 (28m on average).

Total woodland cover within the City of Guelph is 1254.55ha (14.21% of the City's land area of 8830.03ha), based on 2020 ELC mapping obtained from the City of Guelph. This includes FO, CUW, CUP, SWD, SWC, and SWM ELC communities.

Table 9. Significant Woodland Assessment

Criteria[1]	Criteria Comments[1]	Standards[1]	Subject Property Woodland Assessment
1. Woodland Size	• Size refers to the area (spatial) extent of the woodland (irrespective of ownership) • Woodland areas are considered to be generally continuous even if intersected by narrow gaps of 20m or less in width between crown edges. • Size value is related to the scarcity of woodland in the landscape derived on a municipal basis with consideration of differences in woodland coverage among physical sub-units (e.g., watersheds, biophysical regions). • Size criteria should also account for differences in landscape-level physiography (e.g., moraines, clay plains, and community vegetation types)	Where woodlands within the planning area cover: • 5-15% of the landcover, woodlands 4ha in size or larger should be considered significant. ***Note:*** The size threshold should be reduced in the absence of information for the other three criteria. As a consideration in addressing the potential loss of biodiversity, the largest woodland in the planning area (or sub-unit) should be identified as significant.	Woodland 1: 2.10ha – not Significant **Woodland 2: 7.06ha – Significant** Woodland 3: 1.40ha – not Significant **Woodland 4: 4.14ha –Significant** **Woodland 5: 21.31ha – Significant**
Ecological Functions			
2a. Woodland Interior	• Interior habitat more than 100m from the edge (as measured from the limits of a continuous woodland as defined above) is important for some species. • For purposes of this criterion, a maintained public road would create an edge even if the opening was not wider than 20m and did not create a separate woodland.	• Any interior habitat where woodlands cover less than 15% of the land cover.	Woodland 1: 0ha – not Significant **Woodland 2: 0.07ha –** Not significant due to small size that would not functionally provide interior habitat. Woodland 3: 0ha – not Significant Woodland 4: 0ha – not Significant **Woodland 5: 0.84ha & 0.20ha - Significant**
2b. Proximity to other	• Woodlands that overlap, abut or are close to other significant natural heritage	• A portion of the woodland is located within a specified distance (e.g., 30m) of a significant natural feature or fish habitat	Woodland 1: PSW within 70m; woodland within 40m – not Significant

Criteria[1]	Criteria Comments[1]	Standards[1]	Subject Property Woodland Assessment
woodlands or other habitats	features or areas could be considered more valuable or significant than those that are not • Patches close to each other are of greater mutual benefit and value to wildlife	likely receiving ecological benefit from the woodland and the entire woodland meets the minimum area threshold (e.g., 0.5- 20ha depending on circumstance)	Woodland 2: PSW within 153m; woodland within 40m – not Significant **Woodland 3: contains PSW; within 66m of another PSW - Significant** **Woodland 4: contains PSW; within 66m of another PSW - Significant** **Woodland 5: abuts PSW, contains small wetlands off-property - Significant**
2c. Linkages	• Linkages are important connections providing for movement between habitats. • Woodlands that are located between other significant features or areas can be considered to perform an important linkage function as "stepping stones" for movement between habitats.	• Are located within a defined natural heritage system or provide a connecting link between two other significant features, each of which is within a specific distance (e.g., 120m) and meets minimum area thresholds (1-20ha, depending on circumstance)	**Woodland 1: identified within City NHS; linking habitat between SWH - Significant** Woodland 2: not within City NHS; does not provide stepping stone – not Significant **Woodland 3: identified within City NHS; contiguous with other significant habitats - Significant** **Woodland 4: identified within City NHS; contiguous with other significant habitats - Significant** **Woodland 5: identified within City NHS; contiguous with other significant habitats - Significant**
2d. Water protection	• Source water protection is important. • Natural hydrological processes should be maintained.	• Are located within a sensitive or threatened watershed or a specified distance (e.g., 50m or top of valley bank if greater) of a sensitive groundwater discharge, sensitive recharge, sensitive headwater area, watercourse or fish habitat and meet minimum area thresholds (e.g., 0.5-10ha, depending on the circumstance).	The Study Area is located within a significant groundwater recharge area, as mapped by GRCA. The subwatershed study for the Mill Creek subwatershed did not determine that this is a sensitive watershed. Watercourses and fish habitat are not present. **Woodland 1: located within a catchment that drains to wetlands that receive groundwater discharge - Significant** Woodland 2: not located within a catchment that contributes to wetlands – not Significant Woodland 3: located within a catchment that drains to wetlands that rely more on surface water and are perennially disconnected from the groundwater table – not Significant

Criteria[1]	Criteria Comments[1]	Standards[1]	Subject Property Woodland Assessment
			Woodland 4: located within a catchment that drains to wetlands that rely more on surface water and are perennially disconnected from the groundwater table – not Significant **Woodland 5: located within a catchment that drains to wetlands that receive groundwater discharge - Significant**
2e. Woodland diversity	• Certain woodland species have had major reductions in representation on the landscape and may need special consideration. • More native diversity is more valuable than less diversity.	• Have a naturally occurring composition of native forest species that have declined significantly south and east of the Canadian Shield and meet minimum area thresholds (e.g., 1-20ha, depending on circumstance). • Have a high native diversity through a combination of composition and terrain (e.g., a woodland extending from a hilltop to valley bottom or to opposite slopes) and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance).	**Woodland 1: Contains mostly native, common species; candidate maternity roosting colony habitat for Little Brown Myotis and confirmed SWH for Eastern Wood-Pewee identified; terrain is relatively flat throughout – Significant** **Woodland 2: Contains plantation trees and old hedgerows with low native diversity; no rare plant species; candidate maternity roosting colony habitat for Little Brown Myotis identified; terrain is relatively flat throughout – Significant** **Woodland 3: Contains mostly native, common species; candidate SWH for bat maternity colonies; terrain is relatively flat throughout – Significant** **Woodland 4: Contains mostly native, common species; candidate SWH for bat maternity colonies; terrain is relatively flat throughout - Significant** **Woodland 5: Contains mostly native, common species; deciduous portions are candidate SWH for bat maternity colonies; coniferous portions are considered candidate SWH for raptor wintering; rolling topography – Significant**
3. Uncommon Characteristics	• Woodlands that are uncommon in terms of species composition, cover type, age or structure should be protected. • Older woodlands (i.e., woodlands greater than 100 years old) are particularly	• Have a unique species composition or the site is represented by less than 5% overall in woodland area and meets minimum area thresholds (e.g., 0.5ha, depending on circumstance). • Have a vegetation community with a provincial ranking of S1, S2, or S3 (as ranked by NHIC) and meet minimum	Woodland 1: does not have a unique species composition; not a rare vegetation community; does not contain a plant species with CC value ≥8; not an older woodland – not Significant Woodland 2: does not have a unique species composition; not a rare vegetation community; Red Pine is the only species with CC value ≥8 however this species is not naturally occurring

Criteria[1]	Criteria Comments[1]	Standards[1]	Subject Property Woodland Assessment
	valuable for several reasons, including their contributions to genetic, species and ecosystem diversity.	area thresholds (e.g., 0.5ha, depending on circumstance). • Have habitat (e.g., with 10 individual stems or 100m^2 of leaf coverage) of a rare, uncommon or restricted woodland plant species and meet minimum area thresholds (e.g., 0.5ha, depending on circumstance): o Vascular plant species for which the NHIC's Southern Ontario Coefficient of Conservatism is 8, 9, or 10 o Tree species of restricted distribution such as sassafras or rock elm o Species existing in only a limited number of sites within the planning area • Have characteristics of older woodlands or woodlands with larger tree size structure in native species and meet minimum area thresholds (e.g., 1-10ha, depending on circumstance): o Older woodlands could be defined as having 10 or more trees/ha greater than 100 years old o Larger tree size structure could be defined as 10 or more trees/ha of at least 50cm in diameter, or basal area of 8 or more in m^2/ha in trees that are at least 40cm in diameter	in this area; not an older woodland – not Significant **Woodland 3: does not have a unique species composition; not a rare vegetation community; contains two species with CC values ≥8 (Hobblebush and Virginia Ground-cherry); not an older woodland - Significant** **Woodland 4: contains a small thicket community that is ranked S3; does not contain a plant species with CC value ≥8; not an older woodland – Significant** **Woodland 5: does not have a unique species composition; not a rare vegetation community; contains two species with CC values ≥8 (Sharp-loved Hepatica, Bristly Buttercup); not an older woodland - Significant**
4. Economic and social functional values	• Woodlands that have high economic or social values through particular site characteristics or deliberate management should be protected.	• Have high productivity in terms of economically valuable products together with continuous native natural attributes and meet minimum area thresholds (e.g., 2-10ha, depending on circumstance) • Have a high value in special services, such as air-quality improvement or recreation at a sustainable level that is compatible with long-term retention and meet minimum area thresholds (e.g., 2-10ha, depending on circumstance) • Have important identified appreciation, education, cultural or historical value and	Woodland 1: isolated and located on private lands; does not provide a high value of services in the City – not Significant Woodland 2: isolated and located on private lands; does not provide a high value of services due to lack of plantation management – not Significant Woodland 3: isolated and located on private lands; does not provide a high value of services in the City – not Significant Woodland 4: isolated and located on private lands; does not provide a high value of services in the City – not Significant

Criteria[1]	Criteria Comments[1]	Standards[1]	Subject Property Woodland Assessment
		meet minimum area thresholds (e.g., 2-10ha, depending on circumstance)	**<u>Woodland 5</u>: part of a broader contiguous woodland community that spans multiple properties and has been identified within the NHS. It is proposed to have connections to public trails in the future (off-property), as identified in the Clair-Maltby Secondary Plan and the City's Trail Master Plan - Significant**

[1]OMNR 2010

Table 10. Summary of Significant Woodland Assessment

Woodland	Meets Size Criteria?	Number of Other Criteria Met
Woodland 1	No	3
Woodland 2	Yes	1
Woodland 3	No	4
Woodland 4	Yes	4
Woodland 5	Yes	7

As shown in Table 10, all woodlands assessed meet at least one criteria. Woodland 5 met the most criteria (7) while also meeting the size criteria. Woodland 2 only meets one other criteria in addition to the size criteria. Significant Woodlands are shown on Map 9.

5.3 Significant Landform

The City of Guelph Official Plan (2022) includes policies that restrict development within Significant Landform and require additional assessment of potential impacts within the 50m adjacent lands. However, these policies do not apply to the Subject Property as a result of OPA 80.

The Significant Landform boundary was verified by the City of Guelph based on the methods described in Section 3.2. Based on the results of fieldwork and the desktop analysis alternate areas of Significant Landform were not reviewed as conflicts with the proposed undertaking were generally minimal and impacts to the Significant Landform can be eliminated or reduced. The City-confirmed Significant Landform provides conditions that support the development of kettle wetlands, which support a variety of wildlife, and allowed for the development of woodland areas due to the steep slopes that prevented active and ongoing agriculture. The Significant Landform, as described in previous section, provides soil conditions that support rapid infiltration of groundwater, outside of the kettle wetlands, which supports shallow and deep groundwater aquifers. The shallow groundwater system provides coldwater groundwater discharge contributions to Mill Creek, which supports a healthy coldwater fish community. The Significant Landform within the Subject Property also includes a variety of slopes that represent the hummocky nature of the Paris Moraine. A high point is present at the northwest side of the property that is part of a dominant ridge of the Paris Moraine that extends northward towards Clair Road. This ridge flanks the western side of several wetlands west of the Clair-Maltby Secondary Plan lands. Surface water originating on the ridge contributes to water levels within these wetlands, supporting their hydrological regime and conditions for breeding reptiles and amphibians, and other life cycle needs of the wildlife community. An east-west trending ridge is

present near the northeast Subject Property boundary that connects to a third ridge that rises to the north along the eastern property boundary, from a low near Maltby Road.

The Significant Landform also incorporates the string of wetlands that extends into the agricultural field and extends northwest to southeast from the northern property boundary to Maltby Road. This area is low lying and is much flatter than the surrounding Significant landform areas. These wetlands and the area surrounding them are kettle depressions that support a variety of wildlife and recharge the shallow groundwater aquifer. The Significant Landform is less prominent along the string of wetlands; however, a slope is present on the west side, dropping down towards the wetlands, that helps to define the edge of the feature in this area. Capturing this low lying area was important to the Significant Landform delineation as a key component of the visual, hydrological, and hydrogeological uniqueness of the Paris Moraine is these low lying kettle depressions.

The significant portions of the Paris-Galt Moraine, identified as City-confirmed Significant Landform on Map 9, are representative portions of the larger Paris Moraine that were determined to have physiographic, hydrologic, hydrogeologic, ecological, and aesthetic features that represent the larger system. The Significant Landform areas are protected as part of the City's Natural Heritage System. No development or site alteration is allowed within these areas. No buffers are required for Significant Landform; however, site grading must match to the existing grades at the feature boundary, and environmental impacts within 50m of the boundary must be assessed. This EIS provides a review of potential impacts within the 50m adjacent lands and assesses the proposed site grades adjacent to the Significant Landform for full context.

5.4 Habitat of Threatened and Endangered Species

Based on the background information review, several SAR were identified as having potential habitat within the study area (Appendix I). Of these potential SAR, three species were recorded by NRSI/Aboud & Associates (2020) in recent surveys with habitat on the Subject Property, which includes:

- Eastern Meadowlawk;
- Little Brown Myotis; and
- Eastern Small-footed Myotis.

Under the *ESA*, 2007, individuals of and habitats for Threatened and Endangered Species are protected; permitting is required to remove these habitats when activities where adverse effects

cannot be avoided. The Provincial Policy Statement (OMMAH 2020) also stipulates that development and site alteration shall not be permitted within habitat of Endangered and Threatened species, except in accordance with provincial and federal requirements. An Information Gathering Form (IGF) and Alternatives Avoidance Form (AAF) will be submitted to MECP that outlines SAR and their habitats that are present on the Subject Property and have the potential to be impacted. Mitigation measures, which are also outlined within Section 6, have been determined to minimize impacts to SAR, and will be confirmed with MECP through the *ESA* permitting process.

5.4.1 Eastern Meadowlark

Eastern Meadowlark was recorded with Possible 'PO' breeding evidence at MBB-03 Subject Property (Map 4). Nesting has not been confirmed on the Subject Property or immediate surrounding area, and, as such, the Subject Property is not being considered General Habitat that is protected under the *ESA*.

5.4.2 Little Brown Myotis

In Ontario, Little Brown Myotis primarily use buildings and other anthropogenic structures to roost, including for maternity colony roost sites. However, this species will also use natural roost sites such as exfoliating tree bark and cavities and crevices in trees for roosting (ECCC 2018, Humphrey and Fotherby 2019). Males will roost individually or in small groups, while maternity colonies may consist of hundreds of females with young. This species most often forages in open habitats or within forests (ECCC 2018).

Little Brown Myotis was detected in all but three of the treed communities within the Subject Property (H [#8], H [#28], CUW-1 [#29]) that were surveyed (Appendix VI). Bat pass sequences classified to the Myotis species and/or the high frequency species grouping were recorded in all treed communities. While SAR are included in the high frequency species grouping, this species grouping also includes Eastern Red Bat, and should therefore not independently be considered probable evidence of the presence of SAR.

Based on the pattern of call sequences classified to Little Brown Myotis, multiple candidate maternity roost habitats were identified on the Subject Property (Map 10). Given the variety of treed features within the Subject Property and the relatively high number of candidate roost trees documented, it is likely that at least one tree is being utilized as a maternity roost. Alternatively or additionally, an anthropogenic structure near the Subject Property may be

utilized as a maternity roost site. Suitable anthropogenic structures were not documented within the Subject Property itself, but anthropogenic structures that may provide candidate maternity roost sites exist on adjacent properties. As bats are capable of moving large distances quite quickly upon emergence, the bat pass sequences recorded during the suggested emergence period may represent individuals roosting near the Subject Property and using the treed features for foraging and/or as a flyway for movement between key habitat features shortly after emerging from the roost. Acoustic monitoring results also suggest that Little Brown Myotis is using the treed features within the Subject Property for foraging and/or as a flyway to move between key habitat features. All 15 of the treed communities surveyed as part of this study are considered candidate flyway/foraging habitat for the species. Additionally, 10 of the monitored treed vegetation communities are identified as candidate male/non-reproductive female day roosting for Little Brown Myotis (Map 10). Suitable maternity and male/non-reproductive female day roosting habitat for Little Brown Myotis within the White Pine Coniferous Plantation (CUP3-2) (#40) community is limited to certain portions of the community. The majority of this community contains planted coniferous trees, few of which were identified as potentially suitable roost trees. An old hedgerow community, consisting of mature deciduous trees such as Sugar Maple (*Acer saccharum*), runs through the center of the CUP3-2, and additional deciduous trees exist along the southern edge of the feature. Dead American Elms with loose bark are scattered through some areas. Of the 41 potential roost trees identified within BHA-01, only 5 of them (12%) are coniferous trees. Although Little Brown Myotis is known to roost in coniferous trees, the older age class, larger diameter tree size, deciduous species, greater prevalence in providing potential roosting habitat all indicate that the deciduous trees found within it provide more suitable roosting habitat than the majority of the coniferous trees throughout the CUP3-2.

5.4.3 Eastern Small-footed Myotis

Although little information is available, Eastern Small-footed Myotis seem to prefer open, sunny and rocky habitats, and potentially buildings, for roosting and maternity colonies (Humphrey 2017). Foraging habitat is also poorly understood in Ontario, but this species likely forages in forests as well as over water bodies, within riparian forests, and occasionally in open fields (Humphrey 2017).

Eastern Small-footed Myotis was detected in 10 of the 15 monitored treed vegetation communities within the Subject Property. Bat pass sequences classified to the Myotis species and the high frequency species grouping were recorded in all treed communities. While SAR are included in the high frequency species grouping, this species grouping also includes

Eastern Red Bat, and should therefore not independently be considered probable evidence of the presence of SAR.

Although Eastern Small-footed Myotis bat pass sequences were recorded at the majority of the acoustic monitoring stations and within the suggested peak emergence period (i.e., within 60 minutes after sunset), suitable roosting habitat for the species was not documented within the surveyed treed communities during habitat assessments as open, sunny, rocky habitats were not present. Additionally, no anthropogenic structures suitable for providing maternity roosting habitat are present within the Subject Property. However, one long rock wall and one small pile of slab rocks, both with open solar exposure, were noted within other areas of the Subject Property (Map 10). The rock wall is located within the Mineral Cultural Savannah (CUS1) (#17) in the northern portion of the property and the pile of slab rock is located on the outskirts of agricultural land just east of the Cultural Mineral Woodland (CUW1) (#29). It is possible that these may provide maternity and/or day/male roosting habitat for Eastern Small-footed Myotis but they fall outside of the surveyed treed communities. Suitable roosting habitat may be also present outside of the Subject Property and on adjacent properties in the form of open, sunny rocky habitats and/or anthropogenic structures. It is most likely that Eastern Small-footed Myotis are utilizing roosting habitat within anthropogenic buildings outside of the Subject Property, but the rock piles noted may also provide potential maternity and/or day/male roosting habitat at this time. Bats are capable of moving large distances quite quickly upon emergence, the bat pass sequences recorded during the suggested emergence period are likely to represent individuals roosting near the Subject Property and using the treed features for foraging and/or as a flyway for movement between key habitat features shortly after emerging from a roost.

Acoustic monitoring results suggest that Eastern Small-footed Myotis is present in all treed vegetation communities in the Subject Property and using the treed features for foraging and/or as flyways to move between key habitat features. All 15 of the treed communities surveyed are therefore considered candidate flyway/foraging habitat for the species (Map 10). Additional details are provided in the Acoustic Monitoring Report (Appendix VI).

5.5 Significant Wildlife Habitat and Linkages

Significant Wildlife Habitat is present within the Subject Property (Appendix III). The locations of candidate SWH are shown on Map 11 and confirmed SWH are shown on Map 12. The SWH found within the Subject Property is explained further below.

Development and site alteration shall not be permitted within SWH or adjacent lands unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions (OMMAH 2020).

The assessment of SWH should consider different scales. Assessments that only consider smaller scales, such as a subject site, are not as ecologically sound as considering large-scale landscapes in natural heritage planning (OMNR 2000). The concept of assessing the ecological importance to similar features that are found in a larger landscape should be applied at a site-specific scale (OMNR 2000). Looking at the landscape scale allows for the identification of the most important features based on the ecosystem representation (OMNR 2000). Additionally, isolated features are typically less effective in protecting ecological functions of a feature compared to features that are part of a larger natural area (OMNR 2000). The Significant Wildlife Habitat Technical Guide (OMNR 2000) explains the various criteria used to determine significant habitats and provides practitioners the relevant information for deciding what habitats should be protected. In 2015, SWH criteria schedules were released by MNRF with recommended considerations for identifying SWH within the different ecoregions in Ontario. The criteria tables provide minimum thresholds for consideration (e.g., minimum area or number of species), however, an assessment that looks at the surrounding landscape and the significance of the habitat in the geographical area needs to be undertaken. The screening table provided in Appendix III provides the starting point of that assessment based on field surveys and background information; the following sections consider this screening in conjunction with a landscape assessment.

In general, the following principles apply to protecting significant habitats (OMNR 2000):

- Greater priority should be given to habitat/species representation at larger scales;
- Large habitats provide better protection than individually identified isolated features. Larger habitats are more resilient to impacts from disturbance, provide better protection against future habitat loss or degradation, can better maintain important ecological processes and conditions for key life stages of the dependent species, and can support more species;
- Isolated features, even with protective buffers, are less effective in protecting ecological functions than features that are part of a larger natural area;
- If a habitat type is poorly represented in a planning area, then all examples of this habitat should be considered significant;
- High habitat diversity/complexity usually indicates that there is a greater probability that the site is of significant value to wildlife;
- Habitats with obvious importance to many wildlife species are more significant.

5.5.1 Seasonal Concentration Areas

Bat Maternity Colonies

Known locations of bat maternity colonies are extremely rare in forested vegetation communities across Ontario. This SWH type is assessed based on the presence of either a Big Brown Bat (*Eptesicus fuscus*) or Silver-haired Bat (*Lasionycteris noctivagans*) maternity colony. Traditionally, Big Brown Bats formed maternity colonies beneath loose bark and in small cavities of various tree species. Today, common maternity roosts for this species are found in buildings, barns and bridges; however, these anthropogenic structures are not considered to be SWH (OMNR 2000).

To our knowledge, there are no known maternity colonies of Silver-haired Bats or Big Brown Bats in the City of Guelph, however, this habitat type is hard to confirm. Silver-haired Bats prefer older mixed or deciduous forests and form maternity colonies in tree cavities and small hollows (OMNR 2000). The minimum criteria for candidate SWH include ≥10 candidate roost trees ≥25 cm DBH/ha within suitable woodland communities. The defining criteria for confirmed SWH consists of a maternity colony that must be used by >10 Big Brown Bats and >5 adult female Silver-haired Bats (MNRF 2015a).

The plot-based assessment completed by Aboud & Associates in 2020 found that the minimum snag density was not achieved for the CUP3-2 (#40) and FOD4 (#39) contiguous community. However, based on additional assessments by NRSI, using an area search methodology, the FOD4 (#39) within Woodland 2, SWD3-3 (#42)/WET-01, Woodland 1, Woodland 3, and the FOD5-1 (#11) within Woodland 5 were found to contain ≥10 candidate roost trees ≥25 cm DBH/ha. Bat acoustic calls classified to Big Brown Bat and Silver-haired Bat were found in relatively lower numbers at the bat acoustic monitoring stations located within the FOD4 (#39). Although there is limited information regarding the behaviours of these species, it is assumed that they follow similar emergence patterns to bat SAR, as described in Appendix VI, whereby the peak emergence period is between 20 and 60 minutes after sunset (Henrey et al. 2002). At BAT-002 within the FOD4 (#39), 11 and 25 Big Brown Bat pass sequences were captured within the first 60 minutes after sunset on June 11 and June 13, respectively. One and three Silver-haired Bat pass sequences were captured within the first 60 minutes after sunset on June 12 and 13, respectively. In caparison, bat stations located in other suitable habitats had between four and 233 total passes of Big Brown Bat, and between one and 15 total passes of Silver-haired Bat within the first 60 minutes after sunset. BAT-009, located along a hedgerow feature near the Woodland 3 and Woodland 4 had the highest number of Big Brown Bat call

sequences within the first 60 minutes after sunset (233), and 67 (28.76%) of these occurred on June 15. Compared with other woodland communities within the Subject Property, the FOD4 is likely not the most significant habitat for these species and is located further from a drinking source; it is therefore not considered candidate SWH. A full list of bat species captured within acoustic monitoring is provided in Appendix VI.

In order to confirm bat maternity colony SWH, bat exit surveys are required to determine if Big Brown Bat or Silver-haired Bat maternity colonies are present. These surveys are not proposed as they rarely result in confirmed presence of these species. Additionally, there are buildings present within the study area (off-property) which may be the location of such colonies. As such, the highest quality FOD, FOM, and SWD communities with ≥10 candidate roost trees ≥25cm DBH/ha within the Subject Property have been identified on Map 11 as **Candidate SWH**.

Turtle Wintering Area

Turtles require wetlands with water that is deep enough to not freeze over the winter and soft mud substrates for overwintering (MNRF 2014b). Within the City of Guelph, particularly in the south end, there are many wetland habitats suitable for turtles. Snapping Turtle and Midland Painted Turtle have been observed in abundance at numerous properties within the Clair-Maltby Secondary Plan area, with candidate and confirmed habitats identified (Wood et al. 2022).

The defining criteria for Turtle Wintering consists of 5 Midland Painted Turtles or 1 or more Northern Map Turtle (*Graptemys geographica*) or Snapping Turtle that are observed over-wintering within a wetland (MNRF 2015b). Three of the wetlands on the Subject Property, WET-06, WET-07, and WET-13, contained the minimum number of Midland Painted Turtles or Snapping Turtles basking during spring surveys (Map 6) identified in the SWH criteria schedules (MNRF 2015b). These wetlands are large and contain numerous basking structures, muddy substrates, and adequate hydroperiod to be considered **Confirmed SWH** (Map 12). These habitats are also partially or wholly surrounded by other natural areas to be retained, which elevates the significance of these features for the overall protection of turtles using them and effectiveness of maintaining core life processes.

The remaining wetlands on the Subject Property did not have the minimum number of turtle species to be assessed for SWH, as observed by NRSI biologists during surveys in 2022. Some of these wetlands were dry or close to dry at the end of the Spring, indicating they are unsuitable and not preferred habitats for these species.

Reptile Hibernaculum

The ability of reptiles to overwinter successfully in cold climates can have a large impact on population persistence (MNRF 2014b). For snakes, hibernation takes place underground, beneath the frost line. Access to such sites may be through fissures in rock, along tree roots, or through mammal burrows. For a number of snake species, the necessary characteristics for hibernacula are not well known and it is therefore difficult to predict where snakes will overwinter (MNRF 2014b). To our knowledge, there is one known snake hibernaculum in the south end of Guelph, at 132 Clair Road West, which was identified in 2015 based on observations of Eastern Gartersnake and Red-bellied Snake in the vicinity of a hibernacula feature. Eastern Gartersnake is common within Guelph.

Multiple snake species were observed within the Subject Property (Map 7). A number of large rockpiles were identified in the CUS1 (#17) community, around the perimeter of the MAM2-2 (#20) community (Map 11). A snakeboard (SNK-01) was located in the general vicinity of these rockpiles; only one Eastern Gartersnake was observed under this snakeboard, however the snakeboard was not found on and after the June 6th, 2022 survey. Extensive surveys on/around the rockpiles were not undertaken as this habitat is proposed to be retained and is a far distance from the proposed development footprint. An old house foundation and a small slab/rock pile is also present west of the FOD3-1 (#4) habitat, near Maltby Road. Snakeboard SNK-02 was located near the foundation and no snakes were observed under this coverboard. Large congregations of snakes were not observed near the foundation or rockpile.

Northern Ribbonsnake was observed in multiple locations on the Subject Property. Northern Ribbonsnake is a semi-aquatic species that inhabits wetlands and the shorelines of lakes and rivers (COSEWIC 2012a). They are often observed near the water's edge outside of the overwintering period, but may spend winter in underground hibernacula (COSEWIC 2012a). They have been known to hibernate in well-drained sites or in areas close to water; some have been observed to move far distances to overwinter in underground tunnels at rocky forested sites (COSEWIC 2012a).

The following marsh habitats where Northern Ribbonsnake were observed close to have been identified as Candidate SWH, which includes the feature plus a 30m buffer: WET-12, WET-07, and WET-06 (Map 11). No confirmed hibernacula sites were found. A 30m buffer from the rockpile has also been identified as **Candidate SWH**, as a conservative approach.

5.5.2 Rare Vegetation Communities

Rare vegetation communities often contain rare species that depend on such habitats for their survival (OMNR 2000). These habitats can be sensitive to changes in moisture or amount of vegetation cover (OMNR 2000). ELC Vegetation communities that are ranked S1-S3, as listed by NHIC (OMNR 2000) are considered SWH. The Buttonbush Mineral Thicket Swamp Type (SWT2-4) is ranked S3, which means it is rare to uncommon. It is estimated to have between 21-100 occurrences in Ontario with a narrow range (>3% but <10% of province area) (OMNR 2000). This is the only known community within the City of Guelph (Dougan 2009). This community is present in the northern portion of the Subject Property, within the existing Natural Heritage System and is considered **Confirmed SWH** (Map 12).

5.5.3 Specialized Wildlife Habitat

Amphibian Breeding Habitat (Woodland)

Woodland amphibian breeding habitats are characterized by shallow, un-polluted water within or adjacent to woodlands that may be temporary or permanent (MNRF 2014b). Emergent and submergent vegetation are important for calling and egg laying (MNRF 2014b). Additionally, the surrounding woodland habitat is important to offer a shady and moist understorey, and maintain breeding pond function (MNRF 2014b). Within the City of Guelph, portions of the Hanlon Creek Swamp PSW contain the largest, and most significant, woodland breeding habitat. In the south end of Guelph, candidate and confirmed habitats have been identified on multiple properties (Wood et al. 2022).

For a habitat to be assessed for significance, it must be at least 500m^2 in size, be within or 120m adjacent to a woodland, and contain breeding populations of the listed species (MNRF 2015a). Spring Peeper and Gray Treefrog were found with call code level 3 at WET-02 and WET-07. Small numbers of Green Frog and Wood Frog were also observed during anuran call surveys. WET-02 is predominantly a reed canary meadow marsh with swamp thicket around the fringes. It lacks a clear contiguous movement corridor to the adjacent woodland (Woodland 1). It is therefore not considered significant, especially when compared to other amphibian breeding (woodland) habitats that are known from the study area and the south end of Guelph. WET-07 is a large wetland, characterized predominantly as a shallow marsh with meadow marsh and swamp thicket around the fringes. It is directly adjacent large deciduous and coniferous woodlands and is therefore considered **Confirmed SWH** for amphibian breeding

habitat (woodland) (Map 12). Woodland breeding habitat includes the breeding pond plus 230m of surrounding woodland area.

Amphibian Breeding Habitat (Wetland)

Most amphibians require specific wetland conditions in order to reproduce. This includes a source of water (i.e., a breeding pond) to mate and lay eggs where the larvae will hatch and live in the water for a specific length of time (depending on the species) and eventually emerge as an adult. (MNRF 2014b). The exception to this is the Red-spotted Newt, which starts on land and then returns to woodland ponds as adults (MNRF 2014b). Other amphibians will either live within the pond or along the edge, disperse from the pond and live in terrestrial environments, and then return in the Spring to breed or in the Fall to hibernate in bottom sediments (MNRF 2014).

In the City of Guelph, this habitat type is less common than woodland habitats, largely because of the lack of natural, open water wetlands. Within the south end of Guelph, a small pocket of candidate amphibian breeding habitat (wetland) has been identified on 2021 Gordon Street and 132 Clair Road Wesy (Wood et al. 2022), based on salamander breeding surveys completed as part of previous Southgate Business Park studies. Although it is not isolated from a woodland, the Halls Pond provides considerable open water wetland habitat and is known to contain many breeding amphibians (Wood et al. 2022).

Within the Subject Property, WET-06 contained Gray Treefrog at call code level 3 and >20 individuals of Unisexual *Ambystomas* and Red-spotted Newt captured within pitfall traps. This wetland is considered **Confirmed SWH** (Map 12) because of its relative abundance of amphibians compared to other wetlands in the Study Area. While it may not be the most significant habitat in the City of Guelph, this habitat type is less predominant across the landscape, and therefore should be identified as significant in this scenario. Pitfall traps near WET-09 also had high levels of salamanders captured, however, these individuals were most likely just moving between WET-06 and woodland habitats. Other wetlands on the Subject Property that had salamanders within pitfall traps nearby are unlikely to have adequate conditions for breeding and are not considered SHW.

5.5.4 Habitat for Species of Conservation Concern

Shrub/Early Successional Bird Breeding Habitat

The species indicated for this habitat type have specific nesting habitat preferences that limit their distribution. They prefer shrubby areas that provide food, cover, and nesting habitat (MNRF 2015a). Within the City of Guelph, this habitat is less common due to past land uses, urbanization and agricultural activities. In the south end of Guelph, candidate habitats have been identified as part of the Clair-Maltby Secondary Plan in general areas where habitat may be suitable (Wood et al., 2022).

Savannah and thicket habitat within the Subject Property are >10haand have been successional habitats for >5 years. These areas are relatively undisturbed. One indicator species for this habitat, Brown Thrasher (*Toxostoma rufum*), was observed with possible breeding evidence at BMB-06, which is near appropriate habitats. Field Sparrow (*Spizella pusilla*) and Eastern Towhee (*Pipilo erythrophthalmus*) are more common species that were observed but when observed in combination with an indicator species, could suggest the habitat is significant (MNRF 2015a). These species were observed with probable and possible breeding evidence, respectively, in appropriate habitats. The breeding evidence for Brown Thrasher and Eastern Towhee is not strong enough to suggest that they are actually breeding in these habitats. Therefore, the shrub/savannah habitats in the Subject Property are not considered SWH. However, with the long-term protection of open habitats on the Subject Property within the natural heritage system, these habitats are still expected to be suitable for bird species requiring these habitats. Additional habitat is also expected to be created in the short term within the Woodland Compensation Area (discussed in Section 6.1.5).

Terrestrial Crayfish

Chimney Crayfish (*Fallicambarus fodiens*) is a semi-terrestrial crayfish that spends most of its time within burrows that consist of underground tunnels and leaves the burrow at night to feed (MNRF 2014b). They are usually associated with marshy fields, drainage ditches, marshes, and ponds (MNRF 2014b). Within the City of Guelph, there are known habitats of terrestrial crayfish. One crayfish burrow was observed within the MAS3-2 (#20) community, as such this habitat is not considered significant.

Special Concern and Rare Wildlife Species: Bristly Buttercup

Bristly Buttercup is a perennial woodland plant species with an SRANK of S3 (MNRF 2022b). This species has been observed in the south end of Guelph, however, the extent and location of

these observations are unknown (Wood et al. 2019), and it is likely an under-recorded species. Within the Subject Property, this species was observed occasionally within the understorey of the FOD5-1 (#11) community. It had not been previously observed on the Subject Property. The FOD5-1 (#11) community in which it was found is considered **Confirmed SWH** (Map 12).

Special Concern and Rare Wildlife Species: Eastern Wood-Pewee

Eastern Wood-Pewee typically occupies woodlands of various sizes, often where lower-density canopy cover occurs, and often near edge zones (Watt et al. 2020). It is most abundant in intermediate-age mature forest stands with little understorey vegetation (COSEWIC 2012b). Within the Subject Property, Eastern Wood-Pewee was observed with probable breeding evidence within the FOD6-5 (#33) community by Aboud & Associates in 2020 and within multiple woodland communities by NRSI in 2022. Observations made at BMB-01 and MBB-04 included possible breeding evidence. At BMB-04, probable breeding evidence was observed, however, it was off-property. Therefore, the only habitat within the Subject Property where breeding is probable is the FOD6-5 (#33), where the habitat conditions are suitable for this species. This habitat is considered **Confirmed SWH** (Map 12)**.**

Special Concern and Rare Wildlife Species: Snapping Turtle

There are three main types of habitat that all turtles require throughout the year: overwintering habitat, active season habitats (where they forage, mate, thermoregulate and seek refuge from predators), and movement corridors (MNRF 2017c).

Overwintering wetlands must be sufficiently deep for turtles to avoid freezing temperatures (MNRF 2014b). For Snapping Turtles, overwintering habitats must have soft mud or organic substrates into which they can bury themselves (MNRF 2014b). Active season habitats for turtles include a wide range of wetlands such as ponds, marshes, swamps, fens, bogs, slow-flowing streams or rivers, and shallow bays of lakes (MNRF 2017c). These habitats are typically nutrient rich, relatively shallow wetlands, with soft substrates, emergent vegetation, and ample opportunities for basking. These areas must provide plentiful food resources (i.e., vegetation, aquatic invertebrates, amphibians, fish, etc.) and access to various temperature regimes for thermoregulation.

Snapping Turtle is quite widespread within southern Ontario, however, in the province, suitable habitat is being reduced as a result of conversion of wetlands to agricultural and urban development (COSEWIC 2008). In the City of Guelph, many observations have been recorded

on iNaturalist, predominantly associated with the Speed River and wetland habitats. Snapping Turtle was observed and confirmed to be using habitats in the south end of Guelph through the Clair Maltby Secondary Plan studies (Wood et al. 2019).

Within the Subject Property, Snapping Turtle was observed basking within WET-07 in the Spring, which indicates it is likely using this habitat for overwintering. It was also observed incidentally near WET-07 and WET-06 (Map 4). These wetlands likely also provide active season habitat as they are inundated for longer periods of time and contain suitable vegetation and opportunities for basking. WET-07 and WET-06 are considered **Confirmed SWH** for this species (Map 12). These habitats are large, relatively intact wetlands and would be considered some of the best representative habitats in the south end of Guelph for providing suitable herpetofauna habitat.

Nesting for this species was not observed on the Subject Property; soil conditions are likely unsuitable.

Special Concern and Rare Wildlife Species: Northern Ribbonsnake

Northern Ribbonsnake spends most of its time in or near water. They feed primarily on amphibians, especially frogs of the younger, more abundant age class of species such as the Northern Leopard Frog, Spring Peeper, Green Frog, and American Toad (Environment Canada 2014). They are also known to eat salamanders (Environment Canada 2014). Quiet, shallow water with low surrounding vegetation is often preferred, but good sunlight exposure is required (COSEWIC 2012a). They will often bask on emergent logs and hummocks, along shoreline habitat adjacent to water, or on low shrubs (Environment Canada 2014). Population decline for this species is primarily associated with the loss of wetland habitat. Since they rely on amphibians as a food source, the degradation of wetland habitats through agricultural activities or other pollution sources also plays a role in reducing their population if amphibian numbers decline as well. Additionally, road mortality is a source for population decline where roads bisect their aquatic habitats.

Within the City of Guelph, this species is not considered locally significant (City of Guelph 2012). This species was observed within the Clair-Maltby Secondary Plan study area in close very proximity to this Subject Property. To our knowledge, there is only one other known observation of this species in Guelph, at 132 Clair Road West, approximately 500m from the Subject Property. Given the vast area of suitable habitat on the Subject Property within areas proposed

to be protected within the Natural Heritage System, and that multiple observations of this species were made within the Subject Property, core habitats on the site are considered significant. The core habitats found on the Subject Property include the marsh communities of WET-06, WET-07, WET-12 and are considered **Confirmed SWH** (Map 12).

5.5.5 Animal Movement Corridors

Amphibian Movement Corridors

When Amphibian Breeding Habitat (Wetlands) are confirmed, amphibian movement corridors must be considered. This relates to the movement of amphibians from their terrestrial habitat to breeding habitat (MNRF 2015a). To be considered SWH, corridors should have at least 15m of vegetation on both sides of the aquatic habitat or be up to 200m wide of woodland habitat with gaps <20m (MNRF 2015a). Shorter corridors are more significant than longer corridors, however, conditions must be suitable for amphibians to be able to move between their summer and breeding habitat (MNRF 2015a). If there is no adequate cover (e.g., in barren agricultural fields in the early Spring), amphibians could become dehydrated (MNRF 2014b). Longer routes will be preferred if the area is less disturbed and provides better cover (MNRF 2014b). Species such as Spotted Salamander and Wood Frog tend to have high site fidelity and will return for multiple years, using traditional routes that typically follow ridges or valleys (MNRF 2014b). Wooded movement corridors which provide unhindered links to ponds are integral. Forest understorey should be comprised of an abundant supply of woody debris, shrubs, and other structures that provide cover and moisture (MNRF 2014b).

Amphibian movement surveys on the Subject Property indicated that there is movement occurring across the site, with the highest concentrations between the string of wetlands in the northeast portion and the upland communities on and off-property to the east/northeast. Hedgerow features are present within the agricultural fields in these areas, however, they do not have suitable conditions to be considered significant. WET-06 was confirmed to have amphibian breeding (wetland) habitat, however, the closest suitable deciduous woodland habitats have barriers by way of agricultural fields and open thicket habitats. Therefore, these areas are **not SWH.** The upland habitats surrounding WET-06 to the north and northeast which connect WET-06 to deciduous woodland habitats are proposed to be retained, in addition to the ecological restoration proposed in the adjacent agricultural fields (discussed in Section 6.1.5); therefore, herpetofauna movement is still anticipated to be facilitated post-development.

5.5.6 Ecological Linkages

Ecological Linkages are considered by the City of Guelph as part of Significant Wildlife Habitat (City of Guelph 2022). They are intended to facilitate movement of flora and fauna within the Natural Heritage System, between Significant Natural Areas and/or other protected habitats (City of Guelph 2022). The PPS also identifies that diversity and connectivity of natural features should be maintained, restored, and improved where possible (OMMAH 2020).

Ecological Linkages have been mapped on the Subject Property by the City of Guelph between the Woodland 1 and CUT1 (#21) communities (Map 11). This area was identified through previous studies and was carried forward on Official Plan mapping. Deer Crossings, Other Amphibian Crossings, and Other Wildlife Crossing Opportunities have also been mapped along Maltby Road (Map 11). The Official Plan states that studies must assess whether the configuration of the linkages and crossings, the nature of adjacent land use, significance, sensitivity, and ecological requirements of the species they are intended to support (City of Guelph 2022). Where a need has been identified for wildlife to cross a road, wildlife crossings and mitigative measures may be required (City of Guelph 2022). Notably, these policies do not apply to the Subject Property as a result of OPA 80, however, an assessment of overall wildlife movement and potential crossings is provided nonetheless to ensure significant populations of wildlife do not become isolated as a result of the proposed development.

The Ecological Linkage identified within the Subject Property is 30m wide and approximately 130m long. It contains a hedgerow feature and agricultural lands and connects two communities that have been confirmed to contain SWH. This area has not been identified as an existing significant wildlife movement corridor, however, the restoration of this linkage will likely provide enhanced movement function. Woodland 1 may also be a stepping stone community between WET-02, where amphibians have been confirmed breeding, and the larger contiguous habitats to the north, although this connection in the current condition is considered low quality due to the narrow width of existing vegetation connecting the features and agricultural activities. The only species observed within pitfall traps at the hedgerow feature within the Ecological Linkage was one individual of Red-spotted Newt. Aboud & Associates (2020) noted that the hedgerows within the development area were not being utilized for salamander movement between breeding and non-breeding habitats. Mammal species captured in their pitfall traps utilize a variety of habitat types (Aboud & Associates 2020). They also concluded that the natural features within their study area are functioning as a “dead-end” due to other barriers to

movement (Aboud & Associates 2020). Large movement patterns were not identified (Aboud & Associates 2020).

Wildlife cameras stationed near the proposed Ecological Linkage saw considerable movement of mammals along or near the hedgerow, largely consisting of White-tailed Deer. Significant habitats for White-tailed Deer have not been identified by MNRF within the Subject Property, however, due to the extent of natural habitats on the property, it is anticipated that White-tailed Deer, along with many other mammal species, will still be able to continue to move throughout, utilizing this linkage area and other access points on the property.

The width and length of this Ecological Linkage is adequate considering the species observed within the Subject Property and the additional ecological enhancements that are proposed, which is discussed in more detail in Section 6.1.5. As shown in Figure 11, a majority of the individuals captured within pitfall traps were found near WET-09 and WET-06, which are proposed to be wholly or partially surrounded by a naturalized restoration area (discussed further in Section 7.1.3). Planted buffers and Significant Landform areas will also provide additional movement habitat/opportunities for these areas.

In addition to the Ecological Linkage already identified, a wildlife crossing, such as a culvert, is recommended that allows for the movement of amphibians between WET-02 and Woodland 1. These areas have been identified on Map 11.

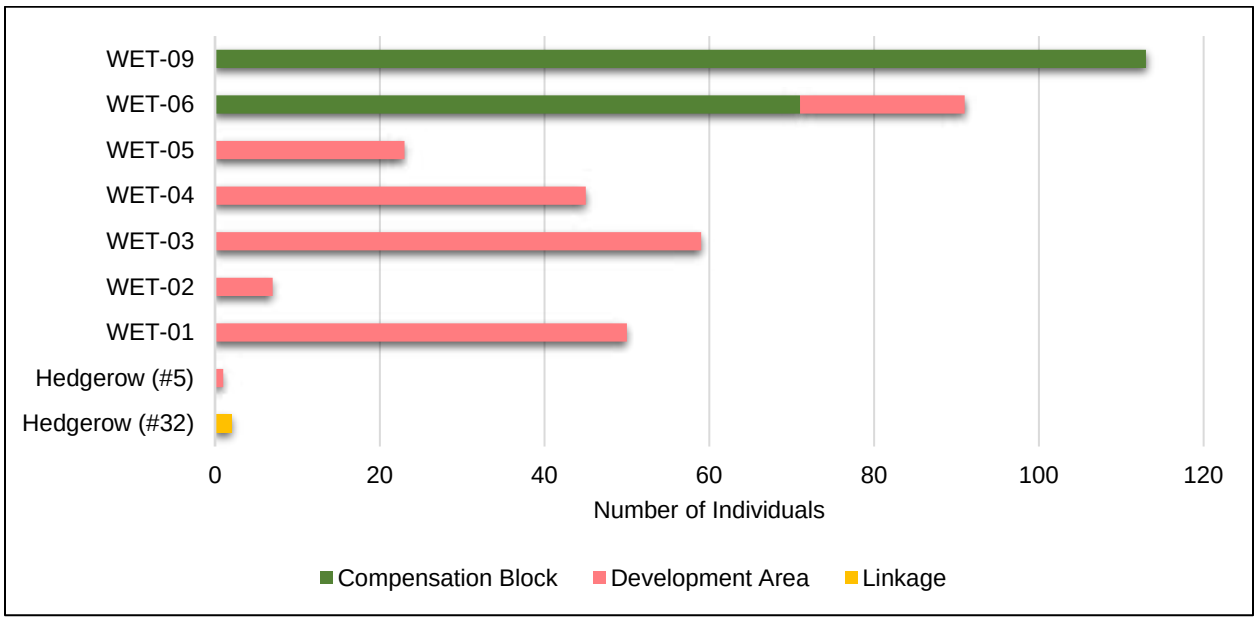


Figure 11. Distribution of Individuals Captured in Pitfall Traps by Development Block

Other Wildlife Crossing Opportunities

As a result of previous work completed for the EIS and EIR on the Subject Property, an Other Wildlife Crossing Opportunity was identified between WET-03 and WET-04. Through those studies, which considered potential impacts associated with a road connection in the (now) Phase 6 industrial lands, this potential wildlife crossing was proposed to facilitate movement between WET-03 and the habitats including and surrounding WET-04. This was brought forward on OP mapping by the City of Guelph (2022). A majority of the herpetofauna movement between these features consisted of Wood Frog (60.58%), followed by American Toad (24.75%). It is anticipated that with the proposed buffer plantings and woodland compensation plantings (discussed further in Section 6.1.5), more movement opportunities and habitats will be created that would negate the need for this wildlife crossing. However, this should be further assessed during the detailed design of Phase 6.

5.6 Locally Significant Species

Habitat for locally significant species is protected within the Natural Heritage System as Natural Areas (City of Guelph 2022), however, these policies do not apply as a result of modifications within OPA 80 for the Subject Property. NRSI biologists observed a variety of locally significant species within the Subject Property (discussed in Section 4 above), and for the purposes of providing full context, the discussion of these species and their habitats has been included in the EIS. For bird species discussed in Section 4.5.1, the habitat has been identified on Map 13 for each species in relation to the areas in which they were observed with probable or confirmed breeding evidence (as shown on Map 4) where habitat is suitable for the given species. Other species groups have also been identified on Map 13 within the vegetation communities where they were observed if their habitat can be discretely identified (i.e., they are not generalist species that will utilize a variety of habitats). The identification of locally significant wildlife habitats does not pose a constraint to development, however, these species are still considered in the context of restoration efforts. An assessment of habitats is provided in Table 11.

Table 11. Habitat for Locally Significant Species and Respective Habitat Guilds within the Subject Property

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
Woodland	Dekay's Brownsnake	Occurs in forested regions and can be found in diverse habitats, including forests, wetlands, forest clearings, edge habitats and urban areas. (Ontario Nature 2022). Hibernates in the burrows of other animals, abandoned anthills, under logs, in rock crevices, or buildings below the frost line.	**Yes.** Suitable foraging and potentially overwintering habitat is present. The observation of this species was within Woodland 4.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** The woodland where this species was observed will be retained. The woodland compensation block will provide additional habitat features and opportunities for foraging.
	Red-bellied Woodpecker	Most commonly breeds in deciduous forests, especially along rivers and in swamps; may also be found in coniferous forest but less often in pure stands of Pine (NAS 2022).	**Yes.** Species observed with Probable breeding evidence within SWD3-3 (#1), which is considered suitable habitat.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** The SWD3-3 and other potentially suitable habitats will be retained. The woodland compensation block will provide additional habitat in the long term.
	American Redstart	Breeds in moist, deciduous, second-growth woodlands with abundant shrubs. (Peck and James 1987, Sallabanks 1993).	**Yes.** Many of the deciduous woodlands are moist with abundant shrubs. Species observed within FOD4 (#28),	**No.** No observations were found within the development area. Suitable habitats are outside of the	**No.** No observations were found within the development area. Suitable habitats are outside of the	**Yes.** The FOD4 will be retained and other potentially suitable habitats will also be retained within the NHS. The woodland compensation block will provide additional habitat in the long term.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
			which is surrounding a deciduous swamp.	proposed development.	proposed development.	
	Baltimore Oriole	Deciduous forests or small clumps of deciduous trees, often along woodland edges or riparian areas (Brewer et al. 1991).	**Yes.** Species observed within CUW1 (#22), FOD5-1 (#11), and FOD4 (#28) with Probable breeding evidence.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** The CUW1, FOD5-1, and FOD4 and other potentially suitable habitats will be retained. The woodland compensation block will provide additional habitat in the long term.
	Pine Warbler	Chiefly open pine woods, pine barrens. Usually breeds in open pine woods, especially southern longleaf pine forest, sandy barrens of pitch pine with scrub oak undergrowth, jack-pine barrens, and similar habitats; can occasionally be found in cedar or cypress. (NAS 2022). This is an area-sensitive species that requires forest habitats of 15-30ha (OMNR 2000)	**No.** Species was observed with Possible breeding evidence by NRSI and Probable breeding evidence by Aboud & Associates (2020) within the CUP3-2 (#40), which is not large enough to be considered optimal habitat.	**No.** Although the species was observed within the CUP3-2, which is proposed for removal, the habitat is considered marginal.	**No.** Although the species was observed within the CUP3-2, which is proposed for removal, the habitat is considered marginal.	**No.** Pine forests are not present within the NHS and are not proposed to be created through compensation/restoration.
	Ontario Aster	Prefers openings within woodlands and along woodland edges. Can	**Yes.** This species was observed within	**No.** No observations were found	**No.** No observations were found	**Yes.** The FOD6-5 is proposed to be retained with buffers surrounding it.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
		also be found in low areas along woodland streams, within savannahs, moist meadows, and abandoned fields. It can benefit from disturbance that reduces shade from canopy trees.	FOD6-5 (#33), which is a woodland with an open canopy due to historical disturbance.	within the development area. Suitable habitats are outside of the proposed development.	within the development area. Suitable habitats are outside of the proposed development.	
Wetland	Marsh Horsetail	Found on lake and stream shores, marshes, seeps, and pools. Typically found on edges of wetlands.	**Yes.** This species was observed rarely within the groundcover of SWD3-3 (#42). This is considered suitable habitat.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** The SWD3-3 will be retained with buffers surrounding it.
	Black Maple	Prefers low rich soil of floodplains, often wetter than preferred by Sugar Maple (which it is closely related to). Can also be found on drier uplands such as roadsides and urban areas.	**Yes.** Observed within FOM6-1 (#2) and SWD4-1 (#27) which are both moist/wet habitats. In both communities, it was rare in the canopy.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** Both communities where it was found are to be retained with buffer surrounding them. Black Maple is also proposed to be planted within restoration areas.
	Eastern Buttonbush	Will grow in swamps, around ponds and along the margins of streams.	**Yes.** Abundant within the understory and groundcover of SWT2-4 (#3).	**No.** No observations were found within the development	**No.** No observations were found within the development	**Yes.** The SWT2-4 will be retained with buffers surrounding it.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
				area. Suitable habitats are outside of the proposed development.	area. Suitable habitats are outside of the proposed development.	
	Hop Sedge	Commonly found in open and forested wetlands. May also be found in wet meadows along rivers, low areas along ponds and lakes, and shallow vernal pools.	**Yes.** Observed in SWD3-3 (#1).	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** The SWT2-4 will be retained with buffers surrounding it.
	Boreal Mannagrass	Wet meadows and along stream and lake margins.	**Yes.** Found within MAS3-10 (#23)	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**Yes.** MAS3-10 will be retained with buffers surrounding it.
	Unisexual *Ambystoma* (Blue-spotted Dependent Population)	Deciduous and mixed forests that typically within close proximity to breeding (pond) habitats (Canadian Herpetological Society 2023). Breeds in vernal pools or fish-free permanent wetlands.	**Yes.** WET-06 is the most likely breeding pond within the Subject Property. The most number of individuals and metamorphs were captured	**No.** Wetlands are outside of the development area. Major movement corridors are also outside of the proposed	**No.** Wetlands are outside of the development area. Major movement corridors are also outside of the proposed	**Yes.** Wetlands will be retained with buffers surrounding them. The proposed woodland compensation and buffer plantings will provide additional movement habitat.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
			in pitfall traps surrounding this wetland.,	development area.	development area.	
	Red-spotted Newt	Adult newts will utilize slow-moving water in ponds and lakes and along quiet stretches of streams and swamps (Ontario Nature 2022a). The terrestrial eft will utilize surrounding damp woodlands and seldom enters water. Some adults may overwinter in water (Ontario Nature 2022a).	**Yes.** This species was observed in small numbers around WET-03 and WET-05, and in higher numbers at WET-06 and WET-09. It is possible that they are breeding in WET-06 and moving to woodland habitats on the Subject Property, both near WET-09 and further north.	**No.** Wetlands are outside of the development area. Major movement corridors are also outside of the proposed development area.	**No.** Wetlands are outside of the development area. Major movement corridors are also outside of the proposed development area.	**Yes.** Wetlands will be retained with buffers surrounding them. The proposed woodland compensation and buffer plantings will provide additional movement habitat.
Meadows/ Open Country	Eastern Kingbird	Open environments such as fields with scattered shrubs and trees, orchards, along woodland edges in forested regions, savannahs, among others (Hespenheide 1971; Johnston 1971; Graber et al. 1974).	**Yes.** This species was observed with Probable breeding evidence in the CUS1 (#17), which is suitable habitat.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed development.	**No.** No observations were found within the development area. Suitable habitats are outside of the proposed	**Yes.** The CUS1 will be retained. Additional suitable habitats will be created in the woodland compensation block.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
					development. .	
	Red-bellied Snake	Forest edges and clearings, fields and meadows with abundant ground cover (logs, rocks, scrap piles, building foundations). Overwinter underground below the frost line. Have small home ranges.	**Yes**. This species was observed along the edge of Woodland 2 within the agricultural fields. The most suitable habitat for this species is contained within the northern portions where mortality from agricultural activities is the lowest.	**No.** Areas with abundant ground cover not present within development area.	**No.** Areas with abundant ground cover not present within development area.	**Yes.** Retained woodlands will provide suitable habitat. The woodland compensation area will include habitat enhancement for snakes.
Other/Generalist	Delaware Skipper	Open prairies/savannahs, moist grasslands and old fields dominated by native grasses, bogs, fens, marshes, and sedge meadows are all suitable habitat types. Host plants include Old Switch Panicgrass and Big Bluestem.	**Yes.** Many of the natural habitats on the Subject Property are suitable, however, specific areas cannot be mapped. Host plant species not observed on the Subject Property.	**No.** Given that the host plants are not present, habitat is not considered.	**No.** Given that the host plants are not present, habitat is not considered.	**Yes.** The proposed woodland compensation will include host species within the seed mixes, providing critical habitat for this species.

Guild	Species	Habitat Requirements	Habitat Confirmed within the Subject Property?	Habitat Confirmed within the Development Area?	Habitat Confirmed within Phase 1 Lands?	Habitat Protected?
	Heart-leaved Aster	Grows in forests, fields, and open areas and is best in partial shade (although highly tolerant of full shade and nearly full sun).	**Yes.** Observed occasionally within CUS1 (#17)	**Yes.** A potential future trail connection could be provided through the CUS1.	**No.**	**Yes.** CUS1 will be retained within the NHS. Relocation or avoidance of this species should be considered through detailed design of any future trail.
	Common Hackberry	Can grow in many different habitats, but prefers bottomlands and soils high in limestone. Can be found in open woodlands, rocky hillsides, limestone outcrops, and sand barrens.	**Yes.** Observed along Maltby Road right-of-way. Other habitats within the Subject Property would also be suitable. However, these individuals were likely planted when Maltby Road was widened previously.	**No.** Individuals were likely planted and these areas are not considered habitat.	**No.** Individuals were likely planted and these areas are not considered habitat.	**No.** Individuals were likely planted and these areas are not considered habitat.

5.7 Summary of Natural Heritage Constraints

A summary of significant or sensitive natural features identified as constraints to the proposed development is provided in Table 12.

Table 12. Summary of Study Area Natural Feature Constraints

Natural Feature Constraint	Regulatory and Permitting Considerations	Project Considerations
Wetlands	• GRCA Ontario Regulation 150/06 (Government of Ontario 2015) • Provincial Policy Statement (OMMAH 2020)	• There are 11 distinct wetlands within the subject property. Ten are PSWs while one has been confirmed to be Non-PSW, using the OWES 3rd edition (MNRF 2014a). • Impacts to wetlands should be avoided through the proposed development design. • Water balance to wetlands should be maintained. • Development within the regulated area will require prior permission from GRCA in the form of a permit pursuant to the Ontario Regulation 150/06 (GRCA 2015). • An Erosion and Sediment Control Plan should be developed to minimize the risk of sedimentation into wetlands. • WET-10 meets the requirements for removal/interference, as per GRCA policy 8.4.4.
Woodlands	• Provincial Policy Statement (OMMAH 2020)	• Five of the woodlands assessed within the Subject Property were determined to be Significant based on criteria within the Natural Heritage Reference Manual. • Woodland 2 is requiring removal to facilitate the proposed development. A woodland compensation planting is proposed to replace the feature with enhanced ecological functions (see Section 6.1.5).
Significant Landform	• City of Guelph Official Plan (2022) • Note: Consideration of OP policy provided for context only as policies not applicable to Subject Property pursuant to OPA 80. • Provincial Policy Statement (OMMAH 2020)	• No development is currently proposed within the Significant Landform.

Habitat of Threatened and Endangered Species	• Endangered Species Act (Government of Ontario 2007) • Provincial Policy Statement (OMMAH 2020)	• Candidate habitats for SAR bats have been identified within habitats to be retained and habitats to be removed within the Subject Property. • Correspondence and permitting for the removal of SAR bat habitat is required. • Tree clearing must avoid the bat active period (April 1 to September 30).
Significant Wildlife Habitat	• Provincial Policy Statement (OMMAH 2020)	• Candidate and Confirmed SWH is present within the Subject Property. • No SWH are directly within areas of proposed development.
Ecological Linkages	• City of Guelph Official Plan (2022) • Provincial Policy Statement (OMMAH 2020) • Note: Consideration of OP policy provided for context only as policies not applicable to Subject Property pursuant to OPA 80.	• An Ecological Linkage has been identified within the City of Guelph's OP (2022) within the Subject Property. This area is proposed to be planted to enhance wildlife movement opportunities. • Other wildlife crossings have also been identified. A wildlife culvert is recommended between WET-02 and Woodland 1, which can be explored further during Phase 3/Phase 5 detailed design.
Locally Significant Species	• City of Guelph Official Plan (2022) • Note: Consideration of OP policy provided for context only as policies not applicable to Subject Property pursuant to OPA 80.	• Habitat for locally significant species (City of Guelph 2012) has been identified within the Subject Property. These habitats will be protected within the natural heritage system. • Buffer and compensation plantings are recommended to include species that will enhance locally significant species habitat.
Individual Trees	• City of Guelph Tree By-Law 19058 (2010)	• A Tree Inventory and Preservation Plan (TIPP) was required to comprehensively assess impacts from the proposed undertaking. • To ensure compliance with the MBCA and ESA, it is recommended that tree and vegetation removal occur between October 1 and March 31.

		• The Tree By-law requires that at least 1 compensation tree is required for any tree removed that is regulated by the By-law.

6.0 Impact Analysis

6.1 Proposed Undertaking

NewCold is proposing an industrial development to be developed in multiple phases, which includes cold storage manufacturing (warehouses, food production), parking, office space, stormwater management facilities, landscaping, and the extension of Southgate Drive to Crawley Road. The reader is referred to the following reports for additional information on stormwater management, servicing, and hydrogeology, which have been summarized for the impacts section:

- Stormwater Management Plan Report (AECOM 2023a)
- Functional Servicing Report (AECOM 2023b)
- Hydrogeological Study (GM BluePlan 2023)

6.1.1 Phase 1

The current application is for Phase 1 of 6 of the development. Phase 1 consists of a frozen hi-bay warehouse, 2 storey frozen dispatch warehouse, 3 storey office area, car parking, pumping station, and landscaped areas. A future Southgate Drive extension and future municipal SWM facility is also included within Phase 1 (AECOM 2023a). Cut and fill and pre-grading operations for Phases 1-4 will occur prior to Phase 1 development commencing (AECOM 2023b). Pre-graded areas are proposed to be seeded. Phases 5-6 will not have any earthworks until their respective phases are being built (AECOM 2023b). Landscaping is also proposed within the site, along with landscaped buffers along the Southgate Drive extension, Crawley Road, and Maltby Road. Landscaping plans are provided under separate cover, prepared by AECOM. Crawley Road will require widening between the Southgate Drive extension and Maltby road, however, the potential impacts associated with this outside of the Subject Property (i.e., tree removals) are not discussed within this report.

6.1.2 Buffers

Buffers are typically the most effective mitigation measure for addressing potential impacts to retained natural heritage features, which form part of a comprehensive impact avoidance and mitigation plan. The overall function of a buffer depends on the characteristics of the natural heritage feature, the characteristics of the adjacent lands (i.e., topography, soils, land use) and the design, layout, and future use of the proposed development. Buffers are often naturalized and management activities are prescribed to ensure that the setback from development is effective for mitigating impacts.

There is an overall absence of published literature that provide specific direction on buffer widths within Ontario. The PPS does not specifically include policies relating to buffers, nor does it define what they are or the width they should be. The Natural Heritage Reference Manual (OMNR 2010), which is the guidance document for the PPS, provides a substantial discussion of buffers, but does not provide guidance in terms of the implementation on site-specific cases. Because of the limited literature available on buffers, there is little to draw from to assess the effectiveness of buffer widths in relation to their ability to protect natural areas. A buffer review completed by Beacon (2012) identified that a range of buffer widths are recommended based on the feature type and impact, and the widths tend to vary between different studies. North-South Environmental (2022) also completed a review of buffer widths and found that there is still limited evidence on the effectiveness of different buffer widths to protect natural features and mitigate impacts due to the lack of rigorous studies. It is also important to note that not all features and ecological functions will have the same sensitivity to impacts, therefore, a standard buffer is not always effective when applied across different feature types within a given study area. Furthermore, different types of proposed land use adjacent to retained natural features will also result in different scale and extent of disturbance and should be factored in accordingly.

All buffers surrounding retained natural features within the Subject Property are recommended to be naturalized with native species plantings. The proposed buffers are shown on Map 14 and the rationale for buffer width recommendations is outlined in Table 13 below. Additional mitigations relating to ensuring buffers are effective for the proposed development are discussed later in Section 6.

Table 13. Buffer Recommendations

Natural Heritage Feature and Areas	Buffer Recommended within Subject Property by NRSI	Rationale
Significant Habitat for Provincially Endangered and Threatened Species	Retained woodlands containing candidate bat SAR habitat: 10m	A 10m buffer provides adequate protection of root zones of woodland features, ensuring that all trees can be retained within the woodland (especially along the dripline). Additional buffer plantings (seed mixes and trees) within woodland buffers enhances foraging habitat and increases native species diversity, providing more opportunities for bat habitat in the long term. Approximately 4-5 rows of trees can be planted in a 10m buffer. This approach will be confirmed with MECP through the *ESA* permitting process.
Provincially Significant Wetlands	30m where possible, with some minor modifications	In many cases, the existing 30m buffer area contains agricultural lands. WET-05 and WET-09 may also be partially tilled in some seasons, depending on how wet the Spring is. In combination with a stormwater management plan that ensures surface water and groundwater inputs are balanced to the extent possible, providing a 30m buffer ensures that the adjacent lands within the catchment area of the wetland can be naturally vegetated, increasing soil pore spaces, providing additional surface water management via root absorption and evapotranspiration. Patterns of surface water and infiltration will be maintained within the buffer, so that water will continue to be directed to the wetlands in a diffuse way, rather than as a point source. A 30m buffer also provides a protective barrier function, reducing impacts to sensitive species and providing a physical separation. Where SWM facilities are proposed adjacent to wetlands, the outer 15m of a 30m wetland buffer is an acceptable encroachment, provided that all maintenance infrastructure (i.e., access roads) and actual ponded areas are located outside the buffer. Buffer modifications are proposed around WET-02 to allow for the SWM facility to be located within the outer 15m of the 30m buffer. The buffer has also been reduced, to a width that is no smaller than 15m, to “square off” the buffer and allow for better configuration of the adjacent building. An equal buffer area has been provided on the opposite side of WET-02 to compensate for this loss of buffer area. Buffer modifications are also proposed around WET-03 to accommodate the road and any potential future trail connection in Phase 6. A buffer width of no less than 15m has been maintained. The potential future trail connection is located within 15-25m of the surveyed wetland boundary with a roadway located within 25m.
Significant Woodlands	10m	A 10m buffer provides adequate protection of root zones of woodland features, ensuring that all trees can be retained within the woodland (especially along the

Natural Heritage Feature and Areas	Buffer Recommended within Subject Property by NRSI	Rationale
		dripline). Additional buffer plantings (seed mixes and trees) within woodland buffers enhances woodland habitats and increases biodiversity. Approximately 4-5 rows of trees can be planted in a 10m buffer. All proposed woodland buffers within the proposed development area are currently tilled for agriculture. The cessation of agricultural activities in these areas will reduce disturbance to the retained woodlands. A 10m buffer will provide a protective barrier to sensitive woodland species and increase canopy cover in the long term.
Significant Landform	No buffer	The Significant Landform is proposed to be maintained at the confirmed boundary. Detailed grading is not known at this time, however, elevations will be matched at the boundary. Additional buffer is not warranted.
Significant Wildlife Habitat	Wetlands: 30m where possible, with some minor modifications Woodlands: 10m Cultural habitats (thickets, meadows, savannah): 0m	Buffer distances specified above will be adequate to protect SWH where it is found within wetland and woodland communities. Wildlife communities have established within these features on the Subject Property over a vast period of time, with agricultural activities occurring. For the purposes of protecting wildlife (including birds, herpetofauna, and mammals), buffers will protect the environmental conditions of the retained feature, enhance existing habitat through buffer plantings, and inhibit human-induced impacts. Many of the wildlife species observed on the Subject Property are common, tolerant, interior or edge species that are often found in urban and suburban environments. Several species of amphibians utilize the wetlands and woodlands for breeding and post-breeding habitat; they depend upon the water balance to provide the appropriate hydroperiod to support their breeding, survival, and nearly all life stages. Cultural habitats are also important for wildlife on the Subject Property and are within areas proposed to be retained that are far from the proposed development, therefore, additional buffers are not proposed. There are no buffer modifications proposed where confirmed SWH has been identified. Buffer modifications around WET-03, where candidate bat maternity colony SWH has been identified, will not impact this habitat type if the vegetation communities are sustained by the proposed water balance of adjacent development.
Potential Habitat for Locally Significant Species	Wetlands: 30m Woodlands: 10m Cultural habitats (thickets, meadows, savannah): 0m	See above. Where habitats are to be retained, the minimum buffers are adequate to protect the habitat feature.

6.1.3 Trails

The City of Guelph's Trail Master Plan (2021) has identified a potential connection route within the Subject Property. There is potential for a future 10m trail block connection on the Subject Property to connect lands from the east to Crawley Road within Phase 6 lands (Maps 14 & 15). If implemented, it is recommended that any such future trail connection follow existing grades to the extent possible. The potential future trail connection is shown to cross through the CUS1 (#17), CUW1 (#22) and CUT1 (#21) which have been identified as Significant Natural Areas in the Natural Heritage System. It then traverses outside of wetland and woodland buffers, except where it crosses between WET-06 and WET-07. This area is an existing tractor path with minimal vegetation cover. In the eastern portion of the Subject Property, the potential future trail connection then traverses through the proposed woodland compensation block and then along the eastern edge of WET-03, where it encroaches slightly into the outer 15m of the wetland buffer to accommodate a road access.

6.1.4 Stormwater Management

The proposed management of stormwater has been determined by AECOM (2023a) under the various construction phases. Cut and fill and pre-grading operations for Phases 1-4 will occur prior to Phase 1 development commencing (AECOM 2023b). Phases 5-6 will not have any earthworks until their respective phases are being built (AECOM 2023b). Because of the physical constraints of the terrain on the Subject Property, there is no overland flow for runoff; as such, stormwater management will heavily rely on infiltration of stormwater (AECOM 2023b). Within Phase 1, AECOM (2023a) has identified, based on background reports and existing policy framework, that excess runoff from the five-year design storm may pond in parking areas of least anticipated use (up to 0.3m). Water quality control measures must also be designed to provide Enhanced (Level 1) water quality control, which includes 80% total suspended solids removal (AECOM 2023a).

Phase 1 will include the following infrastructure (AECOM 2023a):

- Runoff from a portion of the proposed roofs would be collected and conveyed to the proposed parking lot area. The parking lot areas and proposed pumping station would be graded to allow the conveyance of all storm events up to and including the 100-year storm event. A catch basin infiltration system will provide water quality control.
- The proposed storm sewer system will discharge into a series of underground storage systems to provide quantity and quality control. This will also capture discharge from the construction of future development. A pre-treatment, consisting of a row of chamber wrapped in woven geotextile fabric, will act as a filter strip and

provide additional enhanced suspended solids and pollutant removal, while also providing surface area for runoff reduction. The chamber storage tank will also be sized to capture drainage from roofs and parking lot expansions when the site is further development.

- Two separate underground chamber storage systems are proposed to collect drainage from the Southgate Drive extension.

6.1.5 Ecological Restoration

Ecological restoration is proposed within the Subject Property to mitigate for tree and feature removal, enhance wildlife habitats, provide effective buffer enhancements, and increase native species diversity. This will be achieved on the Subject Property through the following methods:

- Woodland compensation
- Buffer and Significant Landform enhancement plantings
- Site landscaping and Ecological Linkage plantings

The full Ecological Restoration Plan is provided in Appendix XII. Each component is summarized below.

Woodland Compensation Area

A total of 5.49ha of industrial land will be conveyed to the City of Guelph and will be planted as woodland compensation (Map 14). This area was chosen to demonstrate the conveyance of currently zoned industrial lands at a 1:1 area replacement for the development within the plantation area (5.49ha), which was not individually inventoried during the tree inventory. This compensation area is located within Phase 6 lands however it is proposed to be planted as soon as Phase 1 approvals are obtained. The area excludes WET-06 and Hedgerow #9, although these contiguous habitats will functionally be part of the Woodland Compensation Area. Hedgerow #8 is located along the southern edge of the Woodland Compensation Area and it is recommended to be retained as well. Trees proposed to be removed within the FOD4 (#39) and CUS1/CUW1 (#43), as well as isolated or hedgerow trees, will be compensated for with buffer plantings, which is discussed further below. Restoration activities will avoid the potential future trail block.

The main objective of the woodland compensation is to achieve early successional woodland at the end of the Year 7 monitoring period, whereby the monitoring stage begins one year after the final phase of planting. The woodland compensation area is proposed to be planted at approximately 1,200/ha and 300 shrubs/ha, with an overall density of 1,500 stems/ha.

Within the 5.49ha planting area, it is estimated that approximately 6,500 trees and 1,650 shrubs would fit, accounting for potentially unsuitable areas for planting (e.g., very stony soils). The following sizes are proposed:

- 3% minimum 40mm caliper stock (195trees)
- 40% 1-3 gallon potted stock/whips (2,600trees)
- 57% plugs (3,705trees)
- 1-gallon shrub stock (1,650 shrubs)

Pit & mound treatment is proposed in random locations within the woodland compensation area, outside of existing wetland buffers. Pit & mound treatment is the process of creating small pits and placing the mound of dirt directly adjacent to it, mimicking the microtopography that is created when large trees fall over in a mature forest, leaving a pit where the root mass has ripped from the forest floor and a 'tip up' mound forms over time as the roots begin to decay. Examples of a pit & mound treatment from other properties are shown in Figures 12 and 13.

Figure 12. Excavated Pit with Surrounding Tallgrass Prairie Species

Figure 13. Excavated Pit with Cattails

Pit and mound microtopography is an important structural component of most forests, influencing soil processes, habitat diversity and biodiversity of flora and fauna. In temperate forests, visible pit and mound topography may affect 15% to 50% of the forest floor (Stephens 1956; Lyford & MacLean 1966; Sobhani et al. 2014). In natural, mature forests, pit & mounds create valuable conditions that allow for the mixing of soil, alteration of ecosystem processes such as soil respiration, and diversification of microhabitats for tree regeneration and ground layer plants and wildlife (Plotkin et al., 2017). Pit & mound microtopography also increases groundwater recharge by allowing for the fast retention and redistribution of infiltrated water throughout the soil profile (Juricka et al., 2022). This will allow for greater retention of precipitation and snow melt, leading to greater groundwater recharge and mitigating risk of drought, which is especially important in restoration planting conditions. Ponding within pits can also create functional amphibian breeding habitat. Permitting from GRCA will be required for

site alteration within regulated areas. The permitting process will be initiated once development timing and phasing is better understood.

A native tallgrass prairie seed mix will be utilized within the woodland compensation area to provide habitat for open country bird species, insects, and locally significant species. In the early successional stages, open habitat and generalist invertebrate and plant species can coexist (Brockerhoff et al., 2017). Following seed mix installation and pit & mound treatment, plantings will occur in multiple stages. It is anticipated that natural succession will occur, whereby seeds from nearby natural features will spread through the planting area and will supplement the species plantings. Seventeen trees have also been identified for tree relocation from the development footprint to be placed within the restoration area. Compensation for bat SAR roosting habitat will also occur within this restoration area, which will include the installation of artificial roosting structures that will provide immediate roosting habitat. Most tree plantings with a woodland density target take approximately 20 years to function as a woodland community, with the required stand characteristics (canopy, sub-canopy, understorey, groundcover) to provide appropriate wildlife habitat. The increased plant diversity will provide abundant and high-quality food resources for a variety of wildlife species (Brockerhoff et al., 2017). Table 14 outlines the anticipated woodland and habitat functions that would be created through restoration, over a 20+ year timeline.

In the current condition, there is approximately 21.81ha of contiguous woodland habitat within this area, including forests, treed wetlands, hedgerows, and cultural woodland features both on and off-property (Map 9). There are two pockets of interior habitat, measured 100m from the edge, totaling 0.48ha (0.84ha and 0.20ha). The successful woodland planting will create 31.20ha of contiguous treed habitat, including features both on and off-property. Within this contiguous treed habitat, there would be one large 3.39ha area of interior habitat, measured 100m from the edge (Map 14). With the increased diversity of trees being planted, these features will have more resiliency to climate change (MNRF 2019b).

See Appendix XII for full details on the restoration plan, including sequencing, proposed species, and monitoring.

Table 14. Anticipated Woodland and Habitat Functions Created Through Restoration

Woodland and Habitat Functions	Planting Year 1	Planting Year 2	Planting Year 3	Post-planting Years 1-7	Post-planting Years 7-20	Post-planting Years 20+
Open-country habitat/early successional habitat for birds and insects	x	x	x	x		
Amphibian breeding habitat	x	x	x	x	x	x
Carbon sequestration, mitigation of soil erosion, reduction of soil temperature, increased groundwater recharge	x	x	x	x	x	x
Enhanced edge habitat and movement corridors	x	x	x	x	x	x
Bat foraging/flyway habitat	x	x	x	x	x	x
Woodland interior habitat						x
Cavity trees for bats*, mammals, and birds.					x	x
Interaction of public with wildlife and natural spaces				x	x	x

*Treed habitats. Artificial roosting structures will provide roosting habitat as soon as they are installed.

Buffer and Significant Landform Enhancement

Plantings are proposed within 5.55ha of buffer areas to compensate for trees that were individually inventoried that are proposed to be removed at a 5:1 ratio (Map 14). Tree spacing is proposed between 1,000-1,600 trees/ha (3-2.5m spacing). A total of 5,695 trees are proposed to be planted within the buffer areas. The same size tree ratios are proposed, which includes:

- 3% minimum 40mm caliper stock (171 trees)
- 40% 1-3 gallon potted stock/whips (2,278 trees)
- 57% plugs (3,246trees)

A native meadow seed mix is proposed within the buffer areas to further enhance them and provide additional habitat functions as the planted trees are growing. Enhancement of the buffer areas will increase canopy cover, provide additional wildlife habitat, and provide a protective barrier for features to be retained. See Appendix XII for full details on the restoration plan, including sequencing, proposed species, and monitoring.

This provides a total of 12,195 trees and 1,650 shrubs (13,845 total stems) to be planted within the Subject Property.

Site Landscaping and Ecological Linkage Plantings

In addition to the trees identified above, the proposed landscaped areas and Ecological Linkage within the development area are proposed to be planted with native trees, shrubs, and seed mixes for further enhancements (Map 14). The exact details of these planting areas are to be determined at the detailed design stage for the associated phases. The reader is referred to Phase 1 landscaping plans prepared by AECOM as part of this submission. Within the Ecological Linkage, it is recommended that species that are more resistant to deer browse be prioritized (such as Bur Oak, Eastern Red Cedar, and White Pine) or are able to tolerate browse conditions (such as Gray Dogwood, Nannyberry, or American Hazel). A trail is no longer proposed within this Ecological Linkage.

Invasive Species Management

Invasive species, such as Common Buckthorn, are present within natural areas proposed to be retained. In areas adjacent to proposed buffer and compensation plantings, this may create challenges as these species will likely spread and could outcompete plantings. In the vegetation communities adjacent to the woodland compensation area, management of Common Buckthorn is recommended where this species is present. An initial basal bark application of herbicide is recommended in the first year of planting and follow-up foliar application is recommended to be applied to any suckering shoots, saplings, and seedlings that have germinated for up to 3 years. The extent of buckthorn will be assessed during the 7-year planting monitoring period and additional management should be identified where necessary.

6.2 Approach to Impact Analysis

Potential impacts arising from the proposed undertaking were determined by comparing the details of the proposed development, including the site plan, grading details, SWM plans, geotechnical information, the hydrogeological assessment, and water balance, with the characteristics of the existing natural features and their functions. Where the development proposal overlaps with or is in close proximity to the natural features, impacts may arise. The boundaries of significant natural features and their associated recommended buffers were provided to the study team to guide the development proposal. This information was combined with other physical and planning constraints to come up with a suitable development plan for the property which respected the natural environment. The impact analysis focuses on the entire Subject Property since grading and grubbing is proposed for Phases 1-4 and vegetation removal is proposed for all development areas during Phase 1 of development. Additional items

specific to Phase 1 have also been identified and explained in further detail where information is available. The proposed development plans associated with Phase 1 activities are shown on Map 15.

The following is a description of the types of impacts which will be discussed:

- Direct impacts to the natural features on the Subject Property associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking.
- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality.
- Induced impacts associated with impacts after the development is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.
- Cumulative impacts associated with continued development within the Mill Creek subwatershed.

In the context of natural heritage features and areas, the PPS defines a negative impact as the:

> "*degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple, or successive development or site alteration activities*" (MMAH 2020).

Ecological functions are defined as:

> *"the natural processes, products or services that living and non-living environments provide or perform within or between species, ecosystems and landscapes. They may include biological, physical and socio-economic interactions*" (MMAH 2020).

Both site-level and landscape-level assessments are important for determining potential impacts (OMNR 2010). The impacts over time are also required to be considered, in order to determine if there are possible future or cumulative impacts created by the development, or if there will be residual impacts after mitigation measures are implemented (OMNR 2010). Mitigation measures to prevent or reduce undesirable impacts are acceptable, so long as they are consistent with the PPS; in this context, it is important to consider the overall significance of the feature, and the severity and longevity of the impact (OMNR 2010). When assessing whether natural feature removal is appropriate, the following should be considered:

> "*the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of Natural Heritage Systems, should be maintained, restored or,*

where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features" (MMAH 2020).

6.3 Direct Impacts and Mitigations

6.3.1 Tree and Vegetation Removal

The majority of the existing wetlands and woodlands within the Subject Property will be retained and adequately buffered from the development (Map 15). Woodland 2, hedgerow trees, small treed patches, and isolated trees within the agricultural fields are proposed for removal where clearing, grubbing, and grading is required. A total of 7.06ha of Significant Woodland, which represents 19.61% of the Significant Woodland area mapped within the Study Area, is proposed for removal. The plantation area (CUP3-2; 5.49ha) within this woodland was not individually inventoried – this area is proposed to be compensated for using a 1:1 area replacement approach. An additional 1,704 inventoried trees are proposed for removal within the Subject Property, of which, only 1,139 (66.84%) require compensation, according to the City of Guelph's tree by-law. Seventeen of the trees to be removed have been identified for relocation, which have not been included as requiring compensation.

In order to outline and weigh potential impacts of this vegetation removal, the benefits these features currently provide must be understood. This is assessed through the area, location, ecological functions, and values of the features.

Woodland 2 is located in an isolated area within the Subject Property, with some small hedgerows extending out towards Maltby Road and Southgate Drive. The western extent of the woodland borders Crawley Road. The isolated nature of the woodland, within agricultural fields, lowers its ecological value and function (MNRF 2015). The woodland meets the size criteria and 1 other criterion to be considered Significant according to the recommended evaluation criteria in the Natural Heritage Reference Manual (OMNR 2010). Woodland 2 contains 3 woodland communities, including a cultural plantation (5.49ha – estimated 7,267 trees), deciduous woodland (1.14ha – inventoried 628 trees), and cultural woodland (0.43ha – inventoried 173 trees), for a total area of 7.06ha and an estimated 8,068 trees. Based on vegetation community mapping prepared by the City of Guelph in 2020, the average (mean) contiguous woodland size within the City of Guelph is 3.68ha, with the majority (62%) being <1m in size (City of Guelph 2020). The largest contiguous woodland within the City is 213.9ha, which is part of the Hanlon Creek Swamp PSW approximately 1.3km northwest of the Subject Property (City of Guelph 2020). Seven other contiguous woodland patches fall within the 7-8ha

category in the City of Guelph (City of Guelph 2020). The Subject Property is located within the southern portion of the City of Guelph, where other larger woodland communities are also more predominant, compared with the northern portion of the City.

The communities within the Significant Woodland contain plant species often found in disturbed sites, which is highlighted by the low average CC values below:

- CUP3-2: 2.7
- FOD4: 2.27
- CUW1: 0.75

The highest CC value plant found in each community was Red Pine (8), Spinulose Wood Fern (5), and Sugar Maple, White Ash, American Basswood (4), respectively. The Significant Woodland contains common and secure plant species (S-Ranks 4-5). The CUP3-2 community is dominated by only a few species, with virtually no ground cover (see Section 4.4.1). Over 90% of the trees within the CUP3-2 community are plantation trees (Norway Spruce, White Spruce, Red Spruce, White Pine, Red Pine, and Scot's Pine), based on a tally completed by Williams & Associates in 2018. The FOD4 and CUW1 communities, on the other hand, while smaller in size, provide more species diversity, which includes native species such as Sugar Maple, American Basswood, and American Elm.

Woodland 2 does not contain any Significant Wildlife Habitat. The habitat functions that have been identified are limited to candidate maternity roosting habitat, male/non-reproductive female day roosting, and foraging/flyway habitat for Little Brown Myotis[1], candidate foraging/flyway habitat for Eastern Small-footed Myotis (see Section 5.4), and marginal habitats for common bird species. Red-breasted Nuthatch is an area sensitive bird species that was observed singing within the CUP3-2 during one breeding bird survey by Aboud & Associates (2020). It was unlikely to be breeding within this feature and requires >10ha of forest habitat for nesting (OMNR 2000). Pine Warbler is another area sensitive bird species that was observed with probable breeding evidence within the CUP3-2 by Aboud & Associates (2020). This species requires forest habitats of 15-30ha (OMNR 2000); the plantation would be considered marginal habitat and the potential impacts to this species are described further in Section 6.3.5.

[1]Refer to Bat Acoustic Monitoring Report in Appendix VI; Note that acoustic monitoring cannot determine exact locations of maternity roosts and anthropogenic structure(s) in the broader study area may be the location of the roost site(s).

There is limited societal value of the Significant Woodland in its current condition due to its location within private lands and lack of species diversity that would typically lend itself to being a high-value recreational feature. It does provide air quality improvements, however, this is true for any woodland.

Recognizing that the removal of Woodland 2, hedgerows, and isolated trees will result in an initial direct loss of tree/canopy cover, over the long term, a net ecological benefit will be achieved with the proposed woodland compensation plantings, buffer/landform plantings, and Ecological Linkage plantings. As outlined in Section 6.1.5 and in Appendix XII, wildlife habitats will be created within the first year of planting as a result of seed mixes and the cessation of agricultural activities. Throughout subsequent stages of restoration, native species diversity will increase through plantings and natural succession, with a functional young-age woodland feature anticipated by Year 20 within the Woodland Compensation Area. The planting of a mixture of tree species will also provide a wider range of ecosystem services and habitats for native species within the planted feature itself and the surrounding habitats. Additionally, the location of the woodland compensation area creates a more connected Natural Heritage System that also maximizes the compatibility of the proposed development. If the plantation community were left as it currently is, without active management, it will become less suitable for wildlife habitat as the stocking would get denser, more trees would decline and/or die, and non-native species, such as Common Buckthorn, will continue to spread (see Section 4.4.1). In this condition, it is also more susceptible to pests, diseases, and wildfires. Overall, the replacement of this feature is expected to be a net-positive outcome in the long-term, with immediate benefits for native species.

The hedgerows, small treed features, and isolated trees that are proposed to be removed also contain common and secure plant species and have not been identified to provide significant movement corridors for wildlife within the Subject Property. No significant trees were identified within the tree inventory. If the mitigation measures listed below are followed, significant negative residual impacts as a result of vegetation removal are not expected.

Mitigations:

- *Trees removed as a result of the proposed development shall be compensated for as specified in Section 6.1.5. Additional plantings are to be determined at the detailed design stage within landscaped areas.*

- *Suitable, regionally native species have been selected for planting and will be monitored following construction. An adaptive management approach will be undertaken to ensure success.*
- *The limit of development should be clearly delineated in the field prior to construction beginning to avoid unintended encroachment.*
- *Tree protection fencing should be installed at retained woodland buffers and at the limit of construction in the vicinity of trees to be retained, as outlined in Appendix V. Fencing must be installed and inspected by a Certified Arborist prior to construction and maintained during construction.*
- *Any limbs or roots of trees to be retained which are damaged during construction should be pruned using appropriate arboricultural techniques. Hazard trees should be identified by a Certified Arborist or tree professional and removed as warranted.*
- *The limit of construction should be inspected by a qualified biologist on a regular basis to document any potential negative impacts to the woodland (e.g., construction garbage, ineffective boundary markings, erosion, etc.).*

6.3.2 Site Grading

A preliminary site grading plan has been prepared by AECOM which identifies that site grading will be required within the development footprint up to the natural feature buffers and Significant Landform boundary (Appendix XIII). Prior to Phase 1 construction, area grading for Phase 1 lands will be completed, along with pre-grading and the construction of temporary drainage flow paths for Phases 2-4 (AECOM 2023b). Phases 5-6 will not have any earthworks or pre-grading completed until their respective phases are being built, however, vegetation removal will occur in these areas within the proposed limits of development (AECOM 2023b). As shown in the grading plans, temporary siltation ponds and interceptor swales will be constructed within the site to ensure sediment is contained and to direct overland flow drainage. Adjacent to the WET-02 buffer, a swale outlet is proposed to outlet to WET-02, providing energy dissipation for runoff being discharged to the wetland (AECOM 2023b).

WET-10 meets the GRCA's policies for wetland removal (Appendix XI). Its location within the development lands and lack of significant ecological benefit does not warrant special protections. It is isolated from other natural features, does not contain any significant species, and does not contain any significant habitats. WET-10 is located within the 14m bermed and

landscaped buffer along Maltby Road and is not proposed to be retained. Additional permitting from GRCA will be required to remove this feature.

No direct impacts to the Significant Landform will occur with the proposed site grading plan. Potential impacts associated within site grading shall be mitigated as follows:

Mitigations:

- *Site grading adjacent to the Significant Landform will match existing grades and retaining walls will be reduced or eliminated, where possible.*
- *Site grading adjacent to the Significant Landform and wetland buffers will be a maximum of 3:1.*
- *The limit of all grading should be protected by heavy-duty silt fencing in areas around isolated features or isolated trees to be retained. Adjacent to wetland buffers, heavy-duty fencing is to be doubled.*
- *Grading areas are to be revegetated as soon as possible to minimize erosion and should comprise of a herbaceous seed mix that is complementary to the surrounding vegetation communities.*

6.3.3 Trail Construction

If implemented, the potential future trail connection will require grading to ensure it meets the City's accessibility standards. Grading should be minimized and, ideally, should follow existing grades to the extent possible. However, additional vegetation removal will be required to construct any such future trail connection. Two candidate bat habitat trees were identified within the potential future trail block connection and one was identified within the vicinity. If implemented, once the exact trail layout has been determined through detailed design, a tree inventory will need to be completed and a Tree Protection Plan will need to be prepared to ensure impacts to vegetation are minimized. The potential future trail connection traverses through Significant Landform and within a wetland boundary (WET-06/-07) and buffers. Direct impacts to Significant Landform are not anticipated where grading is minimized and every effort made to use the existing topography. Direct impacts to wetlands are not anticipated where the potential future trail connection crosses a wetland boundary because this area is part of an existing tractor path with relatively flat topography that is slightly elevated above the rest of the wetland communities.

If implemented, potential impacts associated with construction of any potential future trail connection should be mitigated with the following:

Mitigations:

- *A Tree Protection Plan at detailed design should identify Tree Protection Fencing to protect retained vegetation. Tree and vegetation removals are to be minimized to the extent possible. Candidate bat habitat trees should be avoided where possible.*
- *Erosion and Sediment control fencing should be installed at the limits of construction where it is located close sensitive natural features, such as woodlands and wetlands.*
- *Candidate bat habitat trees should be avoided to minimize impacts to bat SAR.*
- *Permeable surfaces such as crushed gravel or permeable pavers are recommended in sensitive areas, such as Significant Landform and wetland/wetland buffer crossings.*
- *Surface runoff should be directed away from the wetland.*

6.3.4 Impacts to Wildlife and Their Habitats

As shown on Map 15, the proposed development will require the removal of hedgerows, isolated trees, and Significant Woodland. These features have been identified to contain wildlife habitats (see Maps 10-13).

Species at Risk

Little Brown Myotis and Eastern Small-footed Myotis

The footprint associated with the proposed development overlaps with candidate habitat for Little Brown Myotis within hedgerows, isolated trees, and the plantation feature. This includes candidate maternity colony roosting, male/non-reproductive female day roosting, foraging, and flyway habitats. Five of the vegetation communities identified as candidate Little Brown Myotis maternity colony roosting are proposed to be fully or mostly removed. Seven tree communities identified as candidate male/non-reproductive female day roosting habitat are proposed to be fully or mostly removed.

The footprint associated with the proposed development overlaps with candidate habitat for Eastern Small-footed Myotis within hedgerows, isolated trees, and the plantation feature. This includes candidate foraging and flyway habitats. The Woodland Compensation Area and buffer planting areas will provide suitable foraging and flyway habitats for Eastern Small-footed Myotis

and impacts to this species are not anticipated. This will be determined in consultation with MECP. The slab pile located within the agricultural lands east of CUW1 (#29) may also provide potential Eastern Small-footed Myotis maternity and/or day/male roosting habitat and does fall within the proposed development. It is recommended this slab pile not be disturbed until a visual inspection is completed on this slab pile during the maternity period (i.e., June/July) to determine if that habitat is being used.

Vegetation clearing has the potential to directly impact bat roosting habitat. The removal of bat SAR habitat would require *ESA* permitting. Although the observed candidate roost trees identified for removal have the potential to provide suitable habitat, it is anticipated that a majority of the bat roosting opportunities are contained within treed features to be retained. Furthermore, it cannot be ruled out at this time whether this species is roosting in a nearby house instead of or in addition to the candidate roost trees identified within the Subject Property. Capture and telemetry surveys are the only method for determining exact roosting locations. Of the six high quality habitats identified based on candidate roost tree density, only one ecosite (FOD4 [39] and CUS1 [43]) is proposed for removal (Map 10). An Information Gathering Form (IGF) and Alternatives Avoidance Form (AAF) will be submitted to MECP to initiate the permitting process. The proposed artificial roost structures that are to be installed within the woodland compensation area and other areas throughout the Subject Property will provide immediate compensation for bat roosting habitat. In the long term, there will be a net ecological benefit as the woodland compensation area will provide higher quality bat habitat with the planting of deciduous trees. The relocation of some trees within the development footprint will also provide some initial larger DBH trees that may provide bat habitat or will sooner in the future. Additional foraging areas will also be created within this compensation area.

Because SAR bat males are known to periodically switch roosts (ECCC 2018), the removal of candidate male/non-reproductive female roosting habitat is not likely to significantly impact Little Brown Myotis. Additional day/non-reproductive female roosting habitat for Little Brown Myotis is available in treed communities that will be retained within the Subject Property, as indicated by the bat habitat assessment and acoustic monitoring results.

The following mitigation measures are recommended to avoid unintended impacts to bat SAR:

Mitigations:

- *Tree removals must occur between October 1 and March 31, which is the period outside of the active bat season (generally April 1 to September 30) to avoid direct impacts to bats.*
- *Artificial roost structures are to be installed along south-facing woodland edges within the woodland compensation area and within other suitable areas on the Subject Property to compensate for removal of Little Brown Myotis roost trees. Exact details will be determined in consultation with MECP.*
- *Ecological restoration that includes tree plantings, as outlined in Section 6.1.5 and Appendix XIII, shall provide compensation for proposed tree removals and to support the continued presence of bat habitat in the Subject Property.*
- *The slab pile shown on Map 10 that is located within the development footprint shall not be removed or disturbed until it can be confirmed that Eastern Small-footed Myotis are not roosting there. Additional correspondence with MECP may be required.*
- *Tree Protection Fencing and Erosion & Sediment Control Fencing is to be installed at the limit of construction to protect retained habitats.*
- *The limit of construction activities should be clearly delineated to avoid unnecessary encroachment into natural features and habitats.*
- *Avoid the use of pesticides or other products that adversely impact insect populations.*
- *An Information Gathering Form and Alternative Avoidance Form will be submitted for MECP review prior to tree removals occurring. Additional permitting may be required.*

Significant Wildlife Habitat

No confirmed SWH was found within the development footprint, and, as such, direct impacts are not anticipated. Alignment of the potential future trail connection overlaps with five confirmed SWH features and one candidate SWH.

Confirmed SWH: Turtle Wintering Area, Amphibian Breeding Habitat (Wetland & Woodland), and Special Concern/Rare Wildlife Species

Within WET-06, four confirmed SWH categories have been identified, including Turtle Wintering Areas, Amphibian Breeding Habitat (Wetland), and habitats for Snapping Turtle and Northern Ribbonsnake. The potential future trail block connection encroaches within 0.01ha (1.62%) of

WET-06, where an existing tractor path exists. If implemented, trail construction within this area is not anticipated to impact SWH that have been identified here due to the existing condition and minimal vegetation removal that would be required. This area is already currently experiencing impacts (compaction, vegetation trampling, etc.) from agricultural activities. The following mitigation measures will ensure no impacts to SWH or the species present:

Mitigations:

- *The construction period should be minimized to the extent possible. Grading and grubbing within any potential future trail block connection should avoid the hibernation period for snakes, which is generally from late fall until early spring. If tree removals are required, stumps should be left in place through the hibernation period and removed during the active season to avoid harm to snakes.*
- *Wildlife exclusion fencing should be installed around the perimeter of the construction zone prior to the initiation of construction activities in order to exclude herpetofauna from the construction zone. Fencing should follow the guidelines outlined in the documents, Reptile and Amphibian Exclusion Fencing (MECP 2020) and Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario (MNRF 2016c).*
- *Wildlife salvages should be completed (lead by a qualified biologist) during the active season for herpetofauna, which is generally from early spring until late fall, within the fenced area prior to the initiation of any construction activities to relocate any individuals that may have become trapped inside the development area during fence installation.*
- *Wildlife ecopassages should be considered within any potential future trail design to reduce the potential for mortality within more heavily used corridors.*

Candidate SWH: Reptile Hibernaculum

Candidate hibernation habitat for Northern Ribbonsnake has been identified within and around WET-06, where there is a 0.08ha (0.72%) encroachment associated with the potential future trail block connection. Impacts to this habitat and species are not anticipated if the mitigations listed above (for other SWH categories) are followed.

Locally Significant Species

A majority of the locally significant species habitats have been identified within habitats to be retained. Delaware Skipper was found near a hedgerow (#30). This species utilizes a variety of habitats, but generally prefers moist habitats such as marshes, prairies and fields. It will also utilize habitats along road sides and within suburban yards. It is anticipated that this species is using a variety of the retained natural habitats on the Subject Property and it is not expected to be impacted by the proposed development. No other locally significant species were found within the development footprint that would be directly impacted by the proposed development. The potential future trail block connection overlaps with habitats identified for 6 locally significant species, including Ontario Aster, Boreal Mannagrass, Eastern Kingbird, Baltimore Oriole, Unisexual *Ambystoma*, and Red-spotted Newt. The mitigations listed below will ensure no adverse impacts to locally significant species.

Mitigations:

- *Vegetation removal should occur outside of the breeding and nesting season for migratory birds (April 1-August 31).*
- *Should vegetation removal be required during the breeding and nesting season for migratory birds, surveys for nesting birds in "simple habitats" may be undertaken by a qualified biologist to permit vegetation removal should breeding bird absence be confirmed.*
- *A clearance letter is to be prepared by the qualified biologist that undertook the nest searches and submitted to the Developer for their files in the event a record of due diligence is requested by CWS. Areas identified as having no bird nesting activity can be cleared; however, clearing must occur within 48 hours of nest searching.*
- *Ecological restoration activities identified in Section 6.1.5 and Appendix XII will provide additional successional habitats for open country birds.*
- *Wildlife exclusion fencing should be installed around the perimeter of the construction zone prior to the initiation of construction activities in order to exclude herpetofauna from the construction zone. Fencing should follow the guidelines outlined in the documents, Reptile and Amphibian Exclusion Fencing (MECP 2020) and Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario (MNRF 2016c).*

- *Wildlife salvages should be completed (lead by a qualified biologist) during the active season for herpetofauna, which is generally from early spring until late fall, within the fenced area prior to the initiation of any construction activities to relocate any individuals that may have become trapped inside the development area during fence installation.*
- *Wildlife ecopassages should be considered within any potential future trail design to reduce the potential for mortality within more heavily used corridors. Seed mixes for restoration plantings should include some locally significant species or species that are beneficial to locally significant species.*
- *If locally significant plant species are found within the final trail layout, opportunities for relocation should be explored.*

Other Wildlife Species

The proposed development may temporarily displace wildlife species that are currently using the Subject Property while the site is under construction. Species that use the Subject Property are common and well-adapted to relatively urban conditions and landscapes, and are expected to return to the adjacent natural areas and protected buffer areas post-development provided that native tree herbaceous plantings are incorporated in the Natural Heritage System buffer.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs, and young, or avoidance of the area by breeding adults.

According to the Canadian Wildlife Service (CWS), the peak breeding period for migratory birds that nest in treed habitat in southern Ontario is between April 1 and August 31 (Government of Canada 2017). During this period the CWS recommends that no clearing of vegetation within simple and/or complex habitats occur. The 1994 *Migratory Birds Convention Act* (MBCA, Government of Canada 1994) protects migratory birds, their eggs and nests from being harmed or destroyed at any time of the year. However, nest searches, as a means of mitigation during the core breeding period, may be undertaken in “simple” habitats such as hedgerows, isolated trees, or constructed features (e.g., bridges, barns, etc.) where the potential to observe all active nests is relatively high. It is therefore recommended that tree and vegetation removal occur outside the peak breeding bird period, where possible.

The following mitigations are proposed to avoid negative impacts to wildlife:

Mitigations:

- *Vegetation removal should occur outside of the breeding and nesting season for migratory birds (April 1-August 31).*
- *Should vegetation removal be required during the breeding and nesting season for migratory birds, surveys for nesting birds in "simple habitats" may be undertaken by a qualified biologist to permit vegetation removal should breeding bird absence be confirmed.*
- *A clearance letter is to be prepared by the qualified biologist that undertook the nest searches and submitted to the Developer for their files in the event a record of due diligence is requested by CWS. Areas identified as having no bird nesting activity can be cleared; however, clearing must occur within 48 hours of nest searching.*
- *It is unlikely that bird species that include as raptors, hawks or owls are nesting within the proposed development area. However, timing of vegetation and removals should consider the timing windows for bird species protected under the Fish and Wildlife Conservation Act that are not afforded protection under the MBCA (November to March).*
- *ESC fencing is to be erected along the limit of development prior to any on-site works to ensure that construction activities and equipment are maintained outside of the protected areas and their buffers.*
- *Wildlife exclusion fencing should be installed around the perimeter of the construction zone prior to the initiation of construction activities in order to exclude herpetofauna from the construction zone. Fencing should follow the guidelines outlined in the documents, Reptile and Amphibian Exclusion Fencing (MECP 2022) and Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario (MNRF 2016c).*
- *Wildlife salvages should be completed (lead by a qualified biologist) during the active season for herpetofauna, which is generally from early spring until late fall, within the fenced area prior to the initiation of any construction activities to relocate any individuals that may have become trapped inside the development area during fence installation.*

6.4 Indirect Impacts and Mitigations

Buffers are necessary to mitigate indirect impacts, as described in Section 5.7. Indirect impacts may include impacts related to sedimentation and erosion, management of stormwater quantity and quality, and impacts to wildlife and vegetation.

6.4.1 Sedimentation and Erosion

During construction, areas of bare soil will be exposed which have the potential to erode during rainfall events and impact adjacent natural features. In the event of a heavy rain, sediment-laden runoff can enter adjacent natural areas by way of overland flow. In order to protect on-site and off-site natural features from potential impacts due to sediment, an Erosion and Sediment Control Plan must be developed and implemented prior to any construction activities on the site.

During the site grading work, suitable sedimentation controls will be required to help control and reduce the turbidity of run-off water which may flow towards the surface water features. As construction work progresses at the site, regular maintenance and additional sedimentation measures may be required to limit the effect of siltation of run-off water in localized areas. Within the Functional Servicing Report (AECOM 2023b), Erosion and Sediment control measures have been identified. Catchbasin silt sacs and strawbale check-dams will be provided for roadside ditch and storm infrastructure along the Southgate Drive extension when that portion is built (AECOM 2023b). Interceptor swales will also be utilized to direct overland drainage to temporary sediment ponds for detention and infiltration (AECOM 2023b). Provided that these measures are followed, along with the mitigations listed below, indirect impacts related to sedimentation and erosion are not anticipated.

Mitigations:

- *Develop and implement an Erosion and Sediment Control Plan prior to construction. Siltation control measures such as silt fencing, a mud mat at the construction entrance, and tree protection fencing are recommended.*
- *Disturbed areas should be kept to a minimum and re-vegetated in a reasonable timeframe in order to minimize dust.*
- *Inspection and maintenance of the installed Erosion and Sediment measures throughout the duration of construction, to ensure they are functioning as originally intended.*

- *An environmental monitoring program is recommended to ensure that the sediment and erosion control measures are installed, maintained and functioning as intended.*

6.4.2 Management of Stormwater Quantity

The proposed stormwater management strategy will allow for the capture and infiltration of the Regional storm event (AECOM 2023a). GM BluePlan (2023) has prepared a hydrogeological conceptual model to understand the groundwater flows and other hydrogeological components, and assess potential impacts. From this analysis, GM BluePlan was able to determine a feature-based monthly water balance that quantifies recharge and runoff that compares pre- and post-development conditions. Runoff and groundwater recharge are considered below in the context of the vegetation community sensitivity, individual plant species sensitivity and fauna sensitivity within the wetland. Field data is compared to the TRCA's *Wetland Water Balance Risk Evaluation* guideline (TRCA 2017) and the *United States Environmental Protection Agency (U.S. EPA) National Database of Wetland Plant Sensitivities to Enrichment and Hydrologic Alteration* (Adamus and Danielson 2000) to assess the individual plant species' tolerances. Potential indirect impacts to Significant Landform are also discussed.

Runoff

Overall, an annual decrease of runoff of approximately 6% is expected across the site (GM BluePlan 2023). Within the wetland catchments, runoff depths will remain similar post-development, with less than a 10% difference (GM BluePlan 2023). With the exception of WET-01, WET-02, and WET-09, there are no negative impacts anticipated as a result of these changes (GM BluePlan 2023). A portion of these wetlands (WET-03/WET-05, WET-04/-11, and WET-13) will not be affected at all by the proposed development because there is no development proposed in their catchments (GM BluePlan 2023). The reader is referred to GM BluePlan's Hydrogeological Report (2023) for tables that provide changes in runoff for each wetland. It is also anticipated that through further phases of development, there will be more opportunities to increase runoff to wetlands that are expected to experience reductions from Phase 1, through the conveyance of roof runoff or other low impact design measures. Therefore, some of the changes to water balance discussed herein may be temporary and an updated analysis will be required during the detailed design of additional phases.

WET-01, WET-02, and WET-09 will experience changes in their catchment area as a result of Phase 1 development which will result in changes to annual runoff that are substantial enough

to create potential impacts (GM BluePlan 2023). Figures 14-16 show the monthly changes in runoff for each of the above-specified wetlands (GM BluePlan 2023).

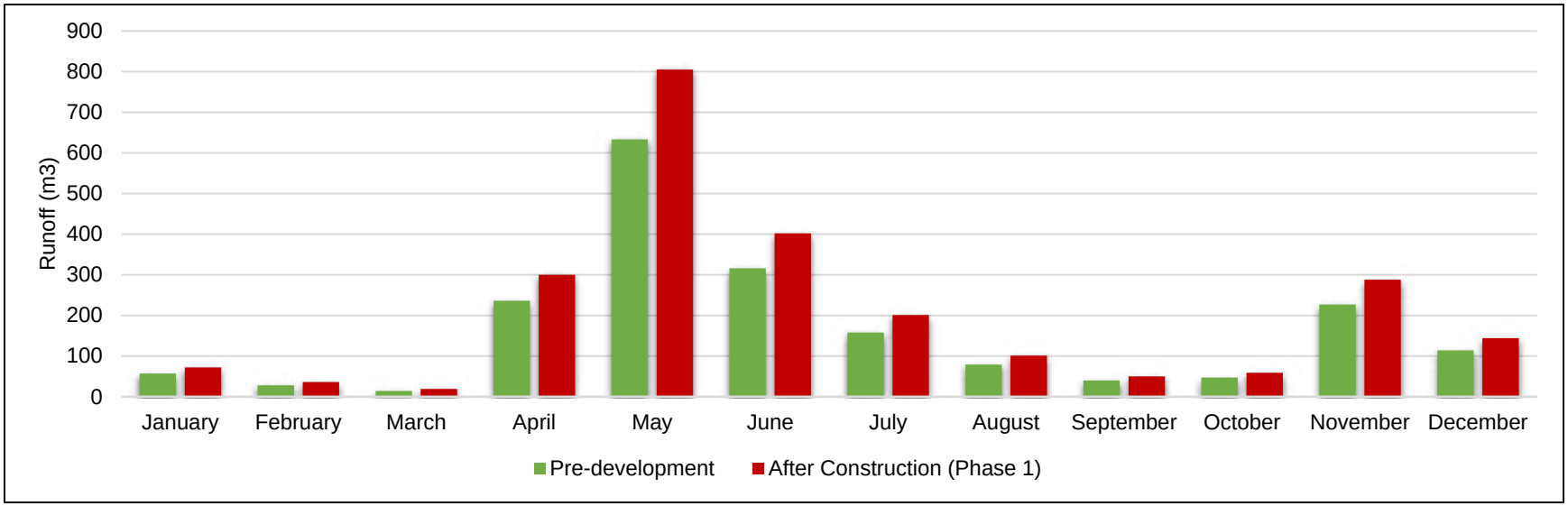


Figure 14. WET-01 Changes in Runoff Post-Construction (Phase 1)

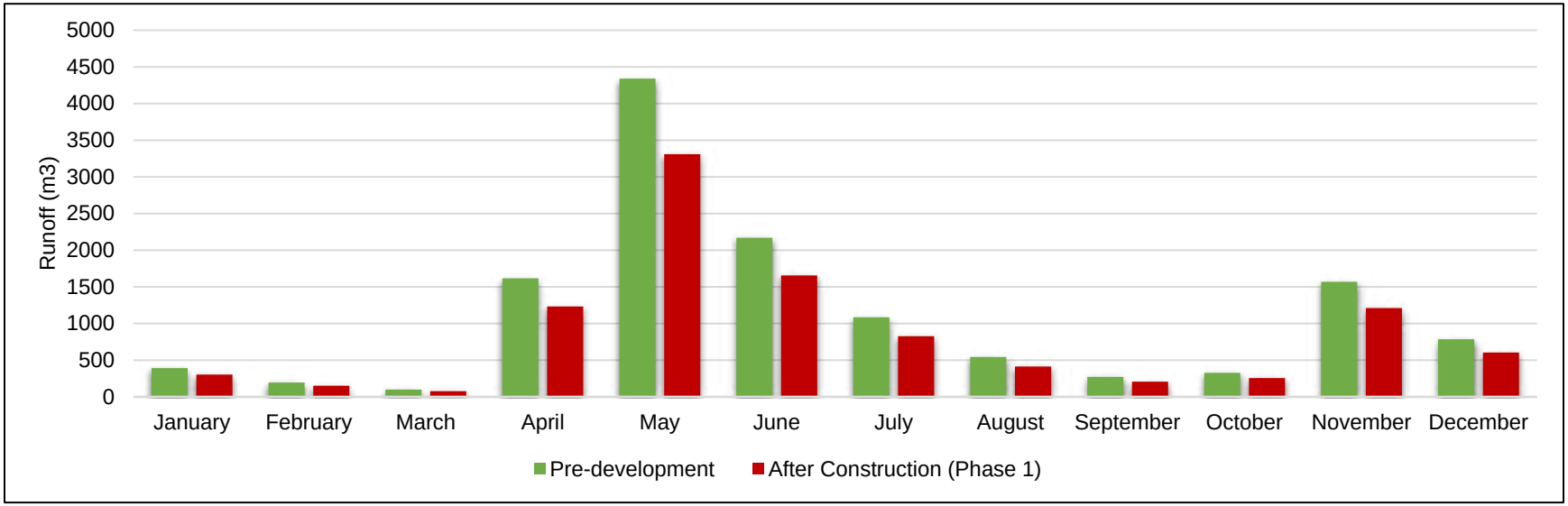


Figure 15. WET-02 Changes in Runoff Post-Construction (Phase 1)

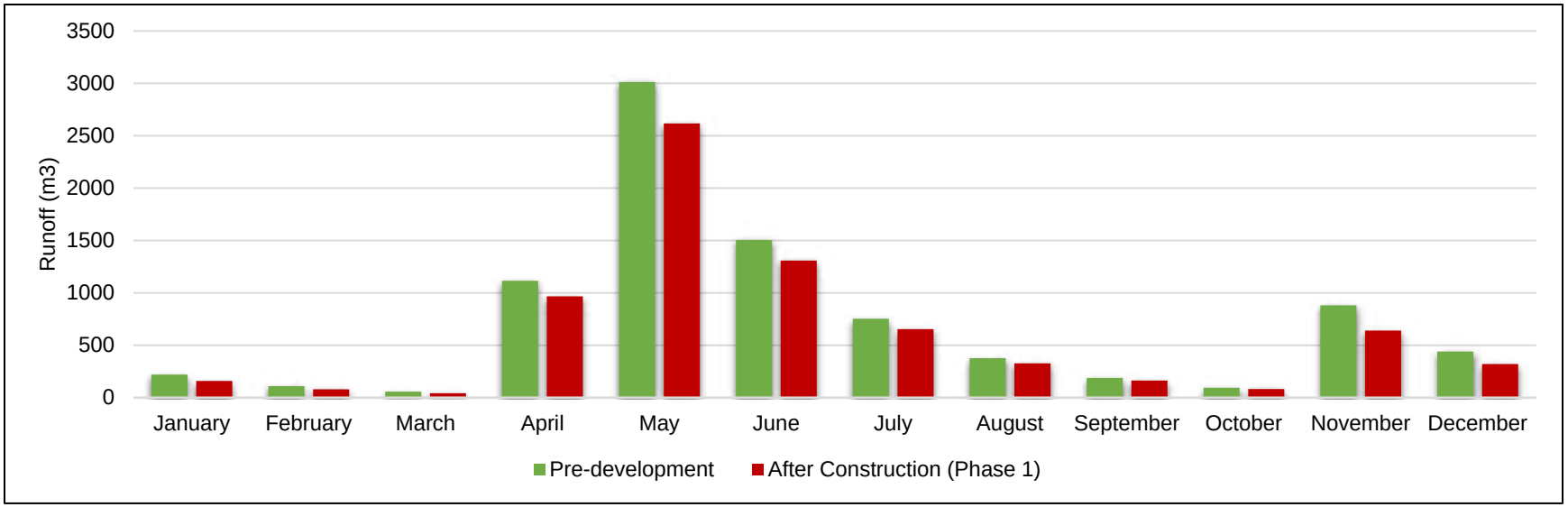


Figure 16. WET-09 Changes in Runoff Post-Construction (Phase 1)

WET-01 receives a roughly consistent increase in runoff on a monthly basis, ranging from 5m^3-172m^3, with the highest expected increase during the month of March (GM BluePlan 2023). When considering an average of 10 rain events per month, this range would be approximately 0.5m^3-17.2m^3 per rain event. In terms of water depth over the wetland area, there will be an approximate increase in 188mm/year in runoff volume (GM BluePlan 2023). The runoff depth on a monthly basis is presented in Figure 17. The runoff water depth increase at WET-01 ranges from 3.57mm to 61.44mm per month (GM BluePlan 2023), with an average per 10 rain events per month of 0.36mm-6.14mm. In May, the largest increase occurs, which is part of the growing season when plants are absorbing moisture through their roots.

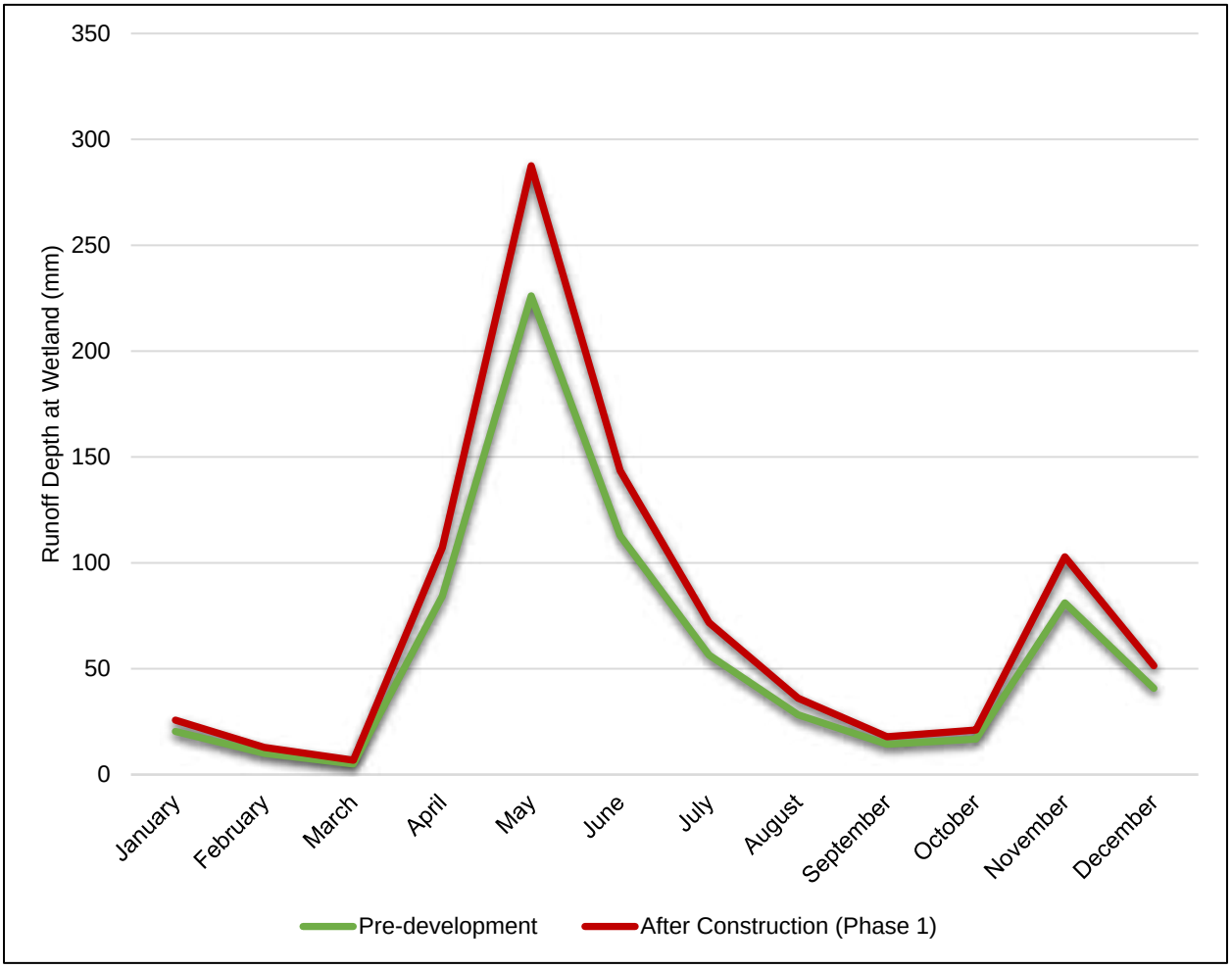


Figure 17. Change in Runoff Depth at WET-01

WET-01 is a deciduous swamp with a canopy dominated by Freeman's Maple. This community type (SWD3-3) is considered to have medium sensitivity to hydrologic change, meaning that it would be tolerant of slight changes in hydrology (TRCA 2017). One locally significant species, Marsh Horsetail, was found rare in the understorey and is considered to have high sensitivity to

hydrologic change (TRCA 2017) and to be moderately tolerant to enrichment (excessive nutrients) and hydrologic alterations (Adamus and Danielson 2000). Sugar Maple, which was found to be rare in the canopy, is intolerant (Adamus and Danielson 2000), however, it is not typically found in wetland communities. All other plant species within this community were either somewhat tolerant or moderately tolerant or had a medium sensitivity to hydrologic change. Plant species that cannot tolerate changes in water depth are expected to spread/relocate to other more suitable areas within the wetland. Overall, it is expected that the changes in hydrology as a result of the proposed development are considered minor and they will not negatively impact the vegetation community. Marsh Horsetail may be a good indicator species to monitor during and post-development. Wood Frog, Spring Peeper, and Gray Treefrog were observed with breeding evidence during anuran call surveys within this wetland. These species are considered to have high sensitivity to hydrologic change (TRCA 2017). However, impacts to the hydroperiod are not anticipated due to the depth of groundwater levels below the ground surface at this location (GM BluePlan 2023).

WET-02 receives a roughly consistent decrease in runoff on a monthly basis, ranging from -20m^3 to -1031m^3, with the largest decrease anticipated in April-September. When considering an average of 10 rain events per month, this range would be an approximate decrease of 2.00m^3-103.10m^3 per rain event. In terms of water depth over the wetland area, there will be an approximate decrease in 802mm/year in runoff volume (GM BluePlan 2023). The runoff depth on a monthly basis is presented in Figure 18. T he runoff water depth decrease at WET-02 ranges from 5.10mm to 262.80mm per month (GM BluePlan 2023), with an average per 10 rain events per month of 0.51mm-26.28mm. In May, the largest decrease occurs.

Figure 18. Change in Runoff Depth at WET-02

The vegetation communities present within WET-02 include a swamp thicket and meadow marsh. Both communities have a low sensitivity to hydrological change (TRCA 2017). However, marshes are typically more tolerant to changes in hydrology than swamps, as swamps tend to require periods of inundation and dry soils, whereas marshes can withstand longer dry periods and longer wet periods. In early June 2022, WET-02 was observed to have a water depth of approximately 750mm. By early August 2022, it was observed to be dry (GM BluePlan 2023). Only one species, Woolly Blue Violet (*Viola sororia*), which was rare in the groundcover, is intolerant to hydrological change (Adamus and Danielson 2000). This species may be a good indicator species to monitor post-development. A majority of the species present range from somewhat tolerant to moderately tolerant (Adamus and Danielson 2000). The dominant species in the meadow marsh is Reed Canary Grass, which is tolerant to hydrologic change. Red-osier Dogwood, which dominates the understorey in the swamp thicket, is somewhat tolerant to change (Adamus and Danielson 2000). Because of the assemblage of plant species present, this fluctuation is not expected to negatively impact the community within WET-02. Plant species that cannot tolerate changes in water depth are expected to spread/relocate to other more suitable areas within the wetland. Four anuran species and one salamander species were either confirmed breeding or observed near WET-

02. These species have high sensitivities to hydrologic change, except for Green Frog which has a medium sensitivity (TRCA 2017). The potential impacts to species identified within the wetland or confirmed breeding as a result of these changes at WET-02 are identified in Table 16. In summary, impacts to species confirmed breeding or observed within WET-02 are not anticipated as a result of decreased runoff.

Table 15. WET-02 Amphibian Species Impact Assessment

Species	Habitat Requirements	Potential Impacts
Gray Treefrog	Breeds from late spring to early summer. Eggs hatch within 5-7 days, and tadpoles metamorphose between 40-60 days (Ontario Nature 2022b). Requires standing water from approximately late spring to end of August.	Gray Treefrog was confirmed breeding in WET-02. The depth of runoff at the wetland is expected to decrease during the beginning of the breeding period in late spring. Standing water is still likely to be present at this time, which will allow for suitable breeding conditions. Since this wetland was observed to be dry August, 2022 (GM BluePlan 2023), if the reduced runoff causes the wetland to be dry by this time in the post-development condition, this is expected to be within the range of normal of this wetland.
Spring Peeper	Breeds from March through May. Eggs are attached to submerged aquatic vegetation and hatch between 1-2 weeks. Metamorphosis occurs between 6-12 weeks. Requires standing water from approximately March to early September. Eggs develop normally in water depth of 30-50cm; fluctuations beyond that can potentially affect the development/success rate (Bunnell & Ciarolo 2010).	Spring Peeper was confirmed breeding in WET-02. The main breeding period is unlikely to be affected by the fluctuations in runoff depth. Decreases in runoff volumes to WET-02 during April and May are unlikely to negatively affect egg development as sufficient standing water will continue to be present. Since this wetland was observed to be dry August, 2022 (GM BluePlan 2023), if the reduced runoff causes the wetland to be dry by this time in the post-development condition, this is expected to be within the range of normal of this wetland.
Green Frog	Breeds from late spring to midsummer (as late as August). Females lay eggs over submerged vegetation in permanent water. Tadpoles overwinter in water before transforming the following summer (Ontario Nature 2022c).	Small numbers of Green Frog were observed near WET-02 and only one male was observed calling during anuran call surveys. In the existing condition, this wetland is likely not suitable for breeding due to its current hydroperiod. As such, this species is unlikely to

Species	Habitat Requirements	Potential Impacts
	Requires 2-3 years of standing water (Wells 1977).	be impacted by the proposed water depth changes post-development.
Wood Frog	Breeding time varies; however, it typically starts in very early spring. Eggs are deposited on submerged vegetation in small, fishless ponds (Ontario Nature 2022d). They tend to lay their egg masses in deeper regions of a pool (<0.5m deep), which develop within 20 days (Skids et al. 2007). Requires standing water from approximately early March to end of July.	Small numbers of Wood Frog were observed near WET-02 and only one male was observed calling during anuran call surveys. This wetland may be suitable breeding habitat for this species. Standing water will be likely from March-July.
Unisexual *Ambystoma*	Breeds in early spring. Eggs are laid on aquatic vegetation and hatch between 3-4 weeks. Metamorphosis takes 3-4 months (Ontario Nature 2022e). Require standing water from approximately early March to end of August at least once every three years.	One Unisexual Ambystoma was observed in pitfall traps surrounding WET-02. The current hydroperiod is likely unsuitable for breeding and this individual was likely exploring adjacent habitats. As such, this species is unlikely to be negatively impacted by the proposed development.

WET-09 is expected to experience changes in runoff as a result of changes in surrounding land uses, from open agricultural fields to woodland compensation plantings. The size of the catchment area post-development will not change (GM BluePlan 2023). As shown in Figure 16 (above), the changes on a monthly basis are relatively minor, with the smallest decrease in runoff expected during the growing season. WET-09 is a meadow marsh, dominated be Reed Canary Grass. This community is relatively resilient, with a low sensitivity to hydrologic change (TRCA 2017). The choice of species planted in and around this community will consider moisture preferences. Impacts to this wetland are not anticipated.

Groundwater Recharge

Overall, an annual increase of groundwater recharge of approximately 16% is expected across the site (GM BluePlan 2023). Most of the wetland catchments will experience only minor changes to recharge, however, the effects of changes in recharge have less of an influence on wetland conditions (GM BluePlan 2023). WET-01, WET-02, and WET-09, which are perennial recharge features that are vertically separated from the water table, will experience a +843m^3 (27.7%), -3618m^3 (-17.5%), and +910m^3 (+14.1%) change in recharge, respectively (GM BluePlan 2023).

Increased recharge to wetland areas may cause the groundwater table to rise, which may affect the hydroperiod, causing flooding (GM BluePlan 2023). Following Phase 1 construction, which includes pre-grading activities for Phases 1-4, it is not anticipated that increased recharge will cause flooding at WET-01 or WET-09 due to the depth of the water table below the wetland (GM BluePlan 2023). Increased recharge at the location of a proposed erosion and sediment control pond adjacent to WET-02 will not result in groundwater mounding or flooding of WET-02 (GM BluePlan 2023). Wetlands within later phases of development should be assessed for groundwater mounding as well, during detailed design of that phase.

Decreases in recharge have the potential to affect the amount of groundwater discharge received by the wetlands that may intersect the groundwater table during periods of high groundwater (GM BluePlan 2023). This is unlikely to occur as a result of Phase 1 construction because of the location of the proposed development in relation to the wetland catchments that rely on some groundwater discharge (GM BluePlan 2023). Discharge-related impacts to wetlands are not anticipated (GM BluePlan 2023).

The Significant Landform within the Subject Property provides and supports several key environmental processes, including surface water runoff to kettle wetlands and shallow groundwater recharge (GM BluePlan 2023). It also has an inherent unique aesthetic quality, in that it contains a variety of slopes, from gentle undulating lands to steep slopes, ridges, and depressions. Based on information provided in the Hydrogeological Study (GM BluePlan 2023), the general groundwater flow direction within the study area is to the north (in the eastern portion of the Subject Property) to west to northwesterly (in the western portion of the Subject Property). Therefore, the development area is located downstream of the Significant Landform, in terms of groundwater flow, and surface water that infiltrates the ground / recharges the groundwater table within the development footprint will not impact the features within the Significant Landform or the function of the Significant Landform. Surface water infiltrating the ground within the Significant Landform and to the northeast within the proposed Woodland Compensation Area and surrounding Natural Heritage System will continue to contribute to the form and function of the existing kettle wetlands and will continue to recharge the shallow groundwater system. In addition, the conceptual groundwater and surface water model shows that the wetlands within the Subject Property are generally elevated above the groundwater table throughout the year, and therefore do not receive substantial hydrological contributions from groundwater discharge. A SWM facility is located on the west side of the string of kettle wetlands that extend from northwest to southeast, from the Natural Heritage System to Maltby

Road. Given the results of GM BluePlan's modelling and groundwater monitoring data to date, water infiltrated within the SWM facility is not expected to significantly affect the water balance of the adjacent wetlands on an annual basis (GM BluePlan 2023). Wetlands within the Significant Landform are expected to have a relatively similar monthly water balance as well (GM BluePlan 2023). Therefore, no indirect impacts to the hydrological or hydrogeological function of the Significant Landform will occur with the proposed development.

Construction Dewatering

At this time, it has not been confirmed whether construction dewatering will be required for Phase 1. If it is necessary, a separate impact assessment may be required.

If the mitigation measures listed below are followed, negative impacts as a result of changes to water balance are not expected.

Mitigations:

- *Water level monitoring is recommended at WET-01 and WET-02 to ensure the development doesn't adversely affect the hydroperiod. An adaptive mitigation approach is recommended to ensure stormwater management components are functioning as expected.*
- *Ecological monitoring of WET-01 and WET-02, including vegetation plots, monitoring of Woolly Blue Violet and Marsh Horsetail plants, and anuran breeding surveys are recommended post-development to identify if changes in water levels are impacting the plant and wildlife species composition within the feature. A baseline vegetation plot monitoring is recommended for comparison, prior to construction. Exact details on monitoring are to be determined in an EIR.*
- *During and post-construction, groundwater level monitoring is recommended to ensure that predevelopment drainage patterns are not altered that would result in a change in surface water and groundwater flows to wetlands.*
- *If construction dewatering is required, an additional impact assessment is necessary to understand if there will be impacts to wetlands or other retained features.*
- *Groundwater mounding analyses should be completed for other wetlands with the potential to be impacted, during the detailed design of the associated phases.*

- *Pit & mound treatment within the woodland compensation area will create more opportunities for groundwater recharge and further mitigate any potential impacts to wetlands that rely more on groundwater recharge than runoff.*
- *Site grading adjacent to the Significant Landform should match existing grades.*
- *Graded slopes are to be planted or seeded immediately following the creation of final grades. Naturalized plantings are encouraged to provide an aesthetic transition towards the Natural Heritage System and Significant Landform.*

6.4.3 Management of Stormwater Quality

Water quality will be maintained using a 'treatment train' approach which would improve water quality prior to infiltration (AECOM 2023a). Enhanced-level treatment will be achieved within the stormwater management system (AECOM 2023a). The proposed Central and East SWM ponds will be sized to provide minimum Basic-level treatment and provide additional water quality control (AECOM 2023b). Only runoff that has not been in contact with paved surfaces will be received by the wetlands (GM BluePlan 2023). In future phases, wetlands are anticipated to receive runoff from rooftop and greenspaces as well. Infiltration activities will mainly be occurring downgradient from wetland areas so it is not anticipated that there will be impacts from salt (GM BluePlan 2023). A portion Catchment 109P will be graded such that its runoff will drain toward WET-02. To prevent water quality impacts associated with this runoff the pre-graded area will be seeded to stabilize soils and minimize the potential for sediment entrainment (GM BluePlan 2023). The use of check dams and structures in a collector swale, and the construction of a spreader structure at the outlet will dissipate energy and minimize erosion (GM BluePlan 2023). Impacts to water quality are not anticipated (GM BluePlan 2023).

AECOM (2023c) has prepared a Salt Management Plan which provides an overview of salt management practices to be implemented, which includes Best Management Practices (BMP). The Salt Management Plan includes recommendations to minimize impacts to natural features, including the use of designated snow storage areas and the minimizing of the use of salt (AECOM 2023c).

If the mitigation measures listed below are followed, negative impacts as a result of changes to water quality are not expected.

Mitigations:

- *Once infiltration testing is complete, the groundwater mounding estimates should be updated to ensure there are no impacts from salt to wetlands.*
- *Salt tolerant plantings are recommended within green spaces.*
- *The Salt Management Plan prepared by AECOM (2023c) should be adhered to.*
- *Designated snow storage areas should be determined in locations away from natural features and buffers.*
- *Silt fencing should be installed along the construction limits. ESC measures are to be regularly inspected and repaired or replaced in a timely manner. Accumulated sediment must be removed as needed.*

6.4.4 Indirect Impacts to Wildlife and Vegetation Communities

Indirect disturbances can stress natural features and weaken their ecological integrity. In these states, natural features are more prone to the establishment and proliferation of invasive, non-native species such as Common Buckthorn, which is preset on this stie. Proliferation of invasive, non-native species within natural communities decreases their ecological value by suppressing native species, decreasing biodiversity, and reducing habitat suitability. Potential indirect impacts to wildlife in the retained natural areas may arise from noise and dust associated with construction activities and unnatural lighting resulting from the development. Indirect impacts associated with construction is anticipated to be minimized, localized, and temporary, and it is expected that displaced wildlife species will return to the vicinity of the Subject Property following construction. Therefore, significant impacts to wildlife from noise and dust are not expected.

A detailed wetland water balance assessment was conducted to evaluate potential impacts to anurans and their habitats (breeding, over-wintering) from the post-development alterations to runoff delivered to the wetlands. This assessment is provided in Section 6.4.3, and states that no negative impacts to amphibians and their habitat is anticipated to occur as a result of hydrological changes.

Detailed lighting plans for Phase 1 have been prepared by AECOM which identify the proposed lighting effects within the Subject Property. All lighting is concentrated near buildings and parking areas, which are far from the retained natural features and their buffers. Zero foot-candles are proposed within the retained natural features and their buffers.

Minor buffer modifications have been proposed around WET-02 and WET-03. Portions of the Central SWM pond adjacent to WET-02 are proposed to be located in the outer 15m of the 30m PSW buffer. Exact details of the pond design will be determined at the detailed design stage of Phase 3. The space along the eastern edge of the food production building in Phase 3 is also proposed to encroach a maximum of 15m into WET-02's 30m buffer; this will provide more room for grading to achieve the desired building footprint. To compensate for this encroachment, an equal area of buffer has been provided on the opposite site of WET-02, next to Phase 5 future parking (Map 15). The pre-grading proposed prior to Phase 1 is not anticipated to impact the wetland where these encroachments are located. Around WET-03, the potential future trail connection, if implemented, would encroach a maximum of 15m in the 30m buffer and the adjacent road access is proposed 25m from the wetland. Pre-grading is not proposed within Phase 6 at this time; this should be assessed further during the detailed design stage of Phase 6.

The following mitigation measures are recommended to avoid unintended Indirect impacts to wildlife and vegetation communities:

Mitigations:

- *In order to suppress dust, areas of bare soil should be moistened with water during construction activities to ensure that the amount of dust within the Subject Property is reduced. Topsoil stockpile locations should be in areas of lesser wind exposure and away from natural features and their buffers;*
- *Disturbed areas with exposed soils should be kept to a minimum and re-vegetated with an approved seed mix in a reasonable timeframe in order to stabilize soils and minimize dust;*
- *All machinery, storage and refueling to be maintained outside of the natural features and their buffers;*
- *Daily timing of construction activities should be limited to between 0700 and 1900 to avoid noise-related impacts during construction;*
- *Any lighting equipment associated with construction activities should be turned off following cessation of daily construction activities, or at least turned away from the adjacent natural features so as to prevent 'light wash' of these areas.*
- *A wildlife culvert is recommended to link WET-02 and the Woodland 1 to encourage movement between these features and reduce road mortality (Map 15). Type and*

material is to be determined at detailed design. Culverts should be constructed outside of the amphibian breeding season (April to June) and fall migration season (September to end of October).

- *Detailed lighting plans for subsequent phases of development should ensure that 0 foot-candles are within the retained natural features and their buffers.*

6.5 Induced Impacts and Mitigations

Induced impacts are described as those that are not directly related to the construction or operation of the facilities in question, but rather arise from the use of the natural areas as a result of the development. The simplest example is increased use of a natural area by users of the property, feral domestic wildlife, and unauthorized trail/pathway construction.

Natural areas and wildlife can be affected by the presence of a development and its occupants. The industrial site is proposed to be surrounded by secure fencing, to prevent unauthorized access. This fencing will also act as a barrier to encroachment within the retained Woodland 2 and the Ecological Linkage. Large wildlife, such as deer, will not have access to the industrial site as a result of this fencing. Exact details on fencing will be prepared at the detailed design stage.

If implemented, construction of the potential future trail block connection within the Natural Heritage System introduces potential for the creation of unauthorized trail/pathway creation within the Natural Heritage System or planting areas. Signage would accordingly be a key educational tool to instruct users to respect wildlife and natural features. Educational signage with respect to the woodland compensation area is discussed in the Ecological Restoration Plan in Appendix XII.

If the mitigations listed below are followed, induced impacts are not anticipated:

Mitigations:

- *Signage should direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas.*
- *Permanent fencing that is to be erected around the industrial site will assist in preventing human induced impacts to natural areas. No natural features shall be isolated such that off-property access is denied to wildlife. Movement corridors between retained features should be maintained where possible.*

- *Road signage should indicate where wildlife crossings are present within the industrial site and alert people to slow down.*

6.6 Cumulative Impacts and Mitigations

Cumulative impacts are as a result of incremental impacts of multiple or successive developments. Subwatershed studies provide an overall assessment of impacts within a watershed and identify development constraints and mitigations that should be considered for development. Within the Mill Creek subwatershed in the City of Guelph, there is substantial development pressure. This includes both industrial and residential developments. The Clair-Maltby Secondary Plan (CMSP) study has been undertaken, which includes both the Mill Creek, Hanlon Creek, and Torrance Creek subwatersheds. Lands within the CMSP study area have been thoroughly studied to ensure the appropriate use of lands and identify environmental constraints. This study incorporated a portion of the Southgate Business Park lands within the broader study area; it has been understood throughout this study that the Subject Property would eventually be developed. Groundwater recharge and wildlife habitats have been heavily studied and considered. As the lands within the CMSP area will be developed through phases, there will be additional pressure on ecological resources. The identification and restoration of a resilient, connected Natural Heritage System, with appropriate monitoring, will be a key component of ensuring no long-term cumulative impacts.

6.7 Summary of Potential Impacts and Mitigation Measures

Table 16. Summary of Potential Impacts and Recommended Mitigation

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
Wetlands	• GRCA Ontario Regulation 150/06 (Government of Ontario 2015) • Provincial Policy Statement (OMMAH 2020)	**Direct Impacts:** • WET-10 is within the development footprint and meets GRCA's policies for removal; this wetland is located within areas proposed to be pre-graded. • No other wetlands will be directly impacted. **Indirect Impacts:** • Changes to surface runoff and groundwater recharge within the Subject Property. WET-01, WET-02, and WET-09 are expected to experience more substantial changes in runoff and groundwater recharge. • Sedimentation and erosion • Indirect impacts to wildlife	**Direct Impacts:** • Minimum 30m buffers around the wetlands are recommended, with some minor modifications to accommodate SWM infrastructure, trails, and efficient use of land. • Buffers represent the limit of development, which should be delineated in the field prior to any construction activities. **Indirect Impacts:** • The water balance of the wetlands will be maintained to the extent that the ecological function is not/will not be impacted during construction and in the post-development scenario. The provision of the collector swale and energy dissipating outlet associated with Catchment 109P will mitigate potential impacts related to runoff directed to WET-02. • Trail grading adjacent to or within surveyed wetland boundaries should be minimized to the extent possible, following existing grades. Permeable surfaces are recommended in these areas. • A detailed ESC plan should be developed at the detailed design stage. Doubled Heavy-duty ESC fencing is recommended adjacent to wetland buffers. Inspection and maintenance of the installed ESC measures should be completed throughout the course of construction. • During and post-construction monitoring is recommended within WET-01 and WET-02 to ensure the development doesn't adversely affect the hydroperiod to the extent that flora and fauna are impacted. • All machinery, storage, and refueling is to be maintained outside of natural features and their buffers.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
		Induced Impacts: • Increased use of a natural area by future users of the property and unauthorized trail/pathway construction.	• Adhere to the Salt Management Plan, which should be updated as required with each phase of detailed design. • Native plantings are proposed within buffer areas. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site.
Woodlands	• Provincial Policy Statement (OMMAH 2020)	**Direct Impacts:** • Woodland 2 is proposed for removal. All other woodlands will be retained with 10m buffers. The function of these woodlands will be maintained. **Indirect Impacts:** • Sedimentation and erosion • Indirect impacts to wildlife **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction.	**Direct Impacts:** • A woodland compensation area is proposed for the plantation with a 1:1 area replacement. Within this area, 6,500 trees and 1,650 shrubs are proposed to be planted. Other restoration activities will provide wildlife habitat, with the end goal of establishing a woodland community with better ecological function than the plantation currently provides. • Compensation for individually inventoried trees, including those within Woodland 2 (outside the plantation) are to be provided within buffer plantings within the Subject Property. • Dripline buffers (10m) are required for retained woodlands. • A detailed TIPP has been prepared which identifies which trees are to be retained within the Subject Property. Tree Protection Fencing is required to protect trees to be retained. **Indirect Impacts:** • A detailed ESC plan should be developed at the detailed design stage. Inspection and maintenance of the installed ESC measures should be completed throughout the course of construction. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
Threatened and Endangered Species	• Provincial Policy Statement (OMMAH 2020) • *Endangered Species Act* (2007)	**Direct Impacts:** • The development plan will result in the removal of candidate maternity roost habitat, male/non-reproductive female roost habitat, and foraging/flyway habitat for Little Brown Myotis. • The development plan will result in the removal of foraging/flyway habitat for Eastern Small-footed Myotis. **Indirect Impacts** • Changes to water quality and quantity • Indirect impacts to wildlife associated with noise, dust, and lighting. **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction.	**Direct Impacts:** • All trees proposed for removal shall be removed outside of the active roosting season (October 1 – March 30). • The woodland compensation area and buffer/landform planting areas will provide additional bat habitat in the long term. Artificial roost structures are proposed to be erected within the Subject Property, in consultation with MECP. • The slab pile within the development footprint should be confirmed to not be utilized as roosting habitat for Eastern Small-footed Myotis through a visual inspection during the maternity period (June/July). • Correspondence with and potentially permitting from MECP will be required. **Indirect Impacts:** • See Indirect Impact mitigations listed for Wetlands. • Areas of bare soil should be moistened with water during construction activities to suppress dust. Topsoil stockpile locations should be in areas of lesser wind exposure and away from significant habitats and their buffers. • Disturbed areas with exposed soils should be kept to a minimum and re-vegetated with an approved seed mix in a reasonable timeframe in order to stabilize soils and minimize dust. • Daily timing of construction activities should be limited to between 0700 and 1900 to avoid noise-related impacts during construction. • Any lighting equipment associated with construction activities should be turned off following cessation of daily activities or turned away from sensitive natural features. • The use of pesticides should be avoided. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
Significant Wildlife Habitat	• Provincial Policy Statement (OMMAH 2020)	**Direct Impacts:** • Direct impacts to SWH within the Subject Property have been avoided. • There is some encroachment within confirmed and candidate SWH if the potential future trail connection is constructed. **Indirect Impacts:** • Sedimentation and erosion • Changes to water quality and quantity • Indirect impacts to wildlife associated with noise, dust, and lighting. **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction. • Potential for increased road mortality.	**Direct Impacts:** • Vegetation clearing and grading should be minimized as much as possible, to be determined at the detailed design stage. • Vegetation removal should occur outside of the breeding and nesting season for migratory birds, which occurs from April 1-August 31 and the bat active season, which occurs from April 1-September 30. • Grading and grubbing associated with any future trail within significant natural areas should avoid the hibernation period for snakes, which is generally from late fall until early spring. If tree removals are required in these areas, stumps should be left in place through the hibernation period and removed during the active season to avoid harm to snakes. • Wildlife exclusion fencing should be installed around the perimeter of the construction zone prior to the initiation of construction activities to exclude herpetofauna. Wildlife salvages are recommended during the active season to ensure no wildlife is trapped within the construction zone. • A wildlife culvert is recommended to connect WET-02 and Woodland 1, which will provide a larger movement corridor between habitats within the development area and larger retained natural features within the Subject Property. Culverts should be construction outside of the amphibian breeding season (April to June) and fall migration season (September-October). **Indirect Impacts:** • See Indirect Impact mitigations listed for Wetlands. • A detailed ESC plan should be developed at the detailed design stage. Inspection and maintenance of the installed ESC measures should be completed throughout the course of construction. • Areas of bare soil should be moistened with water during construction activities to suppress dust. Topsoil stockpile locations should be in areas of lesser wind exposure and away from significant habitats and their buffers.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
			• Disturbed areas with exposed soils should be kept to a minimum and re-vegetated with an approved seed mix in a reasonable timeframe in order to stabilize soils and minimize dust. • Daily timing of construction activities should be limited to between 0700 and 1900 to avoid noise-related impacts during construction. • Any lighting equipment associated with construction activities should be turned off following cessation of daily activities or turned away from sensitive natural features. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site. • Road signage should indicate where wildlife crossings are present within the industrial site and alert people to slow down.
Significant Landform	• City of Guelph Official Plan (2022) • Note: Provided for context only as policies not applicable to Subject Property pursuant to OPA 80.	**Direct Impacts:** • The limits of development have been identified to avoid direct impacts to Significant Landform. • The potential future trail connection overlaps with Significant Landform. **Indirect Impacts:** • There will be no indirect impacts to the hydrological or hydrogeological function of the	**Direct Impacts:** • Permeable surfaces such as crushed gravel or permeable pavers are recommended within Significant Landform areas where any future trail encroaches. • Site grading adjacent to Significant Landform will match existing grades. • The limit of grading should be protected by heavy-duty silt fencing to avoid unintended encroachment. **Indirect Impacts** • Graded slopes adjacent to the Significant Landform should be planted/seeded immediately following the creation of final grades. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
		Significant Landform. **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction.	
Locally Significant Wildlife Habitat	• City of Guelph Official Plan (2022) • Note: Provided for context only as policies not applicable to Subject Property pursuant to OPA 80.	**Direct Impacts:** • There are no locally significant habitats proposed for removal within the development footprint, with the exception of the potential future trail block connection (if implemented). **Indirect Impacts:** • Sedimentation and erosion • Changes to water quality and quantity • Indirect impacts to wildlife associated with noise, dust, and lighting. **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction.	**Direct Impacts:** • See Direct Impact mitigations listed for Significant Wildlife Habitat. • The avoidance and/or relocation of locally significant plant species should be explored during the detailed design stage for any future trail. **Indirect Impacts:** • See Indirect Impact mitigations listed for Significant Wildlife Habitat. **Induced Impacts:** • See Induced Impact mitigations listed for Significant Wildlife Habitat.

Natural Heritage Feature	Relevant Policies	Potential Impacts	Recommended Mitigation
		• Potential for increased road mortality.	
Individual Trees	• City of Guelph Tree By-Law 19058 (2010)	**Direct Impacts:** • 1,704 inventoried trees are recommended for removal, which includes isolated trees, hedgerow trees, and those within Woodland 2 outside of the CUP3-2 (#40). • Trees proposed to be retained may be injured as a result of adjacent tree removals. **Indirect Impacts:** • Sedimentation and erosion • Changes to water quality and quantity **Induced Impacts:** • Increased use of natural area by future users of the property and unauthorized trail/pathway construction.	**Direct Impacts:** • Individual trees inventoried that are proposed to be removed shall be compensated for at a 5:1 ratio. Plantings are proposed within buffer and landform areas. • The limit of development should be clearly delineated and Tree Protection Fencing shall be installed at the retained woodland buffers and the limit of construction. Fencing must be inspected by a Certified Arborist prior to construction and maintained during construction. • Any limbs or roots of trees to be retained which are damaged during construction should be pruned using appropriate arboricultural techniques. **Indirect Impacts:** • A detailed ESC plan should be developed at the detailed design stage. Inspection and maintenance of the installed ESC measures should be completed throughout the course of construction. • Areas of bare soil should be moistened with water during construction activities to suppress dust. Topsoil stockpile locations should be in areas of lesser wind exposure and away from significant habitats and their buffers. • Disturbed areas with exposed soils should be kept to a minimum and re-vegetated with an approved seed mix in a reasonable timeframe in order to stabilize soils and minimize dust. • See Indirect Impact mitigations listed for Wetlands. **Induced Impacts:** • Signage should be used to direct community members or other recreational users not to trespass into sensitive natural areas or restoration areas. • Permanent fencing is to be erected around the industrial site.

7.0 Environmental Implementation Report Recommendations

As a condition of a site alteration permit, the City requires that an Environmental Implementation Report (EIR) be prepared and submitted to agency staff for approval. This typically coincides with the detailed design phase. The EIR serves as a summary document to describe how all the conditions of the application decision have been met and any other special requirements that are required to protect the overall natural environment of the area. It is recommended that the EIR for each application phase include the following components:

- A description of how infrastructure servicing and the protection of Natural Heritage System functions have been addressed;
- Specific direction for any other special requirements to support the protection and/or management of a significant natural feature or area (e.g., management prescriptions, etc.);
- Site-specific details for mitigation measures;
- Guidance for all monitoring plans including specific locations, sampling methods, and dates/timing;
- Detailed landscaping that incorporates native species is required to be a part of the detailed design;
- Detailed educational signage and environmental outreach;
- Revised Tree Inventory and Preservation Plans that incorporate more detailed grading plans, if required;
- Specific requirements which need to be addressed for a Tree Cutting Permit (e.g., landowner permission letters for boundary trees);
- Determination of exact locations of wildlife culverts within the industrial site;
- A review of the final development details (e.g., final stormwater management report, detailed grading plans, sediment and erosion control details, etc.) and an updated impact assessment, where necessary.

8.0 Summary and Conclusions

Natural Resource Solutions Inc. was retained in 2022 by Industrial Equities Guelph Limited Partnership to completed an Environmental Impact Study and Tree Inventory and Preservation Plan to address potential impacts associated with the industrial development at Southgate Business Park (384 Crawley Road). The intent of this report is to characterize important natural features, recommend appropriate buffers, and identify potential impacts associated with the proposed development. This EIS report is for Phase 1 of development, however, it considers the entire Subject Property because of the proposed development phasing and pre-construction works to be performed within the Subject Property as part of Phase 1.

City of Guelph Official Plan Amendment 80 was approved by the Ontario Ministry of Municipal Affairs and Housing on April 11, 2023 and introduced modifications to policy that pertain expressly to the proposed development on the Subject Property. Most notably, many of the Natural Heritage System policies of the City's current consolidated Official Plan do not apply to the Subject Property. The Subject Property contains Significant Woodlands, Provincially Significant Wetlands, Other Wetlands, Significant Landform, Significant Wildlife Habitat, and candidate habitats for Species at Risk under policies of the City of Guelph Official Plan. While no longer subject to policies under the City of Guelph Official Plan, these natural features were assessed based on provincial policy and Grand River Conservation Authority regulations, and the layout of the proposed development considered these features.

Direct impacts associated with this undertaking include the removal of Significant Woodland and isolated trees/hedgerows. Within these areas, candidate Species at Risk habitats have been identified, which will require additional correspondence with MECP to understand mitigation and permitting requirements. To address these impacts, a Tree Inventory and Preservation Plan has been prepared that provides recommendations for tree protection, mitigation, and compensation. An Ecological Restoration Plan has also been prepared that provides a net ecological gain in the long term, creating a more robust, connected, and resilient Natural Heritage System within the Subject Property and broader Study Area.

Indirect impacts to water quality and quantity are addressed in the Hydrogeological Report prepared by GM BluePlan (2023). Impacts to wetlands are not anticipated. An adaptive management approach is recommended to include monitoring to ensure impacts to wetlands do not occur. This report also includes sediment and erosion controls to avoid indirect impacts to the natural features and will be finalized during the detailed design stage of each phase.

This report provides recommendations to minimize impacts to the adjacent natural heritage features and ensure that mitigation measures are installed and functioning properly. These include recommendations to mitigate direct, indirect, and induced impacts that may arise during the proposed development, as well as a monitoring program to ensure impacts to important natural features are not realized. Consistent with the Provincial Policy Statement (OMMAH 2020, no residual negative impacts to Significant Woodlands, Significant Wetlands, or Significant Wildlife Habitat, or their ecological functions, are anticipated as a result of the proposed development.

9.0 References

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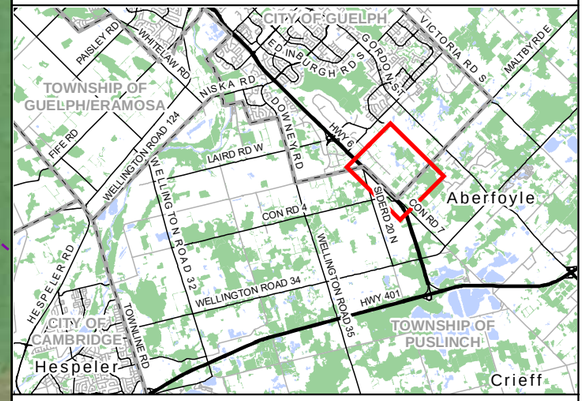
MAPS

Map 1

NewCold Guelph: Phase 1

Study Area and Natural Features



Legend

- Study Area
- Subject Property
- Phase 1 Development
- City of Guelph Boundary
- Utility Line
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse (MNRF)
- Provincially Significant Wetland (PSW) (MNRF)
- Unevaluated Wetland (MNRF)
- Regulated Wetland (GRCA)
- Wooded Area (MNRF)
- Regulation Limit (GRCA)
- Floodplain (GRCA)
- Subwatershed (Wood 2022) (approximate)
- Growth Plan Natural Heritage System

Natural Heritage System (City of Guelph 2022)

- Significant Natural
- Ecological Linkages
- Restoration
- Amphibian Crossings
- Deer Crossings
- Other Wildlife Crossing Opportunities

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Project: 2778
Date: April 22, 2023

NAD83 - UTM Zone 17
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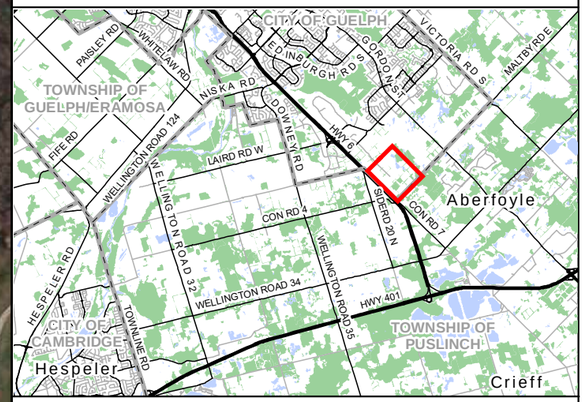
Map 2

NewCold Guelph: Phase 1

Monitoring Stations



Legend

- Subject Property

NRSI (2022) Surveys*

- Winter Raptor Nesting Transect
- Drift Fencing (pitfall traps every 10m on either side)
- General Wildlife Movement Camera
- Anuran Call Survey Station
- Breeding Bird Monitoring Station (BMB)
- Marsh Breeding Bird Monitoring Station (MBB)
- Common Nighthawk Monitoring Station (CONI)
- Snake Cover Board (SNK)
- Turtle Basking Survey Pond (BSK)

*See Maps 1 & 2 of Appendix VI of the EIS for bat habitat assessments and acoustic monitoring stations

Aboud & Associates (2020) Surveys

- Study Area
- Raptor Nesting Transects
- Winter Raptor Transect
- Amphibian Survey
- Breeding Bird Point Count (BB)
- Bat Plot
- Pitfall Trap
- Wildlife Camera

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Project: 2778
Date: February 16, 2023

NAD83 - UTM Zone 17
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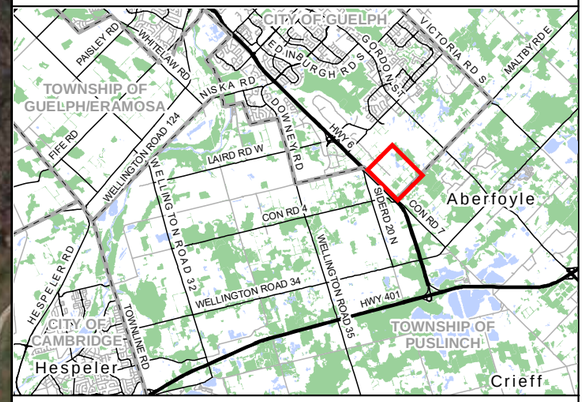
Map 3

NewCold Guelph: Phase 1

Existing Conditions



Legend

- Subject Property
- Butternut Hybrid
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Wetland
- Woodland
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp Type
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Project: 2778
Date: February 17, 2023

NAD83 - UTM Zone 17
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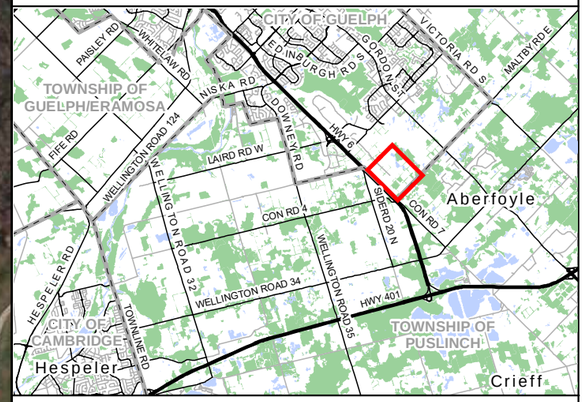
Map 4

NewCold Guelph: Phase 1

Significant Species Observations



Legend

- Subject Property
- Ecological Land Classification (ELC)
- Wetland
- Woodland
- Potential Raptor Nest
- **Species at Risk (SAR) Observations***
  - 1: Eastern Meadowlark
- / **Species of Conservation Concern (SCC) Observations**
  - 1: Bristly Buttercup
  - 2: Eastern Wood-Pewee
  - 3: Snapping Turtle
  - 4: Northern Ribbonsnake
  - 5: Lemon Cuckoo Bumble Bee
  - 6: Barn Swallow
- / **Locally Significant Species Observations**
  - 1: Marsh Horsetail
  - 2: Black Maple
  - 3: Heart-leaved Aster
  - 4: Ontario Aster
  - 5: Eastern Buttonbush
  - 6: Common Hackberry
  - 7: Hop Sedge
  - 8: Boreal Mannagrass
  - 9: Red-bellied Woodpecker
  - 10: Eastern Kingbird
  - 11: Baltimore Oriole
  - 12: Pine Warbler
  - 13: American Redstart
  - 14: Unisexual Ambystoma
  - 15: Red-spotted Newt
  - 16: Dekay's Brownsnake
  - 17: Red-bellied Snake
  - 18: Delaware Skipper

*Refer to the Bat Acoustic Report in Appendix VI of the EIS for details on bat SAR within the Subject Property

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Project: 2778
Date: March 17, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

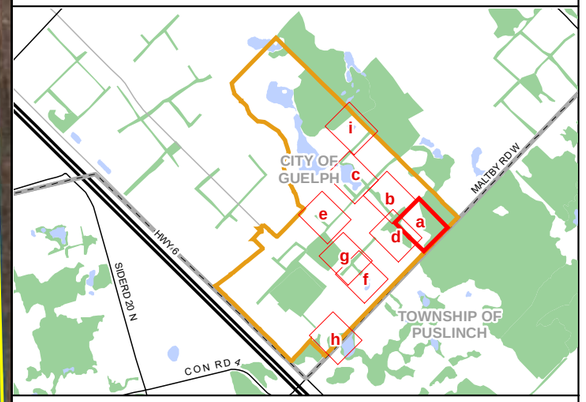
0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map4_SignificantSpeciesObs_8K_2023_03_17_LEH.mxd

Map 5a

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Unisexual *Ambystoma*

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Wood Frog (*Lithobates sylvaticus*)

Mammal Observations

- Shrew sp.

- Ecological Land Classification (ELC)
- (CUT1) Mineral Cultural Thicket Ecosite
- (CUW1) Mineral Cultural Woodland Ecosite
- (FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
- (SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
- (SWD4-1) Willow Mineral Deciduous Swamp Type

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NAD83 - UTM Zone 17
Size: 11x17"
1:600

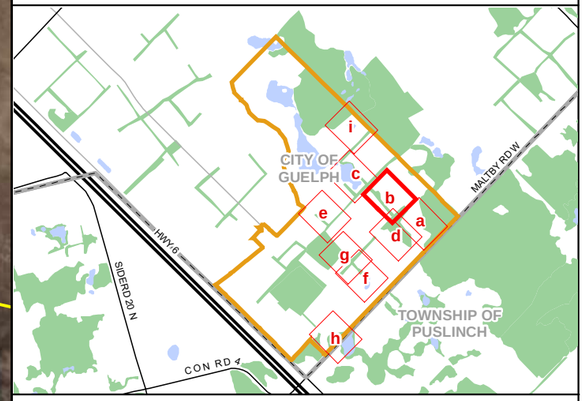
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5b

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Red-spotted Newt (*Notophthalmus viridescens*)
- Unisexual *Ambystoma*

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Northern Leopard Frog (*Lithobates pipiens*)
- Wood Frog (*Lithobates sylvaticus*)

- Ecological Land Classification (ELC)
- (CUW1) Mineral Cultural Woodland Ecosite
- (FOD4) Dry - Fresh Deciduous Forest Ecosite
- (H) Hedgerow
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
- (SWD4-1) Willow Mineral Deciduous Swamp Type

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NAD83 - UTM Zone 17
Size: 11x17"
1:600

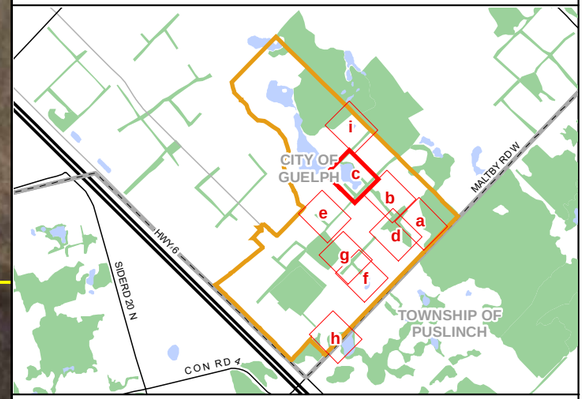
0 10 20 30 Metres

N

Map 5c

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Red-spotted Newt (*Notophthalmus viridescens*)
- Unisexual *Ambystoma*

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Northern Leopard Frog (*Lithobates pipiens*)
- Spring Peeper (*Pseudacris crucifer*)
- Wood Frog (*Lithobates sylvaticus*)

Mammal Observations

- Shrew sp.

- Ecological Land Classification (ELC)
- (CUS1) Mineral Cultural Savannah Ecosite
- (CUT1) Mineral Cultural Thicket Ecosite
- (H) Hedgerow
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
- (MAS3-10) Forb Organic Shallow Marsh Type
- (SWT2-2) Willow Mineral Thicket Swamp Type
- (SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Date: February 16, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:600

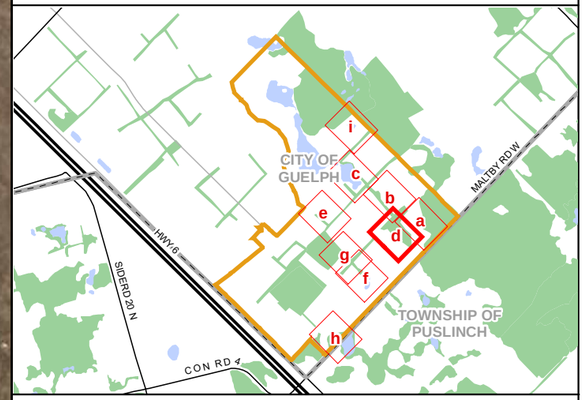
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5d

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap
- Ecological Land Classification (ELC)
- (FOD4) Dry - Fresh Deciduous Forest Ecosite
- (H) Hedgerow
- (SWD4-1) Willow Mineral Deciduous Swamp Type

Salamander Observations

- Unisexual *Ambystoma*

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Northern Leopard Frog (*Lithobates pipiens*)
- Wood Frog (*Lithobates sylvaticus*)

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NAD83 - UTM Zone 17
Size: 11x17"
1:600

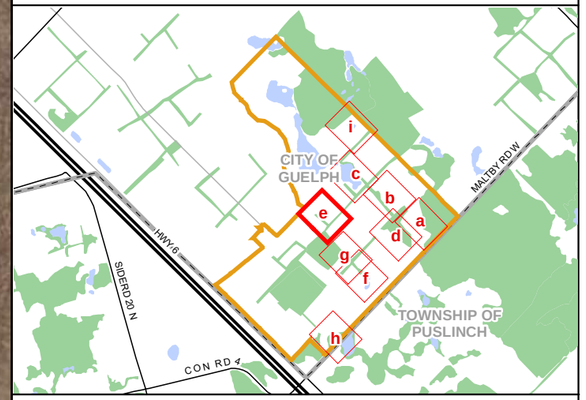
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5e

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Red-spotted Newt (*Notophthalmus viridescens*)

- Ecological Land Classification (ELC)
- (CUM) Cultural Meadow
- (CUT1) Mineral Cultural Thicket Ecosite
- (FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
- (H) Hedgerow

H (31)
165
166
170
169
168
17
167
CUT1 (21)
161
162
1
16
164
163
H (32)
CUM (49)
Woodland 1
FOD6-5 (33)

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Date: February 16, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:600

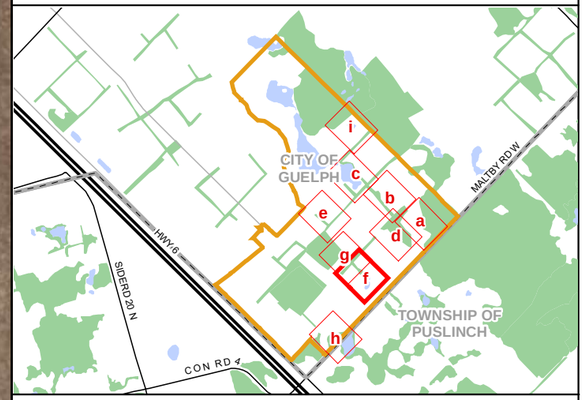
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5f

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Unisexual *Ambystoma*

Anuran Observations

- Green Frog (*Lithobates clamitans*)
- Wood Frog (*Lithobates sylvaticus*)

- Ecological Land Classification (ELC)
- (H) Hedgerow
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
- (SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Date: February 16, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:600

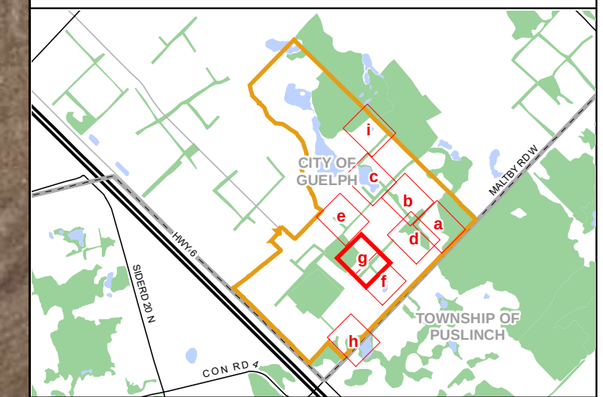
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5g

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Wood Frog (*Lithobates sylvaticus*)

- Ecological Land Classification (ELC)

(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type

(H) Hedgerow

(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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NAD83 - UTM Zone 17
Size: 11x17"
1:600

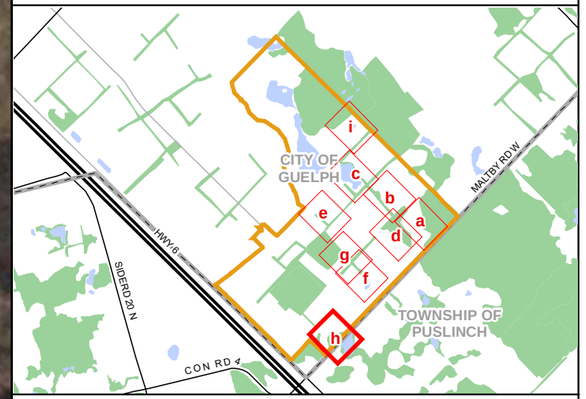
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5h

NewCold Guelph: Phase 1

Pitfall Trap Observations



Legend

- Subject Property
- Wetland
- Drift Fencing (approximate location)
- Pitfall Trap
- Ecological Land Classification (ELC)
- (CUP3) Coniferous Plantation
- (H) Hedgerow
- (SWD3-3) Swamp Maple Mineral Deciduous Swamp Type

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Wood Frog (*Lithobates sylvaticus*)

Mammal Observations

- Shrew sp.

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Date: February 16, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:600

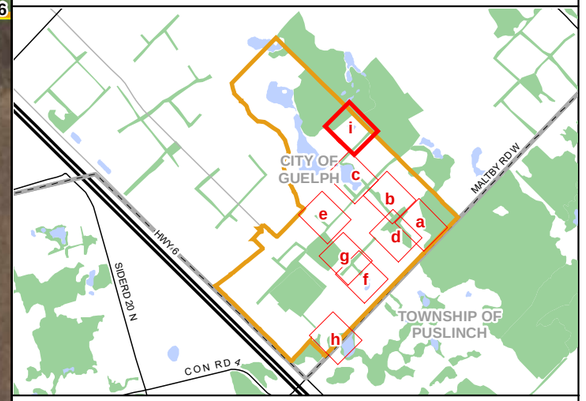
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 5i

NewCold Guelph: Phase 1

Pitfall Trap Observations



CUP3-2

FOD5-6

MAM2-2 (10)

WET-09

Woodland 5

FOD5-1 (11)

H (9)

CUT1 (19)

296 298 300 30 302 304 306
295 297 299 301 303 305
308 307
310 309
312 311
31
314 313
316 315
318 317

Legend

- Subject Property
- Wetland
- Woodland
- Drift Fencing (approximate location)
- Pitfall Trap

Salamander Observations

- Red-spotted Newt (*Notophthalmus viridescens*)
- Unisexual *Ambystoma*

Anuran Observations

- American Toad (*Anaxyrus americanus*)
- Gray Treefrog (*Dryophytes versicolor*)
- Spring Peeper (*Pseudacris crucifer*)
- Wood Frog (*Lithobates sylvaticus*)
- Anuran sp.

Mammal Observations

- Shrew sp.

- Ecological Land Classification (ELC)

(CUP3-2) White Pine Coniferous Plantation Type

(CUT1) Mineral Cultural Thicket Ecosite

(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type

(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type

(H) Hedgerow

(MAM2) Mineral Meadow Marsh Ecosite

(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

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Date: February 16, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:600

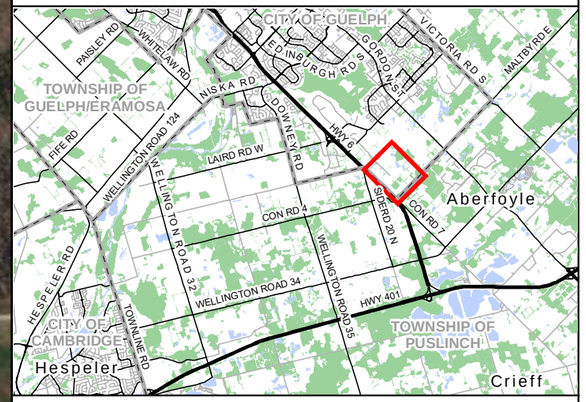
0 10 20 30 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map5_PitfallTrapObs_8K_2023_02_16_LEH.mxd

Map 6

NewCold Guelph: Phase 1

Turtle Observations



Legend

- Subject Property
- Wetland
- Painted Turtle
- Snapping Turtle
- Utility Line
- Permanent Watercourse
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS1) Bedrock Shallow Marsh Ecosite
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp Type
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Size: 11x17"
1:4,500

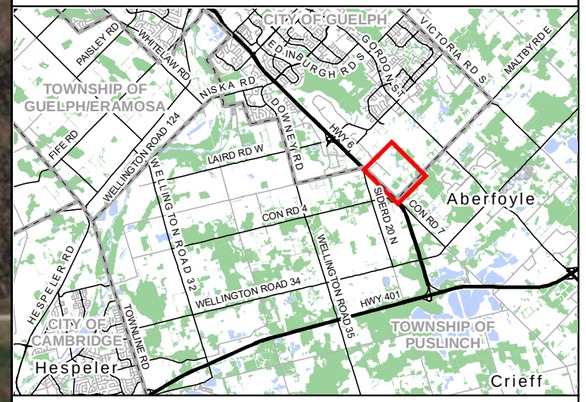
0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map6_TurtleObservations_8K_2023_02_17_LEH.mxd

Map 7

NewCold Guelph: Phase 1

Snake Observations



Legend

- Subject Property
- Snake Cover Board (SNK)
- Wetland
- Woodland
- Utility Line
- Permanent Watercourse

Snake Observations (2022)

- Dekay's Brownsnake
- Eastern Gartersnake
- Eastern Milksnake
- Northern Ribbonsnake
- Red-bellied Snake

- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS1) Bedrock Shallow Marsh Ecosite
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp Type
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

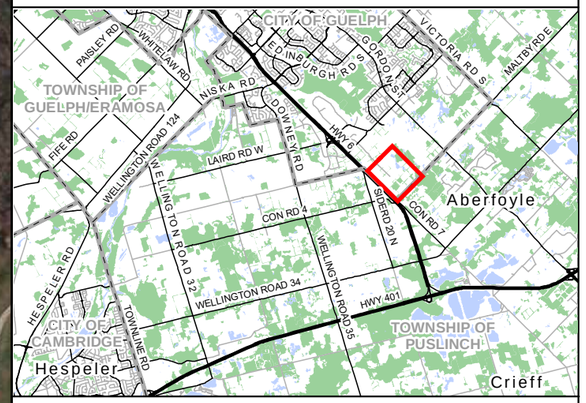
0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map7_TurtleObservations_8K_2023_03_17_LEH.mxd

Map 8

NewCold Guelph: Phase 1

Winter Wildlife and Wildlife Camera Movement



Legend

- Subject Property
- Wetland
- Woodland
- High Density Winter Wildlife Track[1]
- Other Winter Wildlife Track[1]
- General Wildlife Movement Camera[2]
- Denotes proportional wildlife observations (excludes birds; approximate number of observations indicated on map)
- Ecological Land Classification (ELC)
- (CUM) Cultural Meadow
- (CUM1) Mineral Cultural Meadow Ecosite
- (CUP3) Coniferous Plantation
- (CUP3-2) White Pine Coniferous Plantation Type
- (CUS1) Mineral Cultural Savannah Ecosite
- (CUT1) Mineral Cultural Thicket Ecosite
- (CUW1) Mineral Cultural Woodland Ecosite
- (FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
- (FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
- (FOD4) Dry - Fresh Deciduous Forest Ecosite
- (FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
- (FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
- (FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
- (FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
- (H) Hedgerow
- (MAM2) Mineral Meadow Marsh Ecosite
- (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
- (MAS3-10) Forb Organic Shallow Marsh Type
- (MAS3-2) Bulrush Organic Shallow Marsh Type
- (SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
- (SWD4-1) Willow Mineral Deciduous Swamp Type
- (SWT2-2) Willow Mineral Thicket Swamp Type
- (SWT2-4) Buttonbush Mineral Thicket Swamp Type
- (SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

[1]Aboud and Associates did not map wildlife movement patterns within their study area.
[2]CAM-003 was decomissioned on June 22, 2022.

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NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

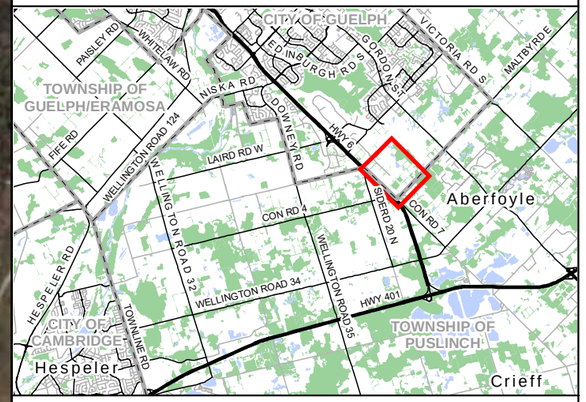
0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map8_WildlifeMovement_8K_2023_02_17_LEH.mxd

Map 9

NewCold Guelph: Phase 1

Significant Natural Feature Boundaries



Legend

- Subject Property
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)
- Significant Landform Boundary as approved by the City on October 12, 2022 (1080 Southgate Dr)
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Landform
- Provincially Significant Wetland (PSW)
- Other Wetland (Non-PSW)
- Significant Woodland
- Existing Interior Woodland Habitat (measured 100m from woodland edge and excluding small gaps)
- Utility Line
- Permanent Watercourse
- Ecological Land Classification (ELC)

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Imagery: First Base Solutions Inc. (2022).

Project: 2778
Date: April 13, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:5,000

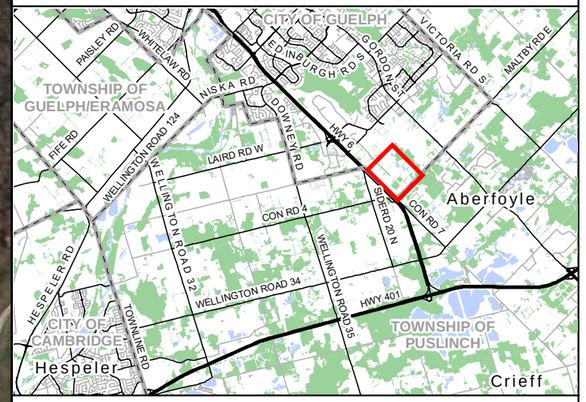
0 40 80 120 160 200 240 280 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map9_SignificantFeatureBoundaries_8K_2023_04_13_LEH.mxd

Map 10

NewCold Guelph: Phase 1

Species at Risk Habitat



Legend

- Subject Property
- Ecological Land Classification (ELC)
- Wetland
- Woodland
- Rockpile
- Slabpile
- High Quality Bat Habitat (≥10 roost trees/ha)

Eastern Small-footed Myotis Habitat

- Candidate flyway/foraging

Little Brown Myotis Habitat

- Candidate flyway/foraging
- Candidate male/non-reproductive female roosting
- Candidate male/non-reproductive female roosting & maternity roosting

Candidate Bat SAR Roost Trees[1]

- Aboud & Associates (2020)
- NRSI (May 2022)
- NRSI (November/December 2022)

[1]Some habitats had full area searches while others had plot-based assessments. Refer to the Bat Acoustic Report in Appendix VI of the EIS.

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Project: 2778
Date: March 17, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

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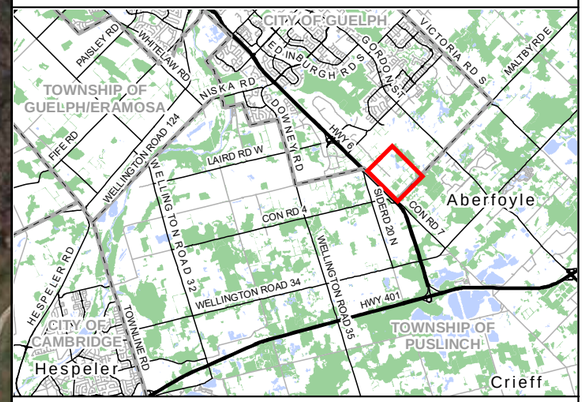
Map 11

NewCold Guelph: Phase 1

Candidate Significant Wildlife Habitat



Legend

- Subject Property
- Wetland
- Woodland
- Rockpile
- Ecological Land Classification (ELC)
- Recommended Wildlife Culvert Location

Natural Heritage System (City of Guelph 2022)

- Ecological Linkages
- Amphibian Crossings
- Deer Crossings
- Other Wildlife Crossing Opportunities

Candidate Significant Wildlife Habitat

- Bat Maternity Colonies
- Reptile Hibernaculum

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Project: 2778
Date: April 13, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

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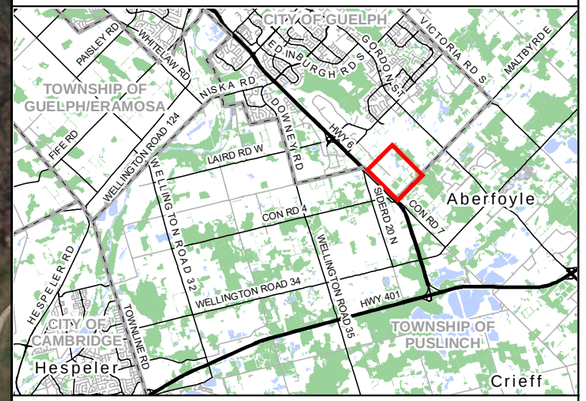
Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map11_CandidateSWH_8K_2023_04_13_LEH.mxd

Map 12

NewCold Guelph: Phase 1

Confirmed Significant Wildlife Habitat



Legend

- Subject Property
- Wetland
- Woodland
- Ecological Land Classification (ELC)

Confirmed Significant Wildlife Habitat

- Amphibian Breeding Habitat (Wetland)
- Amphibian Breeding Habitat (Woodland)
- Special Concern/Rare Wildlife Species: Northern Ribbonsnake
- Special Concern/Rare Wildlife Species: Snapping Turtle
- Special Concern/Rare Wildlife Species: Bristly Buttercup
- Special Concern/Rare Wildlife Species: Eastern Wood-Pewee
- Turtle Wintering Area
- Rare Vegetation Community: SWT2-4

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Project: 2778
Date: April 13, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

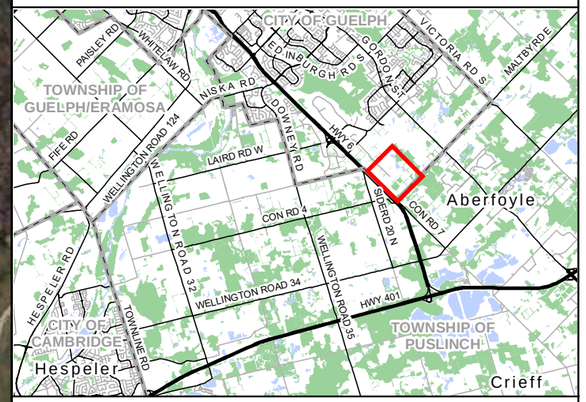
0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map12_ConfirmedSWH_8K_2023_04_13_LEH.mxd

Map 13

NewCold Guelph: Phase 1

Locally Significant Species Habitat



Legend

- Subject Property
- Locally Significant Species Habitat

1: Marsh Horsetail
2: Black Maple
3: Heart-leaved Aster
4: Ontario Aster
5: Eastern Buttonbush
7: Hop Sedge
8: Boreal Mannagrass
9: Red-bellied Woodpecker
10: Eastern Kingbird
11: Baltimore Oriole
13: American Redstart
14: Unisexual Ambystoma
15: Red-spotted Newt
16: Dekay's Brownsnake

- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp Type
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Project: 2778
Date: April 13, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

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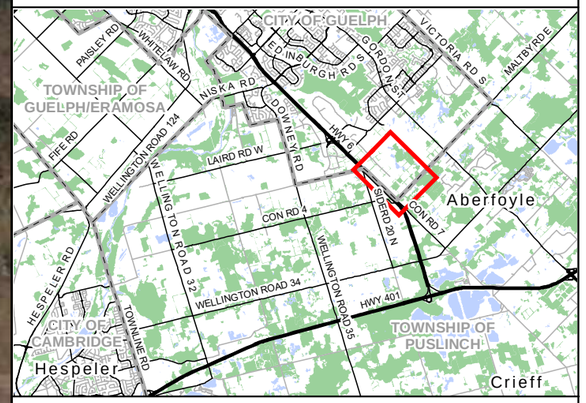
Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map13_LocallySigHabitat_8K_2023_04_13_LEH.mxd

Map 14

NewCold Guelph: Phase 1

Proposed Natural Heritage System



Legend

- Subject Property
- Phase 1 Development
- Potential Future Trail Block
- Utility Line
- Permanent Watercourse
- Significant Landform
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Wetland Buffer (30m)
- Expanded Wetland Buffer (variable)
- Reduced Wetland Buffer (variable)
- Significant Woodland Buffer (10m)

Proposed Natural Heritage System

- Significant Natural
- Ecological Linkages
- Amphibian Crossings
- Deer Crossings
- Other Wildlife Crossing Opportunities
- Recommended Wildlife Culvert Location

Proposed Plantings

- Woodland Compensation Area (5.49ha)
- Buffer/Landform Planting (5.55ha)
- Ecological Linkage Planting (0.42ha)
- Interior Woodland Habitat to be Created (3.39ha)

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Imagery: First Base Solutions Inc. (2022).

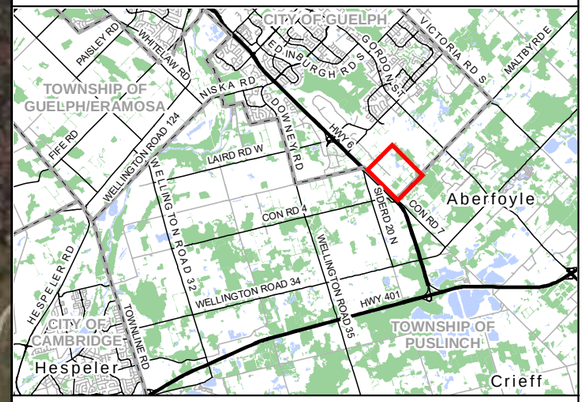
Project: 2778 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 11x17" **1:6,000**

0 100 200 300 Metres

Map 15

NewCold Guelph: Phase 1

Proposed Phase 1 Development Activities



Legend

- Subject Property
- Phase 1 Development
- Phase 1-4 Pre-grading
- Vegetation Removals
- Potential Future Trail Block
- Recommended Wildlife Culvert Location
- Proposed Development
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Wetland Buffer (30m)
- Expanded Wetland Buffer (variable)
- Reduced Wetland Buffer (variable)
- Significant Woodland Buffer (10m)
- Wetland
- Woodland
- Proposed Landscaped Areas (10.54ha)

Ecological Restoration

- Woodland Compensation Area (5.49ha)
- Buffer/Landform Planting (5.55ha)
- Ecological Linkage Planting (0.42ha)

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Project: 2778
Date: April 22, 2023

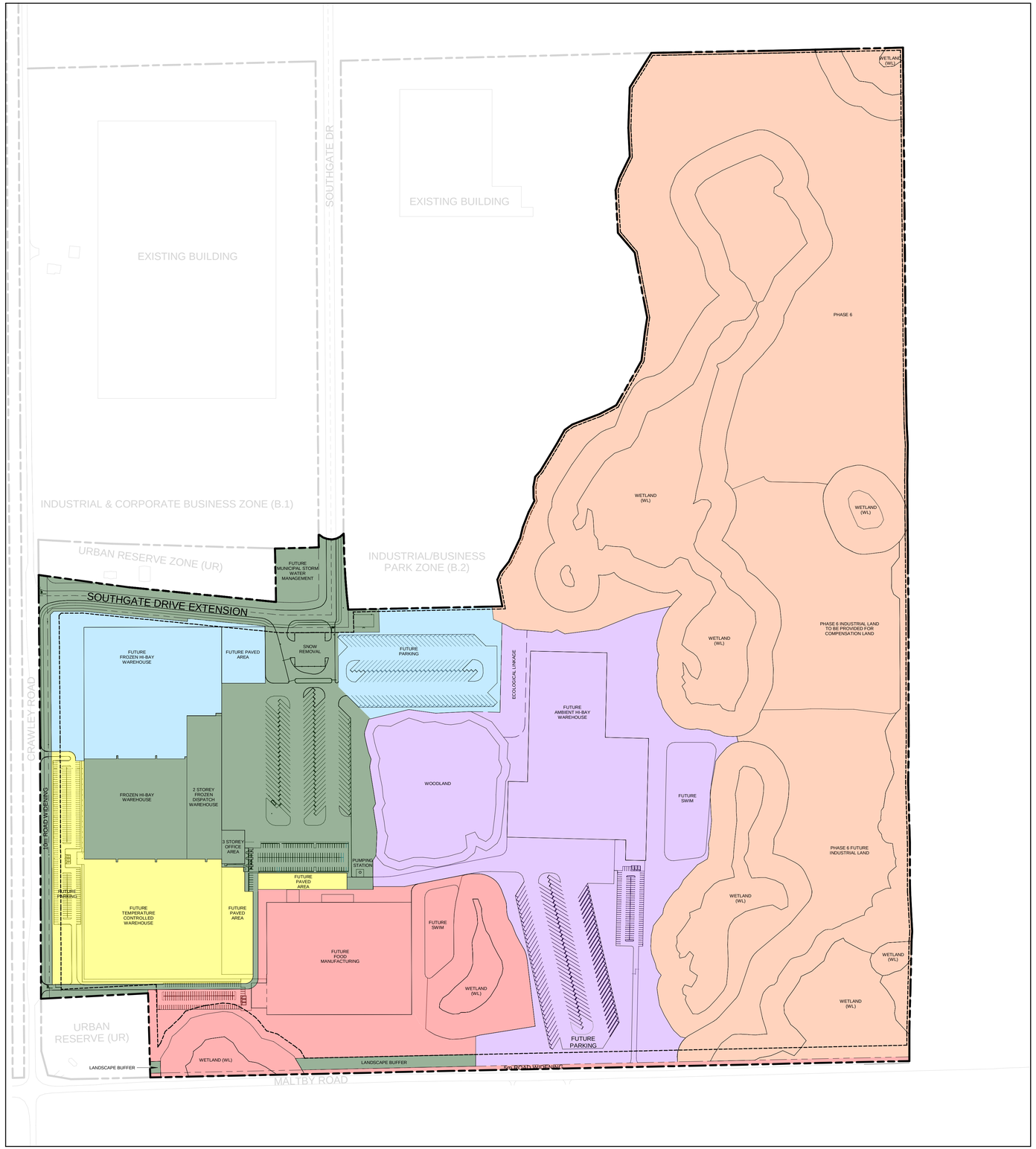
NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map15_ProposedDev_8K_2023_04_22_LEH.mxd

Appendix I
Proposed Phasing Plan (AECOM)

Project Management Initials:
Designer: Designer Checked: Checker Approved: Approver ARCH D 24" x 36"



1 **PHASING PLAN**
Scale: 1 : 2500

SITE LEGEND

- EXISTING PROPERTY LINE
- SETBACK LINE
- FUTURE PROPERTY LINE

PHASING LEGEND

- PHASE 1
- PHASE 3
- PHASE 5
- PHASE 2
- PHASE 4
- PHASE 6

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

AECOM Canada Architects Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
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REGISTRATION

ISSUE/REVISION

1	04/26/2023	ISSUED FOR SPA PHASE 1 REV.
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

PHASING PLAN

SHEET NUMBER

A-101

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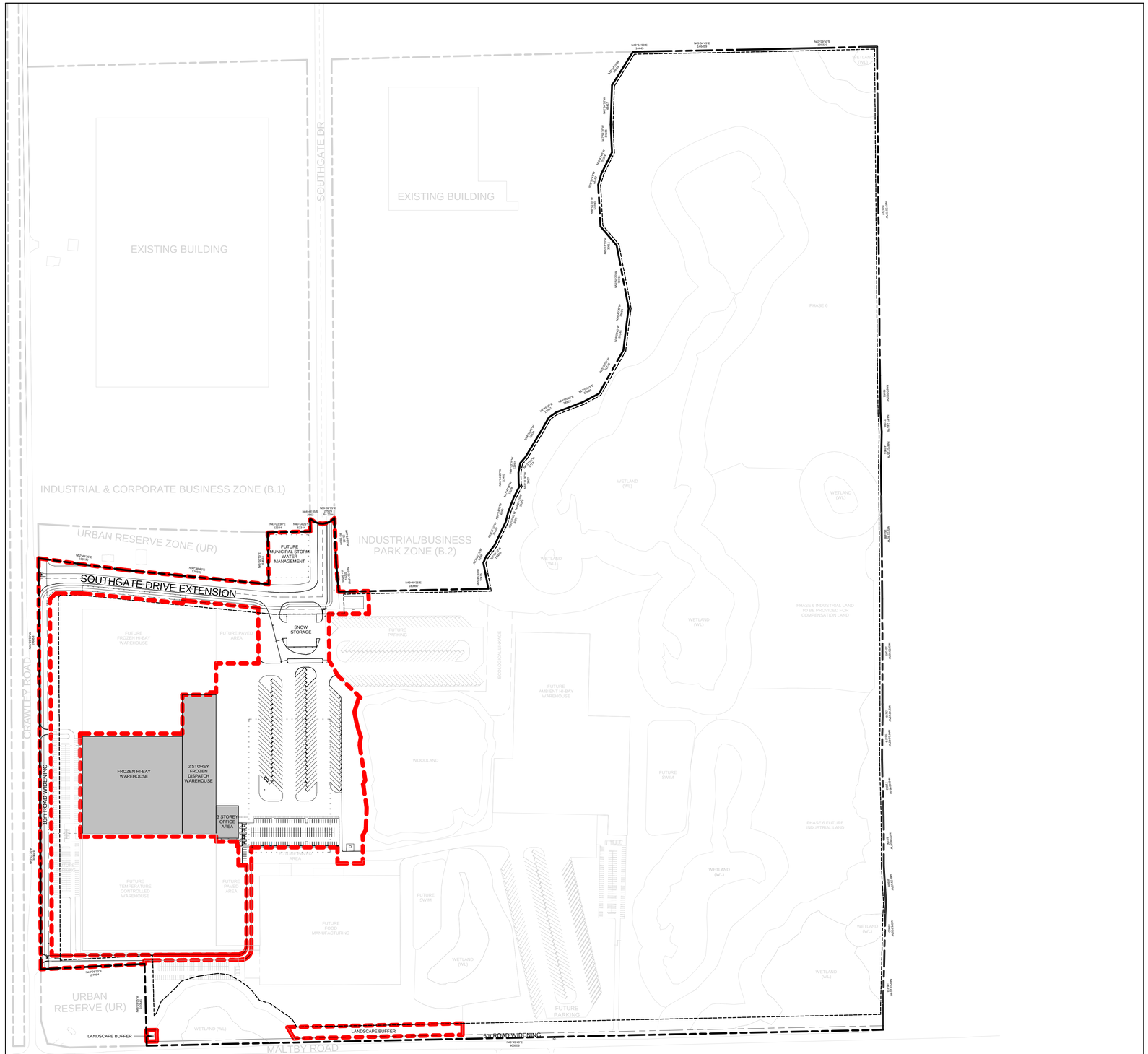

1 **KEY PLAN - DELINEATING PHASE 1**

Scale: 1 : 2500

SITE LEGEND

- EXISTING PROPERTY LINE
- EXTENT OF PHASE 1
- FUTURE PROPERTY LINE
- SETBACK LINE
- CATCHMENT AREAS (SEE CIVIL)
- LANDSCAPING (SEE LANDSCAPE)
- PRIMARY ENTRANCE DOOR (FAAP LOCATION)
- EXIT
- HYD — PROPOSED FIRE HYDRANT (SEE CIVIL)
- EX. HYD — EXISTING FIRE HYDRANT (SEE CIVIL)
- EX. HP — EXISTING HYDRO POLE (SEE CIVIL)
- R. HP — HYDRO POLE TO BE RELOCATED (SEE CIVIL)
- A/G H — ABOVE GROUND HYDRO (SEE CIVIL)
- EXTERIOR LIGHTING (SEE ELECTRICAL)
- WOOD FENCING (SEE LANDSCAPE)
- BOLLARD (SEE LANDSCAPE)

ZONING COMPLIANCE MATRIX - B.3-11 BUSINESS DISTRICT

	BY-LAW REQUIREMENT	PROVIDED	CONFORMS Y/N
MIN. LOT AREA	-	-	-
MIN. LOT FRONTAGE	30m	42m	YES
MAX. DENSITY (UNITS/ha.)	-	-	-
MIN. FRONT YARD IN ACCORDANCE WITH SECTION 7 TABLE 7.3	6m	6m	YES
MIN. EXTERIOR SIDE YARD IN ACCORDANCE WITH SECTION 7 TABLE 7.3 OR PART 11 7.3.3.10.4.2 AND 7.3.3.11.3.2	14m if abutting Maltby Rd	14m when abutting Maltby Rd	YES
MINIMUM SIDE YARD IN ACCORDANCE WITH SECTION 7 7.3.1 & TABLE 7.3	Table 7: One-half the Building Height to a maximum of 9m, but not less than 3m or, 7.3.1.: Abuts a Wetland, Park Zone, or Urban Reserve, greater of 10m or one-half the building height	3m or when abuts Wetland, Park Zone, or Urban Reserve 10m or one-half the building height.	YES
MINIMUM REAR YARD IN ACCORDANCE WITH SECTION 7 7.3.1 & TABLE 7.3	Table 7: 6m or, 7.3.1.: Abuts a Wetland, Park Zone, or Urban Reserve, greater of 10m or one-half the building height	10m or one-half the building height (Entire Rear Yard abuts Wetland or Park Zone)	YES
MAXIMUM BUILDING HEIGHT IN ACCORDANCE WITH SECTIONS 4.16, 4.18 & D.A.M. NO. 68	20m	46m	NO
MINIMUM DISTANCE BETWEEN BUILDINGS IN ACCORDANCE WITH SECTION 5.4.2.3	20m	>20m	YES
MINIMUM COMMON AMENITY AREA IN ACCORDANCE WITH SECTION 5.4.2.4	N/A	N/A	N/A
MINIMUM LANDSCAPE SPACE	20m	-	-
OFF STREET PARKING IN ACCORDANCE WITH SECTION 4	WAREHOUSE: 1/200m^2 = 162 SPACES	163	YES
BUFFER STRIPS	MINIMUM OF 14m IN WIDTH AND 2m-HIGH LANDSCAPED	-	YES
ACCESSORY BUILDINGS OR STRUCTURES IN ACCORDANCE WITH SECTION 4.5	N/A	N/A	N/A
GARBAGE, REFUSE STORAGE AND COMPOSTERS IN ACCORDANCE WITH SECTION 4.9	-	4.9.2	YES
FLOOR SPACE INDEX (F.S.I.)	N/A	N/A	N/A
FENCES: FRONT, SIDE OR EXTERIOR SIDE YARD	-	-	YES
MIN. GFA (GROUND FLOOR AREA) WITH SECTION 7.3.5	464.5m2	32,222m2	YES
PERMITTED USES SECTIONS 7.1.2, 7.3.3.10.1, & 7.3.3.11.1	MANUFACTURING WAREHOUSE OFFICE	PROVIDED	YES

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

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I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE PLAN

SHEET NUMBER

A-102

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Project Management Initials:
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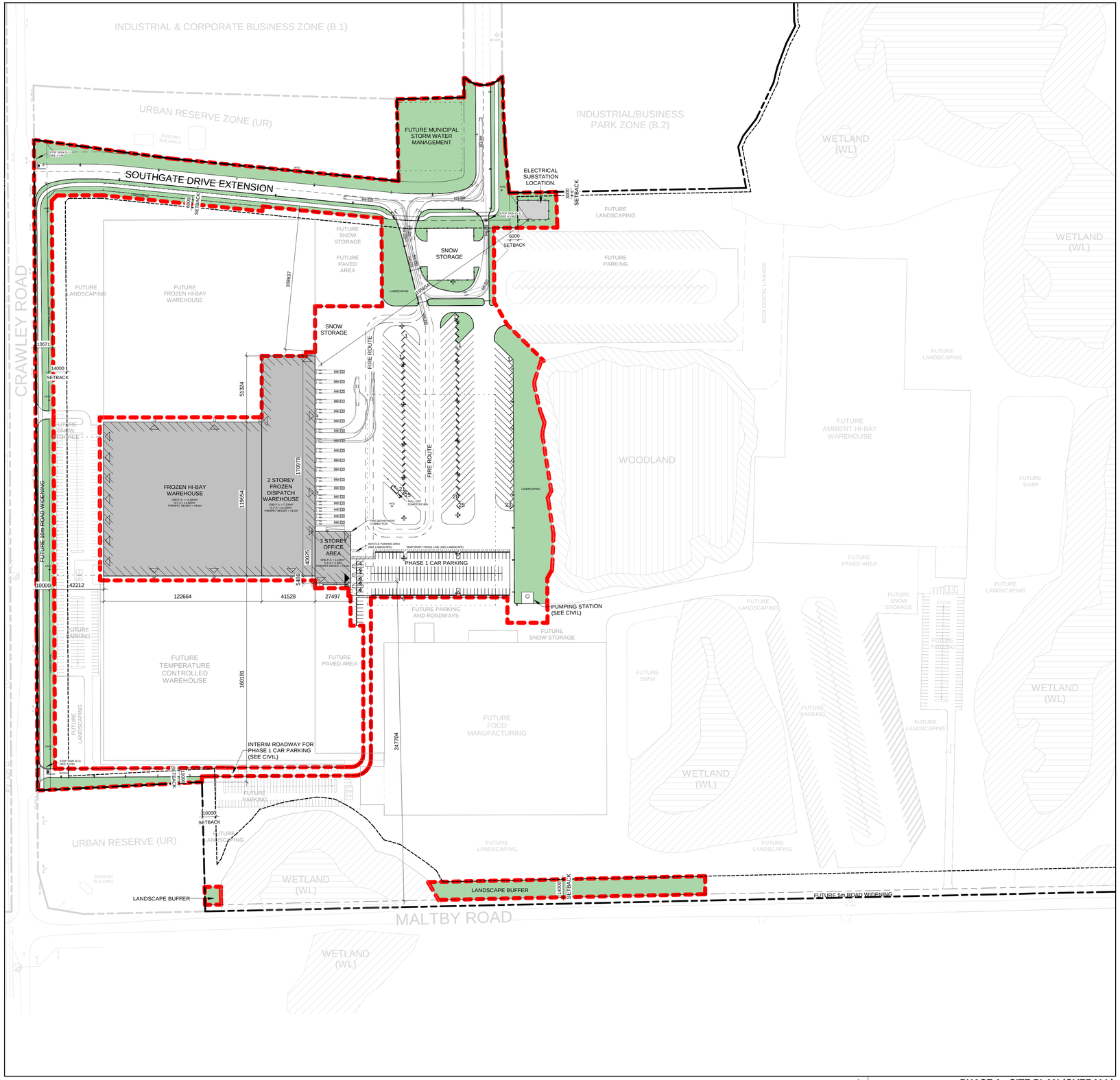


SITE LEGEND

EXISTING PROPERTY LINE	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
CATCHMENT AREAS (SEE CIVIL)	ABOVE GROUND HYDRO (SEE CIVIL)
LANDSCAPING (SEE LANDSCAPE)	EXTERIOR LIGHTING (SEE ELECTRICAL)
PRIMARY ENTRANCE DOOR (FAAP LOCATION)	WOOD FENCING (SEE LANDSCAPE)
EXIT	BOLLARD (SEE LANDSCAPE)

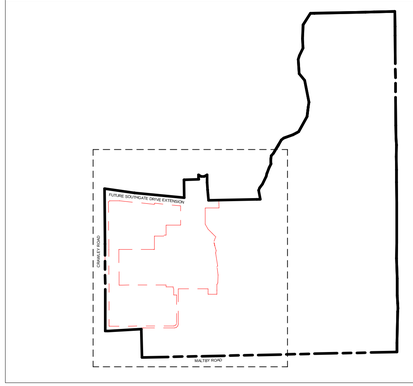
PARKING STATISTICS

	BUILDING TYPE	BUILDING G.F.A. m²	BYLAW PARKING RATE	PARKING SPACES REQUIRED	PARKING SPACES PROVIDED
PHASE 1	WAREHOUSE	32,222	1 PARKING / 200 m² G.F.A.	162	163
TRUCK PARKING	WHOLE SITE	N/A	N/A	N/A	123

PHASE 1 BUILDING INFORMATION

	BUILDING AREA GND.F.A (m²)	BUILDING G.F.A (m²)	BUILDING HEIGHT (m)	STOREYS
FROZEN WAREHOUSE BUILDING	22,902	32,222	42*	3

SITE KEY PLAN



1 PHASE 1 - SITE PLAN (OVERALL)
Scale: 1 : 1500

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

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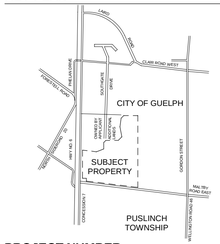
KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SITE PLAN

SHEET NUMBER

A-103

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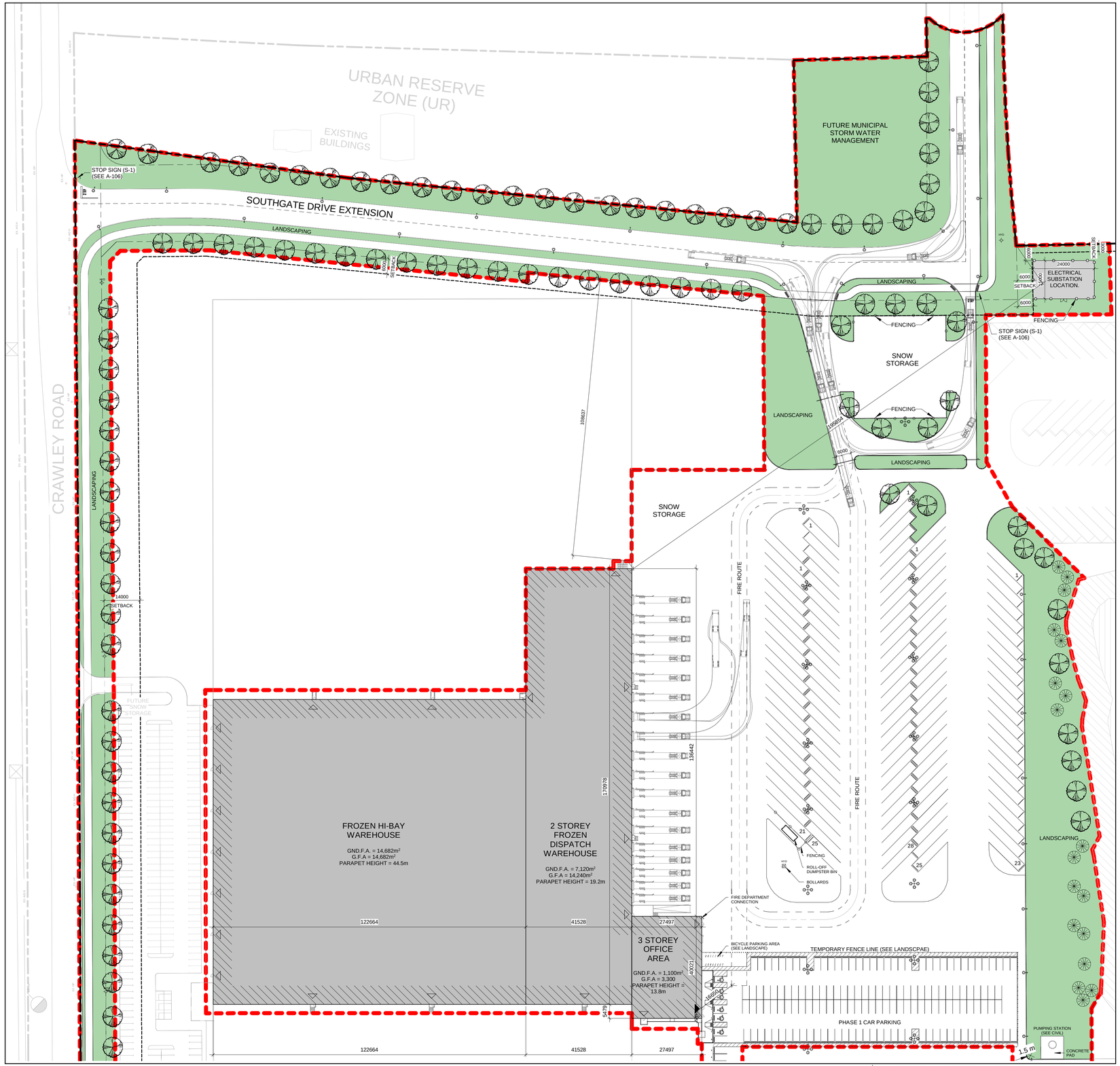


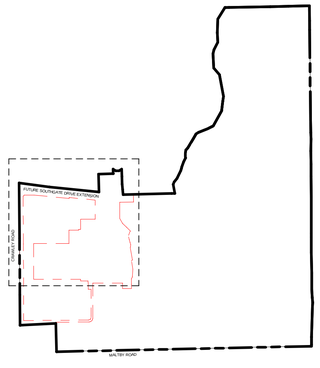
SEE SHEET A-109

1 PHASE 1 - SITE PLAN (BUILDING AND PARKING)
Scale: 1 : 750

SITE LEGEND

- EXISTING PROPERTY LINE
- EXTENT OF PHASE 1
- FUTURE PROPERTY LINE
- SETBACK LINE
- CATCHMENT AREAS (SEE CIVIL)
- LANDSCAPING (SEE LANDSCAPE)
- PRIMARY ENTRANCE DOOR (FAAP LOCATION)
- EXIT
- HYD — PROPOSED FIRE HYDRANT (SEE CIVIL)
- EX. HYD — EXISTING FIRE HYDRANT (SEE CIVIL)
- EX. HP — EXISTING HYDRO POLE (SEE CIVIL)
- R. HP — HYDRO POLE TO BE RELOCATED (SEE CIVIL)
- A/G H — ABOVE GROUND HYDRO (SEE CIVIL)
- EXTERIOR LIGHTING (SEE ELECTRICAL)
- WOOD FENCING (SEE LANDSCAPE)
- BOLLARD (SEE LANDSCAPE)

SITE KEY PLAN



AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

AECOM Canada Architects Ltd.
50 Sportsworld Crossing Road, Suite 290
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519 650 5313 tel 519 650 3424 fax
www.aecom.com

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE PLAN PHASE 1

SHEET NUMBER

A-104

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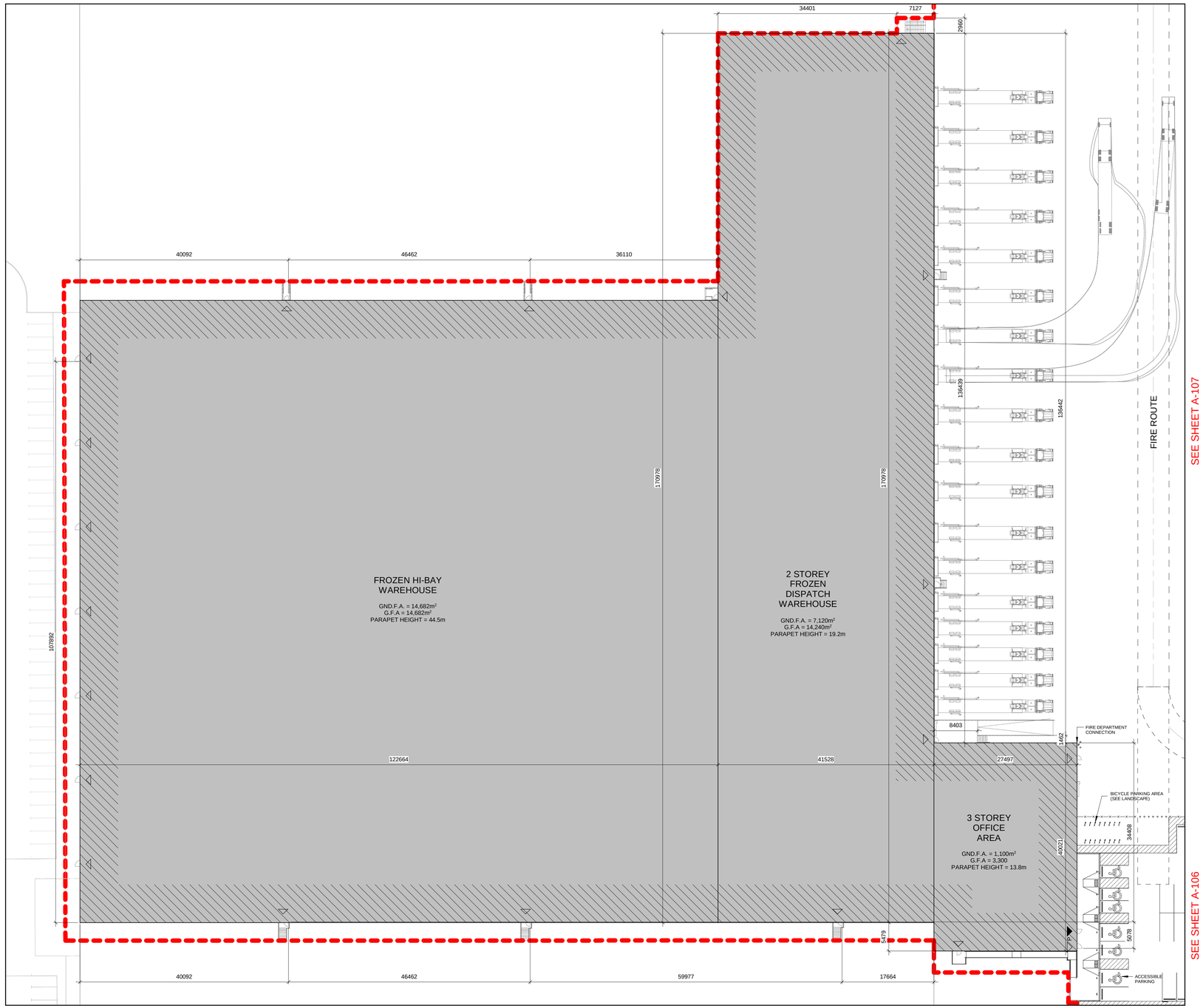
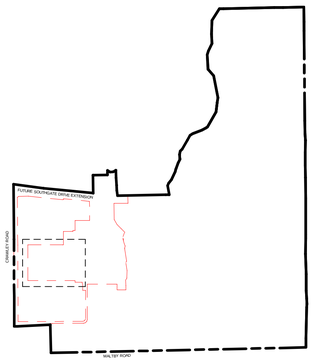


1 **PHASE 1 - SITE PLAN (BUILDING)**
Scale: 1 : 400

SITE LEGEND

EXISTING PROPERTY LINE		HYD	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1		EX. HYD	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE		EX. HP	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE		R. HP	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
CATCHMENT AREAS (SEE CIVIL)		A/G H	ABOVE GROUND HYDRO (SEE CIVIL)
LANDSCAPING (SEE LANDSCAPE)			EXTERIOR LIGHTING (SEE ELECTRICAL)
P PRIMARY ENTRANCE DOOR (FAAP LOCATION)			WOOD FENCING (SEE LANDSCAPE)
EXIT			BOLLARD (SEE LANDSCAPE)

SITE KEY PLAN



PHASE 1 BUILDING INFORMATION

	BUILDING AREA GND.F.A (m²)	BUILDING G.F.A (m²)	BUILDING HEIGHT (m)	STOREYS
FROZEN WAREHOUSE BUILDING	22,902	32,222	42*	3

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PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

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PROJECT NUMBER

60682143

SHEET TITLE

SITE PLAN PHASE 1

SHEET NUMBER

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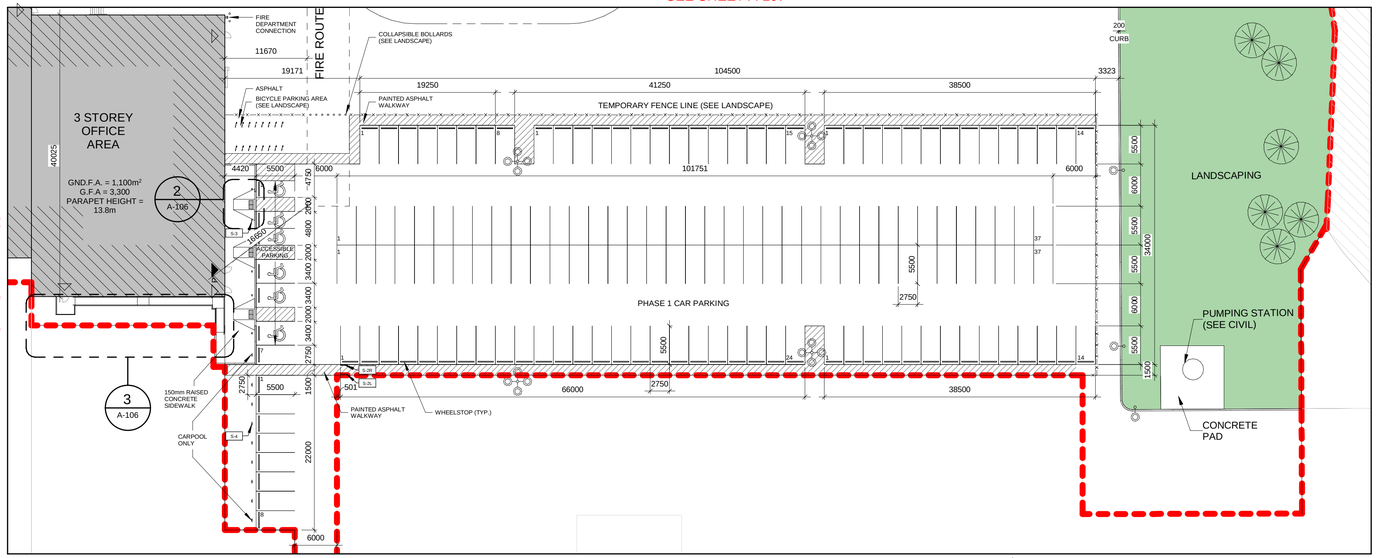
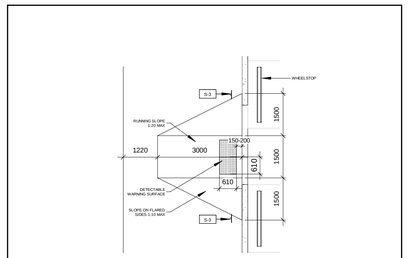
SEE SHEET A-107

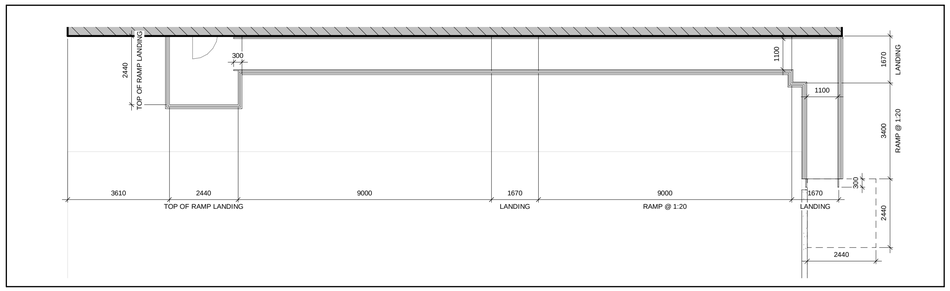


SEE SHEET A-109

1 **PHASE 1 - SITE PLAN (SOUTH PARKING)**
Scale: 1 : 400



2 **CURB RAMP WITH FLARED SIDES**
A-106 Scale: 1 : 100

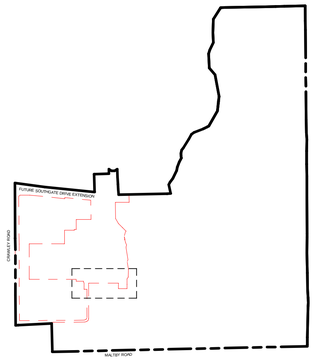


3 **ACCESSIBLE RAMP**
A-106 Scale: 1 : 100

SITE LEGEND

EXISTING PROPERTY LINE	HYD	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1	EX. HYD	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE	EX. HP	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE	R. HP	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
CATCHMENT AREAS (SEE CIVIL)	A/G H	ABOVE GROUND HYDRO (SEE CIVIL)
LANDSCAPING (SEE LANDSCAPE)	EX	EXTERIOR LIGHTING (SEE ELECTRICAL)
P PRIMARY ENTRANCE DOOR (FAAP LOCATION)		WOOD FENCING (SEE LANDSCAPE)
EXIT		BOLLARD (SEE LANDSCAPE)

SITE KEY PLAN



EXTERIOR SIGNAGE

S-1 STOP

S-2L / S-2R OPPOSITE ARROW — PEDESTRIAN CROSSING LEFT/RIGHT

S-3 — ACCESSIBLE PARKING

S-4 — CARPOOL PARKING ONLY

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

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SHEET TITLE
SITE PLAN PHASE 1

SHEET NUMBER
A-106

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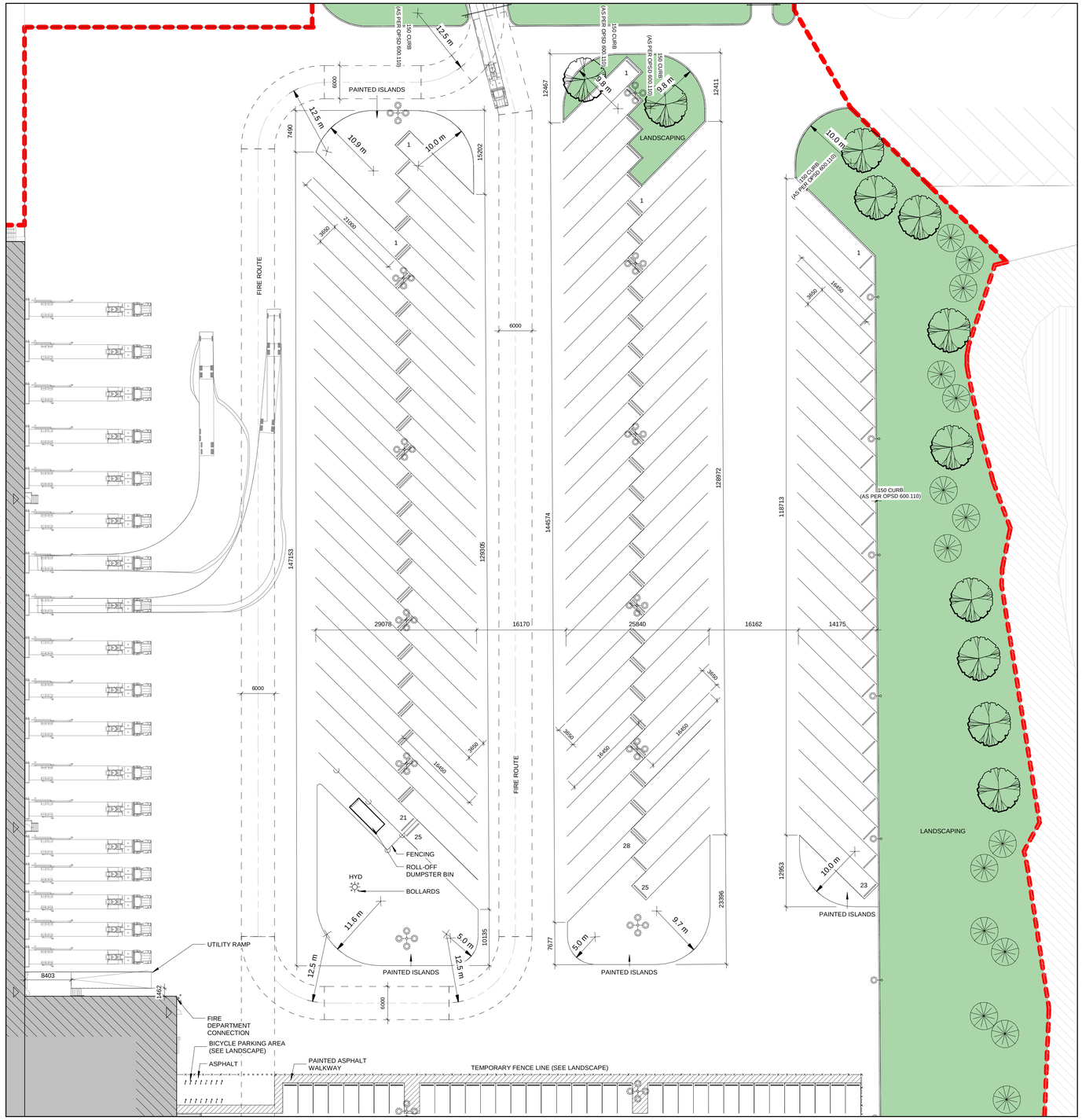


SEE SHEET A-105

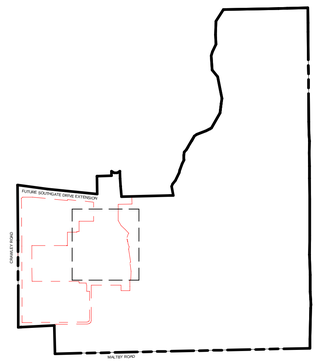
SEE SHEET A-106

1 PHASE 1 - SITE PLAN (NORTH PARKING)
Scale: 1 : 400

SITE LEGEND

EXISTING PROPERTY LINE		HYD	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1		EX. HYD	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE		EX. HP	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE		R. HP	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
CATCHMENT AREAS (SEE CIVIL)		A/G H	ABOVE GROUND HYDRO (SEE CIVIL)
LANDSCAPING (SEE LANDSCAPE)			EXTERIOR LIGHTING (SEE ELECTRICAL)
P PRIMARY ENTRANCE DOOR (FAAP LOCATION)			WOOD FENCING (SEE LANDSCAPE)
EXIT			BOLLARD (SEE LANDSCAPE)

SITE KEY PLAN



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PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

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KEY PLAN

PROJECT NUMBER
60682143

SHEET TITLE
SITE PLAN PHASE 1

SHEET NUMBER
A-107

Project Management Initials:
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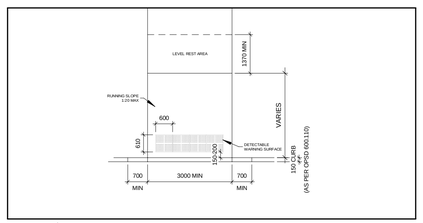
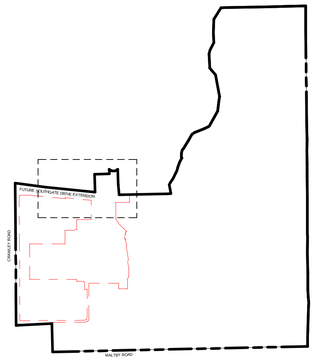
1 PHASE 1 - SITE PLAN (ROAD AND ENTRANCE)
Scale: 1 : 400



2 CURB RAMP AT WIDE MEDIAN SIDEWALK CROSSING
A-108 | Scale: 1 : 100

SITE KEY PLAN



SITE LEGEND

EXISTING PROPERTY LINE	HYD	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1	EX. HYD	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE	EX. HP	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE	R. HP	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
CATCHMENT AREAS (SEE CIVIL)	A/G H	ABOVE GROUND HYDRO (SEE CIVIL)
LANDSCAPING (SEE LANDSCAPE)		EXTERIOR LIGHTING (SEE ELECTRICAL)
PRIMARY ENTRANCE DOOR (FAAP LOCATION)		WOOD FENCING (SEE LANDSCAPE)
EXIT		BOLLARD (SEE LANDSCAPE)

EXTERIOR SIGNAGE

S-1 STOP | S-2L / S-2R OPPOSITE ARROW PEDESTRIAN CROSSING LEFT/RIGHT | S-3 ACCESSIBLE PARKING | S-4 CARPOOL PARKING ONLY

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

CLIENT

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SHEET TITLE
SITE PLAN PHASE 1

SHEET NUMBER
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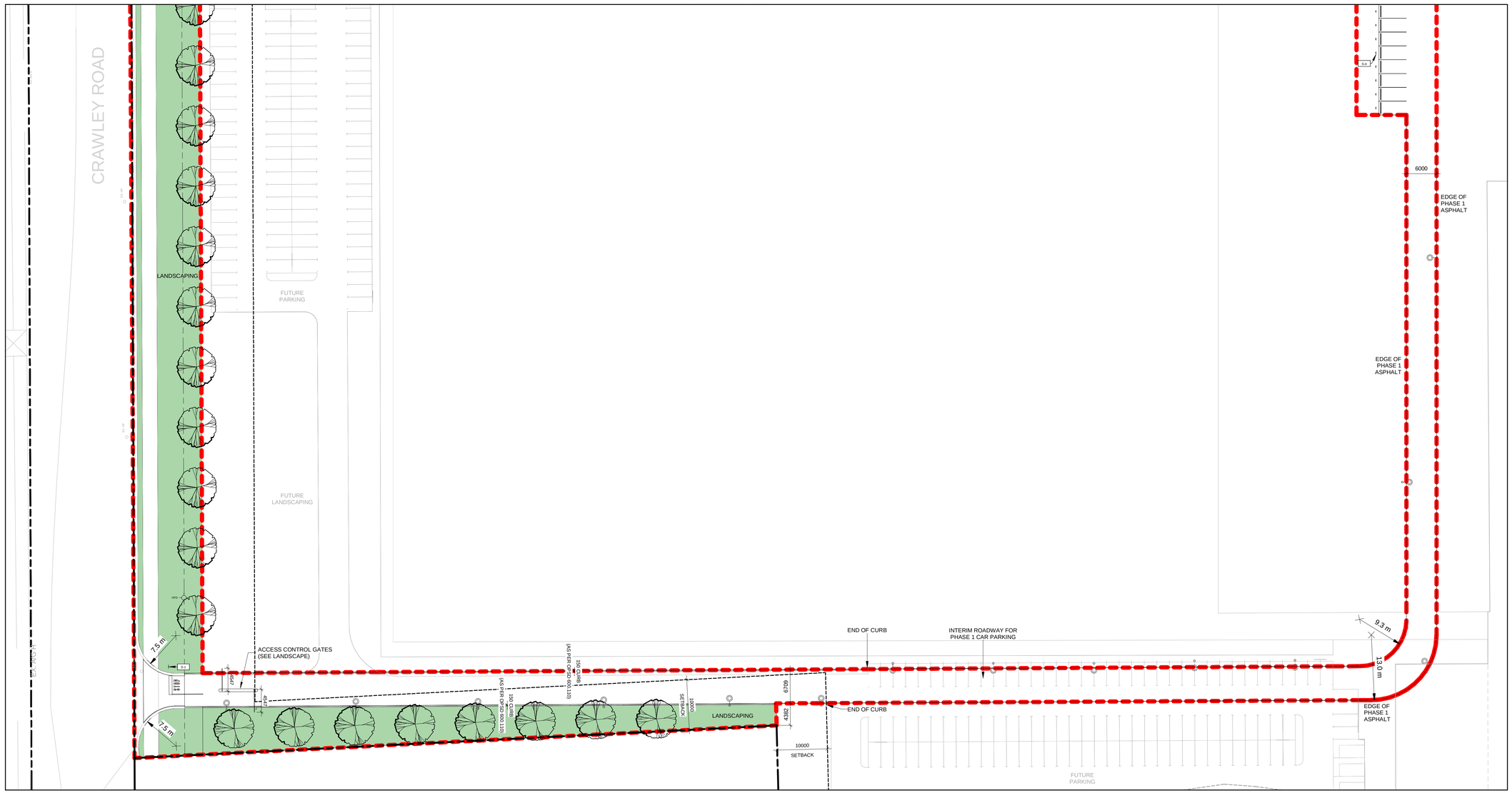
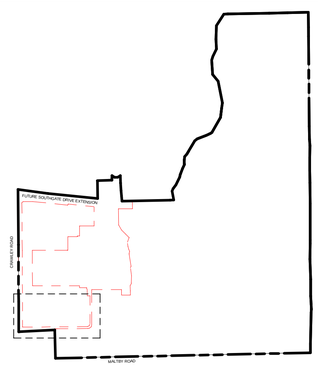


1 **PHASE 1 - SITE PLAN INTERN ROADWAY**

Scale: 1 : 400

SITE KEY PLAN



SITE LEGEND

EXISTING PROPERTY LINE	HYD	PROPOSED FIRE HYDRANT (SEE CIVIL)
EXTENT OF PHASE 1	EX. HYD	EXISTING FIRE HYDRANT (SEE CIVIL)
FUTURE PROPERTY LINE	EX. HP	EXISTING HYDRO POLE (SEE CIVIL)
SETBACK LINE	R. HP	HYDRO POLE TO BE RELOCATED (SEE CIVIL)
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LANDSCAPING (SEE LANDSCAPE)		EXTERIOR LIGHTING (SEE ELECTRICAL)
PRIMARY ENTRANCE DOOR (FAAP LOCATION)		WOOD FENCING (SEE LANDSCAPE)
EXIT		BOLLARD (SEE LANDSCAPE)

EXTERIOR SIGNAGE

S-1	S-2L / S-2R OPPOSITE ARROW	S-3	S-4
STOP	PEDESTRIAN CROSSING LEFT/RIGHT	ACCESSIBLE PARKING	CARPOOL PARKING ONLY

AECOM

PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

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SHEET TITLE

SITE PLAN PHASE 1

SHEET NUMBER

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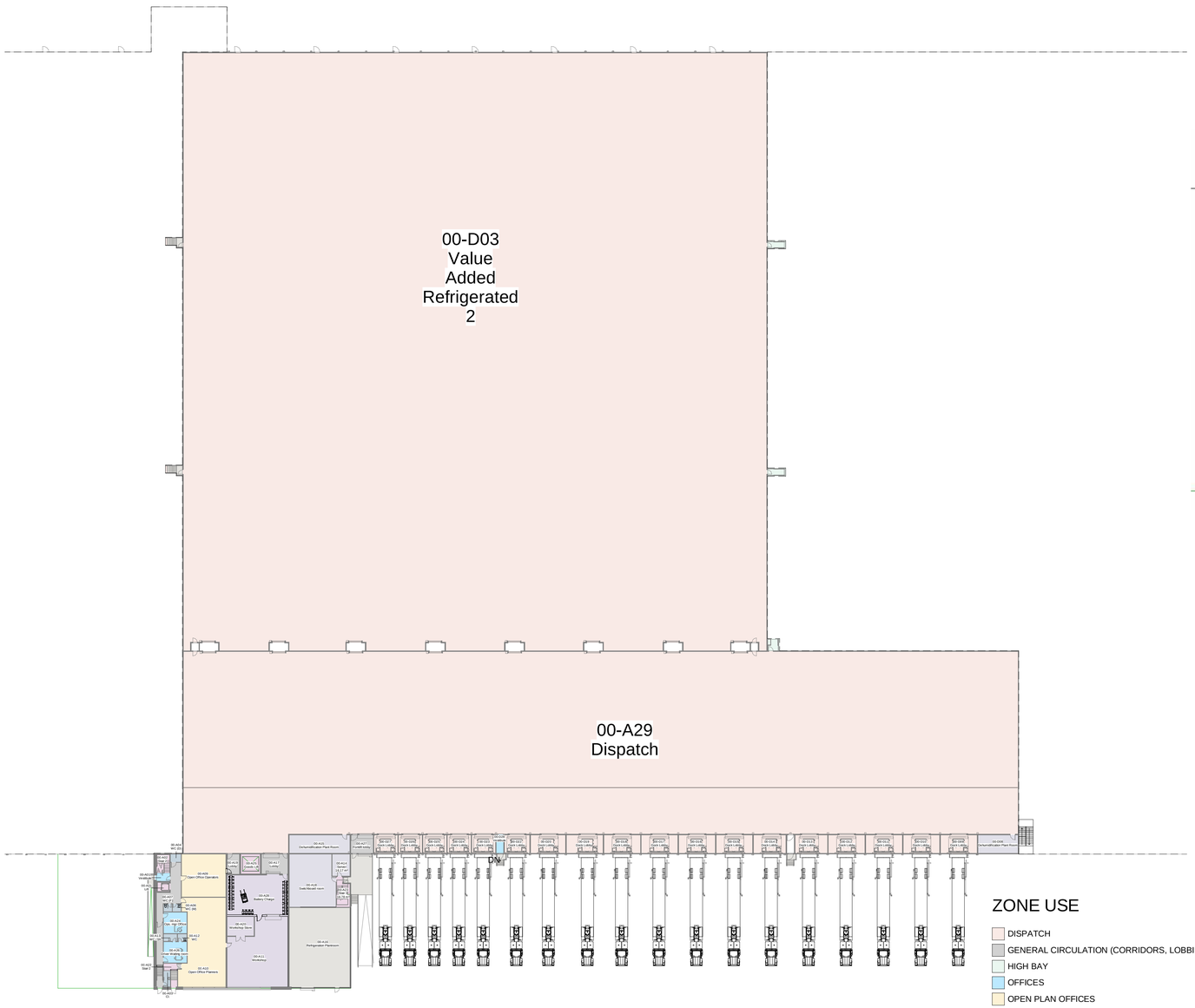

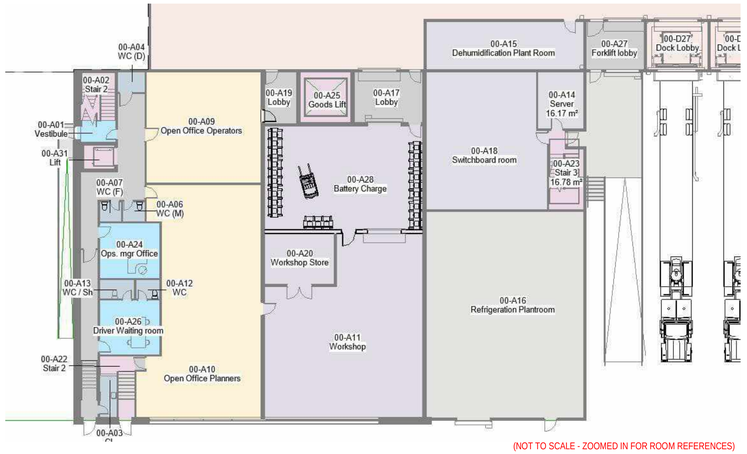

(NOT TO SCALE - ZOOMED IN FOR ROOM REFERENCES)

ZONE USE

- DISPATCH
- GENERAL CIRCULATION (CORRIDORS, LOBBIES & WAITING AREAS)
- HIGH BAY
- OFFICES
- OPEN PLAN OFFICES
- PLANT AREAS (MEP)
- STAIRS / LIFTS
- WELFARE (TOILETS, SHOWER, LOCKER ROOMS & CLEANERS CUPBOARDS
- WORKSHOP AREAS

1st Floor Zoning Plan

SCALE: 1 : 500

0 12500 25000 mm

SCALE: 1:500

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PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

1st Floor General Arrangement Plan

SHEET NUMBER

A-110

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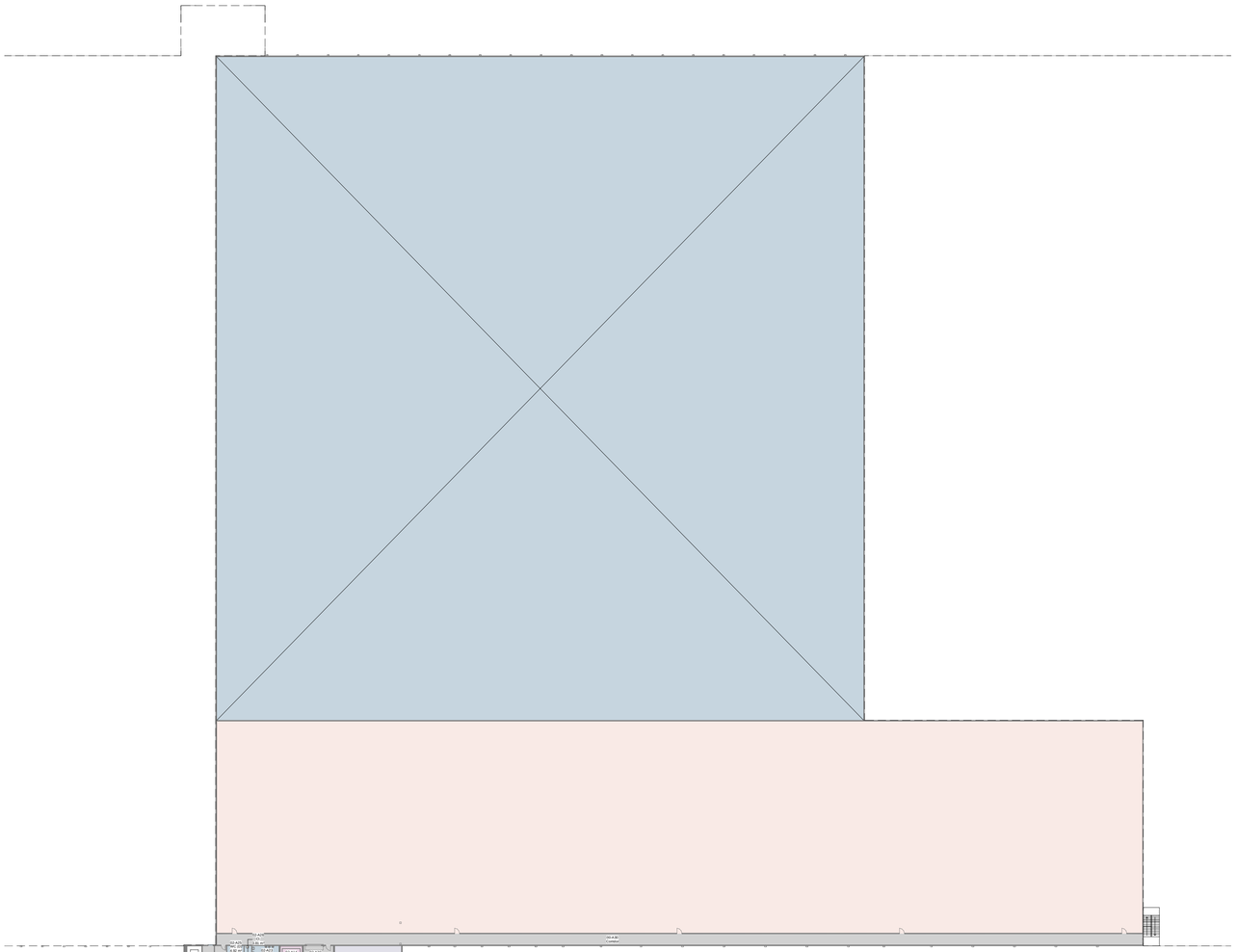

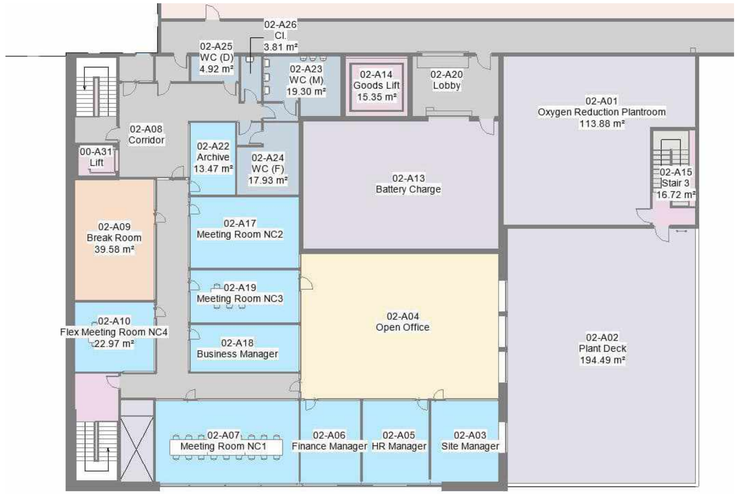

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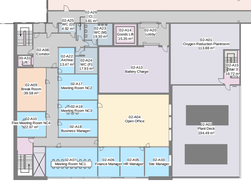

ZONE USE

- DISPATCH
- GENERAL CIRCULATION (CORRIDORS, LOBBIES & WAITING AREAS)
- HIGH BAY
- KITCHEN / MESS / CANTEEN
- OFFICES
- OPEN PLAN OFFICES
- PLANT AREAS (MEP)
- STAIRS / LIFTS
- WELFARE (TOILETS, SHOWER, LOCKER ROOMS & CLEANERS CUPBOARDS
- WORKSHOP AREAS

3rd Floor Zoning Plan

SCALE: 1 : 500

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PROJECT

NEWCOLD COLD STORAGE FACILITY
384 CRAWLEY ROAD,
GUELPH, ON L1L 1G5

CLIENT

NEWCOLD ADVANCED COLD LOGISTICS

CONSULTANT

AECOM Canada Architects Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

3rd Floor General Arrangement Plan

SHEET NUMBER

A-111

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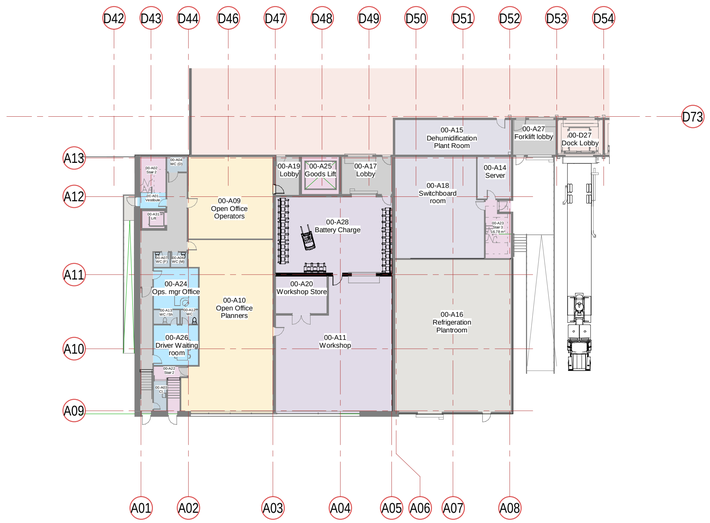
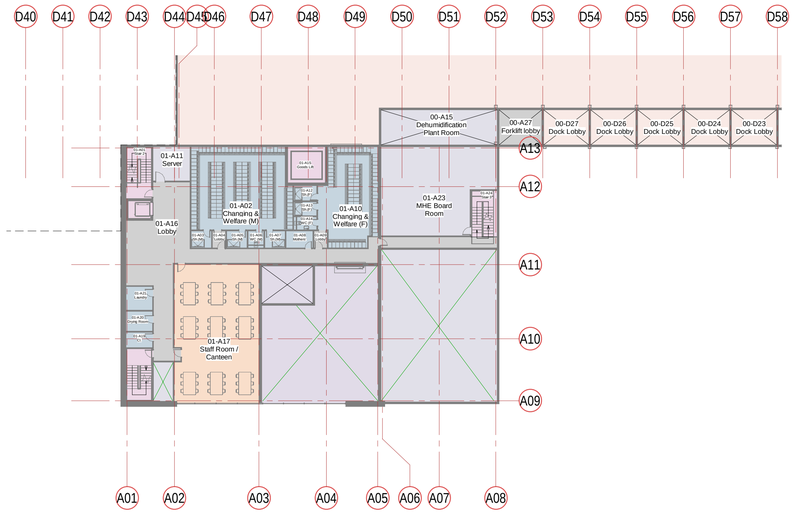


1st Floor Zoning Plan (Office)

SCALE:1 : 300

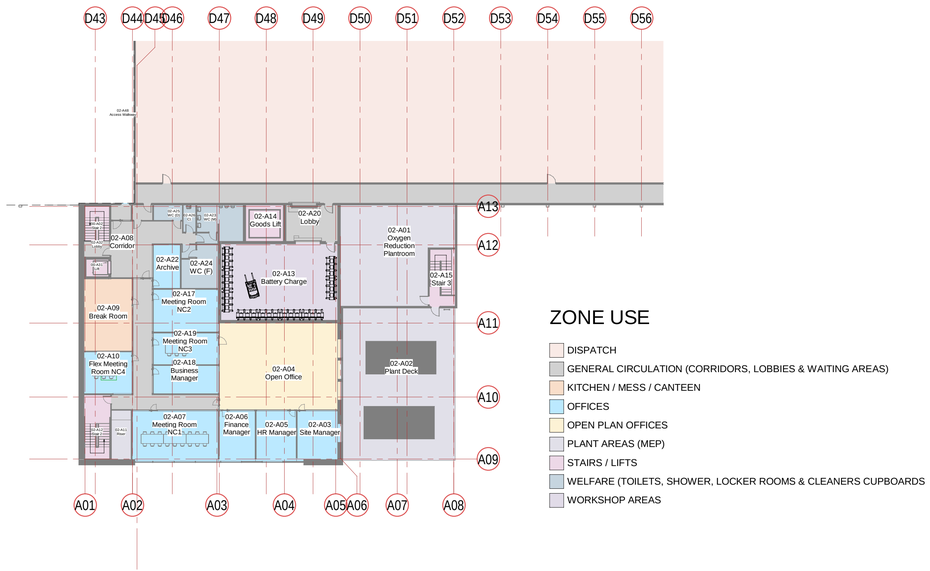
ZONE USE

- DISPATCH
- GENERAL CIRCULATION (CORRIDORS, LOBBIES & WAITING AREAS)
- OFFICES
- OPEN PLAN OFFICES
- PLANT AREAS (MEP)
- STAIRS / LIFTS
- WELFARE (TOILETS, SHOWER, LOCKER ROOMS & CLEANERS CUPBOARDS
- WORKSHOP AREAS



2nd Floor - Front Office

SCALE:1 : 300



ZONE USE

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- KITCHEN / MESS / CANTEEN
- OFFICES
- OPEN PLAN OFFICES
- PLANT AREAS (MEP)
- STAIRS / LIFTS
- WELFARE (TOILETS, SHOWER, LOCKER ROOMS & CLEANERS CUPBOARDS
- WORKSHOP AREAS

3rd Floor Office areas

SCALE:1 : 300

0 5000 10000 mm

SCALE: 1:200

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384 CRAWLEY ROAD, GUELPH, ON L1L 1G5

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

Office General Arrangement Plans

SHEET NUMBER

A-112

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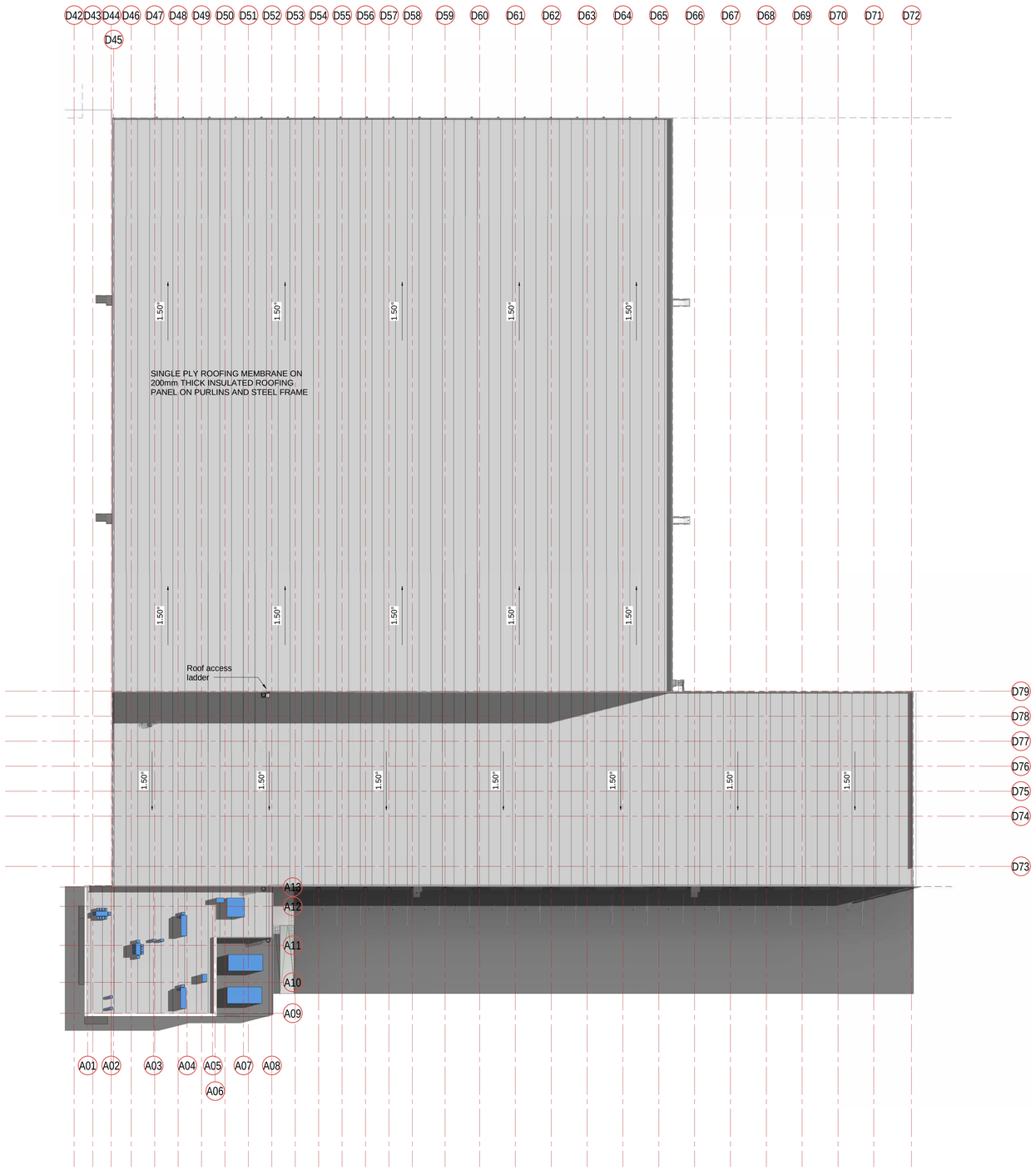

Low Point - High Bay Roof

SCALE: 1 : 500

0 12500 25000 mm

SCALE: 1:500

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

Roof Plan

SHEET NUMBER

A-113

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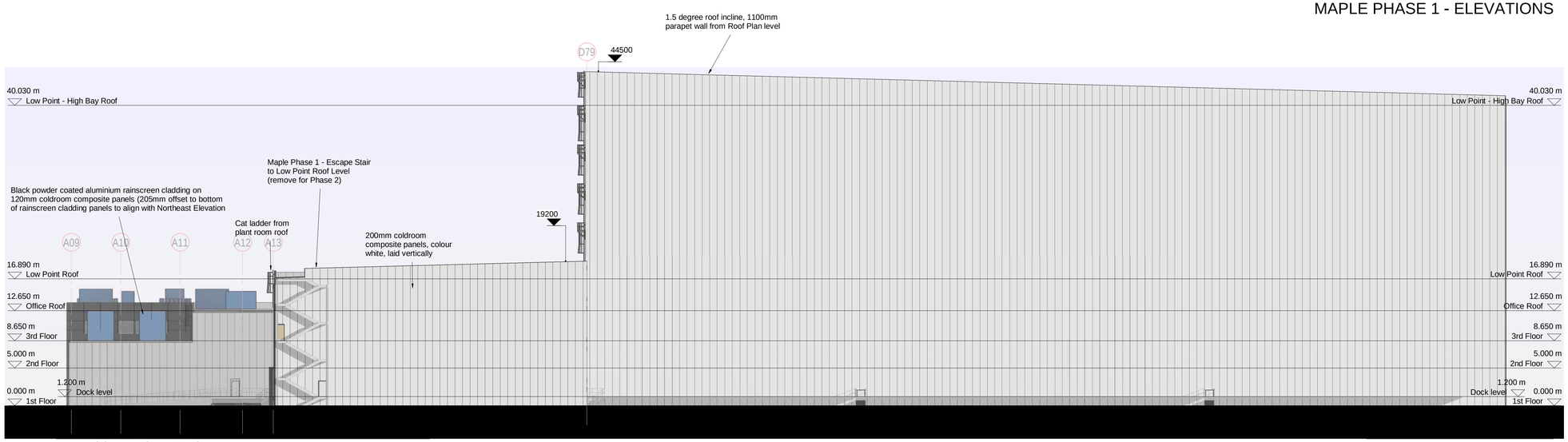
MAPLE PHASE 1 - ELEVATIONS



RAINSCREEN CLADDING
200MM COLDROOM COMPOSITE PANELS

200MM COLDROOM COMPOSITE PANELS

North Elevation MP1

SCALE:1 : 300

200MM COLDROOM COMPOSITE PANELS

West Elevation MP1

SCALE:1 : 300

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60682143

SHEET TITLE

Phase 1 Elevations 1/2

SHEET NUMBER

A-114

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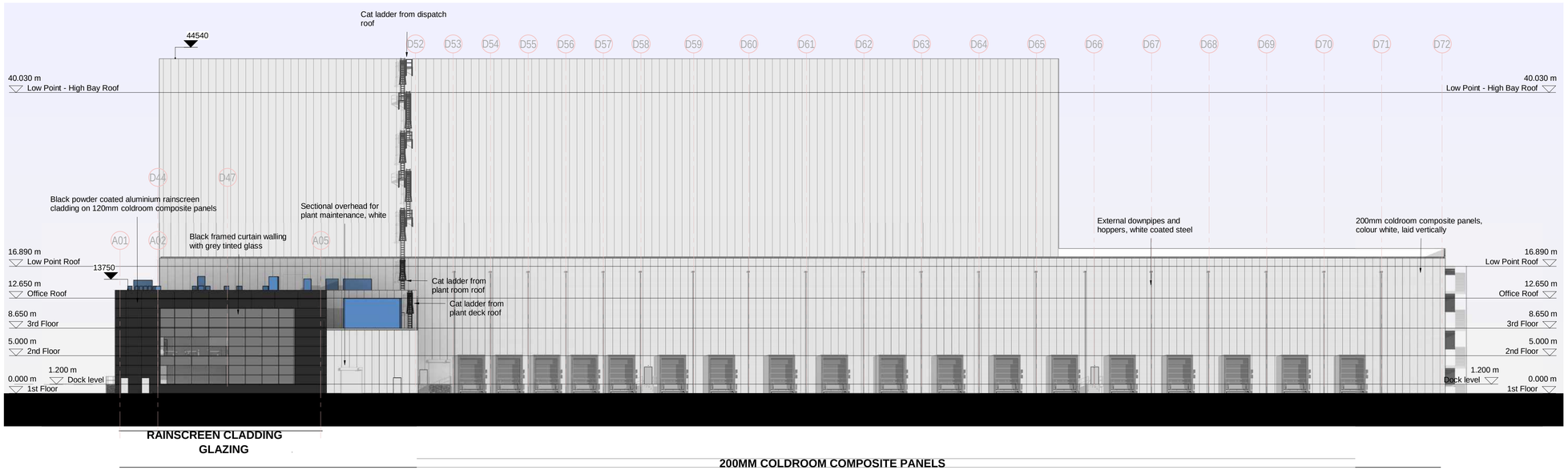
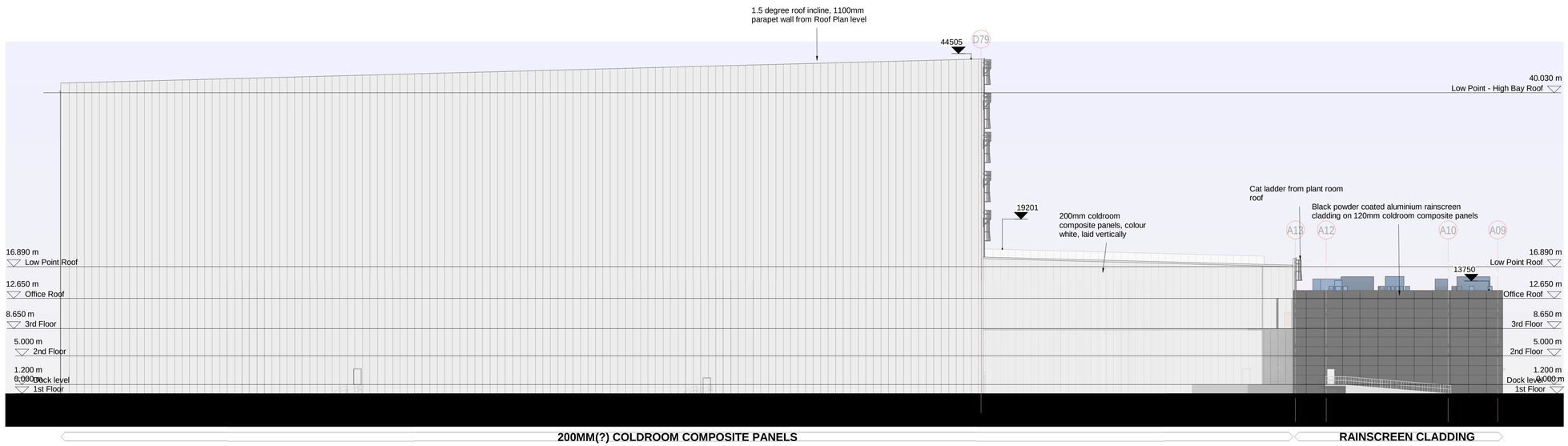


East Elevation MP1

SCALE:1 : 300



South Elevation MP1

SCALE:1 : 300

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

Phase 1 Elevations 2/2

SHEET NUMBER

A-115

Appendix II
Species at Risk & Species of Conservation Concern Screening Table

#2778 - NewCold Guelph: Phase 1 Environmental Impact Study

Species at Risk and Species of Conservation Concern Screening Table

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	SARA Schedule[3]	Observed on Subject Property in Previous Studies[4, 5, 6]	Habitat Preference	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale	Observed on Subject Property by NRSI in 2022	Phase 1
Birds													
Ammodramus savannarum	Grasshopper Sparrow	S4B	SC	SC	SC	Schedule 1	Yes	Well-drained grassland or prairie with low cover of grasses, taller weeds or sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities. Requires perches for singing and tracts of grassland generally >5ha.	Yes	Yes	Open habitats on the subject property may be suitable, however, they are not considered grasslands.	No	Habitat not present.
Chaetura pelagica	Chimney Swift	S3B	THR	T	T	Schedule 1	Yes	Commonly found in urban areas near buildings; nests in chimneys, hollow trees,and crevices of rock cliffs. Feeds over open water.	No	No	Species has only been seen incidentally and suitable habitat is not present.	No	Habitat not present.
Chordeiles minor	Common Nighthawk	S4B	SC	SC	T	Schedule 1	No	Open ground; clearings in dense forests (including burns and logged areas); rock barrens; peat bogs; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	Yes	Yes	Open meadow/savannah habitats may be suitable.	No	Habitat not present.
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1	Yes	Mid-canopy layer of forest clearings and edges of deciduous and mixed forest. Abundant in intermediate-age mature forest stands with little understory vegetation.	Yes	Yes	Woodlands within the subject property may be suitable. Breeding habitat confirmed within the subject property.	Yes	Habitat not present. No observations within Phase 1 lands.
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	No	Large (>10 ha), open expansive grasslands, pastures, hayfields, meadows or fallow fields with dense ground cover. Occassionally nest in large (>50 ha) fields of winter wheat and rye in southwestern Ontario.	No	No	No suitable habitat within study area, does not meet size criteria. Not observed.	No	Habitat not present.
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	No	Carolinian and Great Lakes-St. Lawrence forest zones. Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth. Near pond or swamp. Must have some trees higher than 12 m.	Yes	Yes	Woodlands within the subject property may be suitable. Not observed.	No	Habitat not present.
Melanerpes erythrocephalus	Red-headed Woodpecker	S3	END	E	E	Schedule 1	No	Open, deciduous forest with little understory; fields, parks or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees. Requires cavity trees with at least 40 cm dbh.	Yes	Yes	Study area has small woodlots and forest edges with fields/pasture type lands. Larger woodlands that are being retained are most suitable.	No	Treed areas within Phase 1 may be suitable.
Riparia riparia	Bank Swallow	S4B	THR	T	T	Schedule 1	No	Nests in burrows in natural and human-made settings with vertical faces in silt and sand deposits. Usually on banks of river and lakes, but also found in sand and gravel pits.	No	No	Cliff faces or silt/sand deposits not present. Not observed.	No	Habitat not present.

Natural Resource Solutions Inc. 2023

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	SARA Schedule[3]	Observed on Subject Property in Previous Studies[4, 5, 6]	Habitat Preference	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale	Observed on Subject Property by NRSI in 2022	Phase 1
Hirundo rustica	Barn Swallow	S4B	SC	SC	T	Schedule 1	Yes	Farmlands, rural areas and other open or semi-open areas near body of water. Nests almost exclusively on human-made structures such as open barns, buildings, bridges and culverts.	Yes	Yes	Man-made buildings for nesting are not present. Observed foraging in multiple locations on the subject property.	Yes	Agricultural lands in Phase 1 are suitable for foraging. No nesting habitat present.
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	Yes	Open pastures, hayfields, grasslands or grassy meadows with elevated singing perches (small trees, shrubs or fence posts). Also weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields or other open areas. Generally prefers larger tracts of habitat >10 ha, but will sometimes use smaller tracts.	Yes	Yes	This species was confirmed breeding within the subject property in 2007. Was not confirmed breeding in 2022; observations were within open communities to be retained.	Yes	Habitat not present.
Reptiles and Amphibians													
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1	Yes	Slow-flowing rivers and streams, lakes, and permanent or semi-permanent wetlands with soft substrates and vegetation. Key habitat requirements: open areas with structures for basking, open sand or gravel areas for nesting, shallow areas with soft substrates to bury in, soft banks or substrates for hibernation.	Yes	Yes	Wetlands within the subject property may be suitable. Turtle basking surveys to confirm.	Yes	Habitat not present.
Emydoidea blandingii	Blanding's Turtle (Great Lakes / St. Lawrence population)	S3	THR	E	E	Schedule 1	No	Eutrophic, shallow wetlands such as marshes, ponds, swamps, bogs, fens, or coastal wetlands, with soft, muddy substrates, abundant aquatic vegetation, and basking structures (logs, stumps, hummocks). Large overland movements occur between aquatic habitats and to open sandy or gravelly areas for nesting. Forest habitat is important for upland movements. Overwintering typically occurs in permanent wetlands.	Yes	Yes	Wetlands within the subject property may be suitable. Turtle basking surveys to confirm.	No	Habitat not present.
Graptemys geographica	Northern Map Turtle	S3	SC	SC	SC	Schedule 1	No	Large bodies of water such as rivers and lakes with soft bottoms, aquatic vegetation, abundant mollusc prey, and basking structures such as logs or rocks. Nesting occurrs in open areas with soft substrates such as sand or gravel. Hibernate on the bottom of deep areas of lakes or deep, slow-moving sections of rivers.	No	No	Wetlands are not large enough to provide suitable open water habitats.	No	Habitat not present.
Pantherophis gloydi pop. 1	Eastern Foxsnake (Georgian Bay population)	S3	THR	E	E	Schedule 1	No	Open habitats with exposed bedrock, scattered trees, shrubs and vegetation, such as rock barrens and sparse forests, within 1km of the eastern Georgian Bay shoreline. Rocks and logs provide shelter. Nests in rotten logs, stumps, dune slopes, decaying piles of vegetation. Hibernates communally in deep cracks or fissures in the bedrock, animal burrows, or in old wells or foundations.	No	No	Study area not within 1km of Georgian Bay	No	Habitat not present.

Natural Resource Solutions Inc. 2023

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	SARA Schedule[3]	Observed on Subject Property in Previous Studies[4, 5, 6]	Habitat Preference	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale	Observed on Subject Property by NRSI in 2022	Phase 1
Thamnophis sauritus septentrionalis	Northern Ribbonsnake	S4	SC	SC	SC	Schedule 1	Yes	Sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows grassy marshes or sphagnum bogs; borders of ponds, lakes or streams; hibernates in groups.	Yes	Yes	Open habitats and wetland habitats are suitable.	Yes	Habitat not present. No observations within Phase 1 lands.
Ambystoma jeffersonianum	Jefferson Salamander	S2	END	E	E	Schedule 1	No	Large deciduous or mixed forest containing, or in close proximity to, suitable breeding ponds which include fishless vernal pools or wetlands with suitable hydroperiod for larval development (was present until Aug/Sept). Habitats must contain shelter features including leaf litter, woody debris, rocks, logs, or stumps. Hibernation sites are underground in mammal burrows, root systems, or crevices or fissures in rocks.	Yes	Yes	Pure Jefferson Salamanders are unlikely based on previous genetic testing. Salamander movement studies are to be completed and any individuals that may be Jefferson Salamander will be genetically tested.	No	Habitat not present.
Ambystoma laterale - (2) jeffersonianum	Unisexual Ambystoma (Jefferson Salamander-dependent population)	S2	END	E	E	Schedule 1	No	Unisexual Ambystoma salamanders live in leaf litter, under logs and in underground cavities in deciduous and mixed forests, typically within close proximity to breeding habitats. Adults breeds in vernal pools (temporary woodland ponds) or fish-free permanent wetlands. They lay their eggs in clumps attached to underwater vegetation in shallow water. The eggs hatch into aquatic larvae after about one month, and the larvae transform into juveniles by the end of summer. The juveniles leave the pond and head into the surrounding forest. Unisexual Ambystoma salamanders spend the winter underground where they can get below the frost line and avoid freezing temperatures, such as in mammal burrows, rock crevices or other underground cavities. Although these salamanders spend much of the year underground or under cover, they can often be observed in early spring when they travel to breeding sites.	Yes	Yes	Jefferson-dominant salamanders are unlikely based on previous genetic testing. Salamander movement studies are to be completed and any individuals that may be Jefferson Salamander will be genetically tested.	No	Habitat not present.
Mammals													
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1	No	Mature deciduous forest in the Carolinian region where there is a deep litter layer that allows it to burrow.	No	No	Mature forest with deep litter layer is not present.	No	Habitat not present.

Natural Resource Solutions Inc. 2023

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	SARA Schedule[3]	Observed on Subject Property in Previous Studies[4, 5, 6]	Habitat Preference	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale	Observed on Subject Property by NRSI in 2022	Phase 1
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				No	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland. Hibernates in cold dry caves or mines. Maternity colonies in caves or buildings. Hunts in forests.	Yes	Yes	Detected during acoustic monitoring. Rock and slab piles are present in open/sunny areas, which may be suitable for roosting. Acoustic monitoring results indicate this species is foraging near woodland communities.	Yes	Foraging abitat is suitable; species detected through acoustic monitoring. No roosting habitat present.
Myotis lucifugus	Little Brown Myotis	S3	END	E	E	Schedule 1	No	Uses caves, quarries, tunnels, hollow trees or buildings for roosting. Winters in humid caves. Maternity sites in dark warm areas such as attics and barns. Feeds primarily in wetlands and forest edges.	Yes	Yes	Acoustic monitoring results indicate candidate maternity roosting habitat in multiple woodland communities. Candidate male/non-reproductive female day roosting also present. Confirmed foraging near woodland communities.	Yes	Habitat is suitable; species detected through acoustic monitoring.
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1	No	Roosts in houses and man-made structures but prefers hollow trees or under loose bark. Hibernates in mines or caves. Hunts within forest, below the canopy.	Yes	Yes	Species not detected in acoustic monitoring.	No	Habitat is suitable; species not detected.
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	E	Schedule 1	No	Roosts and maternity colonies in older forests and occassionally in barns or other stuctures. Forage over water and along streams in the forest. Hibernate in caves.	Yes	Yes	Oaks and Maples, which this species prefers for roosting, are present. Only one Tri-Colored Bat call in acoustic monitoring, which suggests this species was likely just passing over the property and suitable habitat is not present.	Yes	Habitat not present.
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	S1	END	E	E	Schedule 1	No	Open grasslands and oak savannahs; dens in new hole or enlarged existing hole; sometimes makes food caches	No	No	No suitable habitat within study area, highly disturbed.	No	Habitat not present.
Butterflies													
Asterocampa clyton	Tawny Emperor	S3					No	Densely wooded riparian areas, dry woods, open woods, cities, fencerows, parks	Yes	Yes	Hackberry, its host plant, now observed within woodland communities.	No	Habitat not present.
Danaus plexippus	Monarch	S2N,S4B	SC	E	SC	Schedule 1	Yes	Adults found in a diversity of habitats with a variety of wildflowers. Caterpillars are confined to meadows and open areas where milkweeds grow (larval food plants).	Yes	Yes	Observed predominantly within retained natural features. Large tracts of Milkweed not observed.	Yes	Habitat not present.
Odonates													
Arigomphus villosipes	Unicorn Clubtail	S3					No	Prefers ponds, lakes, and slow streams with muddy bottoms and little submerged vegetation. Marshes with open banks.	Yes	Yes	Marshes and open water wetlands may provide suitable habitat.	No	Habitat not present.
Phanogomphus graslinellus	Pronghorn Clubtail	S3					No	Slow moving water in ponds, lakes and slow streams.	Yes	Yes	Marshes and open water wetlands may provide suitable habitat.	No	Habitat not present.

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Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA[3]	SARA Schedule[3]	Observed on Subject Property in Previous Studies[4, 5, 6]	Habitat Preference	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale	Observed on Subject Property by NRSI in 2022	Phase 1
Rhionaeschna mutata	Spatterdock Darner	S3					No	Fishless ponds, usually with water-lillies or vegetated ponds and pools, open marshes and bogs, often with spatterdock.	Yes	Yes	Marshes and open water wetlands may provide suitable habitat.	No	Habitat not present.
Somatochlora tenebrosa	Clamp-tipped Emerald	S3					No	Shady forest waters (trickles and streams), occasionally boggy and often partly dry.	No	No	Watercourse within woodland habitat is not present.	No	Habitat not present.
Bumble Bees													
Bombus terricola	Yellow-banded Bumble Bee	S5	SC	SC	SC		No	Mixed woodlands and open habitat such as native grasslands, farmlands and urban areas. Close to or within wooded areas or wetlands.	Yes	Yes	Suitable habitat is present within the woodland, savannah, wetland, and meadow habitats.	No	Habitat is suitable. No observations within Phase 1 lands.
Bombus afinis	Rusty-patched Bumble Bee	S1	END	E	E	Schedule 1	No	Open habitats such as mixed farmland, urban settings, savannahs, open woods, and sand dunes. They require areas that provide nectar and pollen from flowers, nesting sets (undergound and abandoned rodent cavities or clumps of grasses), and overwintering sites (undisturbed soil).	Yes	Yes	Suitable habitat is present within the savannah and meadow habitats.	No	Habitat not present.
Bombus citrinus	Lemon Cuckoo Bumble Bee	S3S4					No	Nest parasite of Common Eastern Bumble Bee, Two-spotted Bumble Bee, and Half-black Bumble Bee.	Yes	Yes	Observed within the subject property. No nests were observed.	Yes	Habitat is suitable. No observations within Phase 1 lands.
Plants													
Juglans cinerea	Butternut	S2?	END	E	E	Schedule 1	No	In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams.It is also found on well-drained gravel sites and rarely on dry rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges.	No	No	Four potential Butternuts were found within the subject property; field hybridity tests confirmed they are hybrids.	No	Not present.
Fraxinus nigra	Black Ash	S4	END	T			Yes	Commonly found in swampy woodlands with high moisture content.	Yes	Yes	Black Ash was observed previously within wetland habitats. Not observed in 2022.	No	Not present.
Aureolaria flava	Smooth Yellow False Foxglove	S2?		T			No	Dry, open to semi-open upland oak forests typically with White Oak present, on well-drained soils.	No	No	Oak forests are not present.	No	Not present.
Ranunculus hispidus	Bristly Buttercup	S3					No	Perrential woodland species.	Yes	Yes	Found occasionally within understorey of retained woodland community.	Yes	Not present.

[1]Ministry of Natural Resources and Forestry (MNRF). 2022. Natural Heritage Information Centre (NHIC): Species List for Ontario. Published: 2014-07-17. All Species List Updated: 2022-04-11. Available: https://www.ontario.ca/page/get-natural-heritage-information

[2]Ministry of the Environment, Conservation, and Parks (MECP). 2023. Species at Risk in Ontario. Published: 2018-07-12. Updated: 2023-01-25. Available: https://www.ontario.ca/page/species-risk-ontario

[3]Government of Canada. 2022. Species at Risk Public Registry: Species Search. COSEWIC Last Assessment Date: 2022-05-11. Available: https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10

[4]Natural Resource Solutions Inc (NRSI). 2007. Southgate Business Park Environmental Impact Study

[5]Natural Resource Solutions Inc. (NRSI). 2010. Pre-construction Terrestrial & Wetland Monitoring Report

[6]Aboud & Associates Inc. 2020. Southgate Business Park Environmental Study Report

Appendix III
Significant Wildlife Habitat Screening Tables

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 1. Characteristics of Seasonal Concentration Areas

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
Waterfowl Stopover and Staging Areas (Terrestrial)					
Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[exlviii]. <u>Information Sources</u> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Undisturbed fields with sheet water not present. Aggregations of 100 or more individuals not observed. **Not SWH**
Waterfowl Stopover and Staging Areas (Aquatic)					
Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[l] or more of listed species for 7 days[l], results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Some wetland habitats may be suitable, however, they are not large enough to contain the required number of individuals. Listed species not observed, apart from small numbers of Canada Goose. **Not SWH**
Shorebird Migratory Stopover Area					
High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #8 provides development effects and mitigation measures.	Shoreline habitat not present. **Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 1. Characteristics of Seasonal Concentration Areas

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
	Ruddy Turnstone Sanderling Dunlin Whimbrel				
Raptor Wintering Area					
Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern:</u> Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites need to be > 20 ha[cxlviii, cxlix] with a combination of forest and upland.[xvi, xvii, xviii, xix, xx, xxi] Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix] Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water, large trees and snags available for roosting <u>Information Sources</u> • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	Large woodlands are present in the study area which overlap the subject property. A majority of the upland habitat is disturbed (agricultural fields) but there are some undisturbed open areas. Three potential raptor nests were observed within the large FOC3-1 community during winter raptor surveys (unknown species). Two large stick nests were also observed along the edge of the large CUP3-2 community that is off-property. The nest were not observed to be occupied. Red-tailed Hawk was observed multiple times flying within the subject property. Regular use (at least 20 days) was not observed. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Bat Hibernacula					
Bat hibernacula are rare habitats in Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200m radius around the entrance of the hibernaculum[cxlviii, ccvii] for most. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv] • SWHMiST[cxlix] Index #1 provides development effects and mitigation measures.	No suitable habitat within study area. **Not SWH**
Bat Maternity Colonies					
Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in buildings[xxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii] • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii] • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii] • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx] <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by: • >10 Big Brown Bats • >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for wind Power Projects[ccv] • SWHMiS T[cxlix] Index #12 provides development effects and mitigation measures.	Woodland and treed wetland habitats are present. Multiple woodlands have >10 cavity trees/ha. **Study Area: Presumed Candidate SWH** **Subject Property: Candidate SWH**
Turtle Wintering Area					
Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle <u>Special Concern</u>: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH.	Multiple open water wetlands are present in the study area and subject property that provide suitable habitat. WET-06, WET-07, and WET-13 were observed to contain the required number of Midland Painted Turtles or Snapping Turtles in early spring.

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 1. Characteristics of Seasonal Concentration Areas

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
		areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May)[cvii] • Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	**Study Area: Candidate SWH** **Subject Property: Confirmed SWH**
Reptile Hibernaculum					
Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, lii, cxii.] • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information from CAs. • Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs • Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[l] • SWHMiST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Hibernacula were not identified through previous studies. Potential hibernacula sites (rock piles) were observed within the subject property however congregations of snakes were not observed. Targeted surveys within natural areas to be retained were not undertaken. Marsh communities may provide appropriate overwintering habitat for Northern Ribbonsnake, which was observed on the Subject Property. **Study Area: Candidate SWH** **Subject Property: Candidate SWH**
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas [ccv] • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii] • Field surveys to observe and count swallow nests are to be completed during the breeding season Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #4 provides development effects and mitigation measures	No suitable habitat within study area. **Not SWH**
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries	Studies confirming: • Presence of 5[l] or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH [cc, ccvii] • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells	Suitable habitat may be present in the study area and subject property. Colonial nesting bird habitat was not observed during previous studies. Bird species or nests not observed. **Study Area: Candidate SWH** **Subject Property: Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 1. Characteristics of Seasonal Concentration Areas

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
			• Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	• SWHMiST[cxlix] Index #5 provides development effects and mitigation measures.	
Colonially - Nesting Bird Breeding Habitat (Ground)					
Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[l]. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #6 provides development effects and mitigation measures.	No suitable habitat within study area. Species not observed. **Not SWH**
Migratory Butterfly Stopover Areas					
Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u>: Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: <u>Field</u>: CUM CUS CUT <u>Forest</u>: FOC FOM FOD CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south[xxxii, xxxiii, xxxiv, xxxv, xxxvi.] • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat cxlviii, cxlix. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes[xxxvii, xxxviii, xxxix, xl, xli.] <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur [xl, xliii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST[cxlix] Index #16 provides development effects and mitigation measures.	No suitable habitat within study area, not within 5km of Lake Ontario. **Not SWH**
Landbird Migratory Stopover Areas					
Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha[l] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario. • If multiple woodlands are located along the shoreline, those woodlands <2km from Lake Ontario are more significant[cxlix] • Sites have a variety of habitats; forest, grassland and wetland complexes[cxlix]. • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario are Candidate SWH[cxlviii]. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #9 provides development effects and mitigation measures.	No suitable habitat within study area, not within 5km of Lake Ontario. **Not SWH**
Deer Yarding Areas					
Winter habitat for deer is considered to be the main factor for northern deer populations. In winter, deer	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are	Woodland habitats are present in the subject property, however deer yarding areas have not been identified by MNRF. Deer were not observed

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 1. Characteristics of Seasonal Concentration Areas

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.		thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%[cxciv]. • OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual"[cxcv] • Woodlots with high densities of deer due to artificial feeding are not significant.	minimum criteria for a deer yard to be considered as SWH[lvi, lvii, lviii, lix, lx, i]. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations[cxcv]. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #2 provides development effects and mitigation measures.	in significant amounts during winter wildlife surveys. **Not SWH**
Deer Winter Congregation Areas					
Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions[exlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv] , ground or road surveys, or a pellet count deer density survey[ccxxv]. • If a SWH is determined for Deer Wintering Area of if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #2 provides development effects and mitigation measures.	Woodland habitats are present in the subject property, however deer wintering areas have not been identified by MNRF. Deer were not observed in significant amounts during winter wildlife surveys. **Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 2. Characteristics of Rare Vegetation Communities

Rationale	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes	Habitat Description	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
Cliffs and Talus Slopes					
Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources</u> • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMiST[cxlix] Index #21 provides development effects and mitigation measures.	Vegetation communities not present. **Not SWH**
Sand Barren					
Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	Any sand barren area, >0.5ha in size. <u>Information Sources</u> • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)[l]. • SWHMiST[cxlix] Index #20 provides development effects and mitigation measures.	Vegetation communities not present. **Not SWH**
Alvar					
Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleochairs compressa 4) Scutellaria parvula 5) Trichostema branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoo geographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5 ha in size[lxxv]. <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five Alvar indicator species[lxxv, cxlix] at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMiST[cxlix] Index #17 provides development effects and mitigation measures.	Vegetation communities not present. **Not SWH**
Old Growth Forest					
Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest Í. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii] • The stand will have experienced no recognizable forestry activities[cxlviii] • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand[lxxviii] • SWHDSS[cxlix] Index #23 provides development effects and mitigation measures.	Vegetation communities not present. Woodlands are not mature enough. **Not SWH**
Tallgrass Prairie					
Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • OMNR Districts • Natural Heritage Information Center (NHIC) has	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).	Vegetation communities not present. **Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 2. Characteristics of Rare Vegetation Communities

Rationale	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes	Habitat Description	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
			location information available on their website • Field naturalists clubs • Conservation Authorities	• SWHMiST[cxlix] Index #19 provides development effects and mitigation measures.	
Savannah					
Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics sp.). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	Vegetation communities not present. **Not SWH**
Other Rare Vegetation Communities					
Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii] The OMNR/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	SWT2-4 is ranked S3. **Study Area: Candidate SHW** **Subject Property: Confirmed SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 3. Characteristics of Specialized Wildlife Habitat

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
Waterfowl Nesting Area					
Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120m[cxlix] from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	Suitable wetland habitats are present in the subject property with adjacent upland habitats. Nesting pairs of indicator species not observed. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey <u>Special Concern</u>: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi], ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant[ccvii] • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #26 provides development effects and mitigation measures	Forested communities are located next to open water wetland communities and may be suitable. Osprey was observed with possible breeding evidence at MBB-04, which is adjacent to an open water wetland community. An active nest was not observed. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Woodland Raptor Nesting Habitat					
Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat[lxxxviii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper's hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of habitat is the SWH[ccvii]. • Barred Owl – a 200m radius around the nest is the SWH[ccvii]. • Broad-winged Hawk and Coopers Hawk – a 100m radius around the nest is the SWH[ccvii]. • Sharp-shinned Hawk – a 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in	The interior habitat for the large contiguous forest on the subject property is not large enough, however, some potential raptor nests were observed. These nests were not observed to be occupied. **Study Area: Candidate SWH** **Subject Property: Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 3. Characteristics of Specialized Wildlife Habitat

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
			• Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST[cxlix] Index #27 provides development effects and mitigation measures.	
Turtle Nesting Areas					
These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle <u>Special Concern</u>: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH[cxlviii]. • Travel routes from wetland to nesting area are to be considered within the SWH[cxlix]. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No suitable habitat within study area. The agricultural fields adjacent to the wetlands do not contain sand and gravel substrates. Turtle nesting or evidence of nesting was not observed. **Not SWH**
Seeps and Springs					
Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxix, cxx, cxxi, cxxii, cxiii, cxiv <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists clubs and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat[cxlviii] • SWHMiST[cxlix] Index #30 provides development effects and mitigation measures	Seeps and springs have not been identified in previous studies and were not observed within the subject property. **Not SWH**
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii] <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • OMNRF wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses)[lxxi] or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys[cviii] will be required during the spring March-June when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the woodland area plus a 230m radius of woodland area[lxiii,lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi] if a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is the be included in the habitat. • SWHMiST[cxlix] Index #14 provides development effects and mitigation measures.	Previous studies from <10 years ago on the subject property confirmed this habitat type. WET-02 and WET-07 had Spring Peeper and Gray Tree Frog with call code level 3. WET-07 and adjacent woodland communities meet the requirements to be considered significant. **Study Area: Candidate SWH** **Subject Property: Confirmed SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 3. Characteristics of Specialized Wildlife Habitat

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
			• Ontario Vernal Pool Association: http://www.ontariovernalpools.org		
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m2 (about 25m diameter)[ccvii] supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats[clxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 individuals (adults or eggs masses)[lxxi, lxxiii], or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys[cviii] will be required during spring March to June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST[cxlix] Index #15 provides development effects and mitigation measures.	Previous studies from <10 years ago on the subject property confirmed this habitat type. Salamander breeding is likely present in some of the wetlands. WET-06 contained Gray Treefrog at call code 3 and >20 individuals for Unisexual Ambystomas and Red-spotted Newt. Salamander breeding is likely occurring within WET-06 based on pitfall trap observations. **Study Area: Candidate SWH** **Subject Property: Confirmed SWH**
Woodland Area-Sensitive Bird Breeding Habitat					
Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha.[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvii, clviii, clix • Interior forest habitats are at least 200m from forest edge habitat. Information Sources • Local bird clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to greatest value to interior species • Reports and other information available from CAs.	• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #34 provides development effects and mitigation measures.	The interior habitat for the large contiguous woodland on the subject property is not large enough. Only two of the listed species, Veery and Blackburnian Warbler, were observed with possible breeding evidence in 2022, Aboud (2020) observed Red-breasted Nuthatch with possible breeding evidence in the plantation. Numbers are not sufficient within one woodland community for this habitat. **Study Area: Candidate SWH** **Subject Property: Not SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 4. Characteristics of Habitat for Species of Conservation Concern

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
Marsh Bird Breeding Habitat					
Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan <u>Special Concern</u>: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species[l]. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH[l]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi]. • SWHMiST[cxlix] Index #35 provides development effects and mitigation measures	Marsh wetland communities are present within the study area. Only one marsh bird species, Sora, was documented during marsh breeding bird surveys, exhibiting possible breeding evidence. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Open Country Bird Breeding Habitat					
This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow <u>Special Concern</u>: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha [clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[l]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi]. • SWHMiST[cxlix] Index #32 provides development effects and mitigation measures.	Indicator species are known from the study area and have been observed on the subject property in previous surveys. Open habitats are approximately 15ha. Only one open country species, Savannah Sparrow, was observed within the retained meadow community in the north with no breeding evidence. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Shrub/Early Successional Bird Breeding Habitat					
This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	<u>Indicator spp.</u>: Brown Thrasher Clay-coloured Sparrow <u>Common spp.</u>: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher <u>Special Concern</u>: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha[clxiv] in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[l]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species [clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[l]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMiST[cxlix] Index #33 provides development effects and mitigation measures.	Savannah and thicket habitat within the subject property are >10ha. Brown Thrasher was observed with possible breeding evidence at BMB-06, which is near appropriate habitats. Field Sparrow and Eastern Towhee were observed with probable and possible breeding evidence, respectively, in appropriate habitats. This breeding evidence is not strong enough to be considered significant **Study Area: Candidate SWH** **Subject Property: Not SWH**
Terrestrial Crayfish					
Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [ccii]	Chimney or Digger Crayfish: (*Fallicambarus fodiens*)	MAM1 MAM2 MAM3 MAM4	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows,	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci]	Suitable wetlands are present in the study area however crayfish have not been observed in previous studies. One crayfish burrows was

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 4. Characteristics of Habitat for Species of Conservation Concern

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
	Devil Crawfish or Meadow Crayfish: (*Cambarus Diogenes*)	MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	• Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH • Surveys should be done April to August during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult[cci] • SWHMiST[cxlix] Index #36 provides development effects and mitigation measures.	observed within the MAS3-2 community, which is not significant. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Special Concern and Rare Wildlife Species					
These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website: "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST[cxlix] Index #37 provides development effects and mitigation measures.	The following SCC were observed with suitable habitat on the subject property: • Bristly Buttercup • Eastern Wood-Pewee • Snapping Turtle • Northern Ribbonsnake Monarch was also observed in numerous habitats, however, Milkweed, its host plant, was not found in sufficient numbers to qualify as SWH. **Study Area: Candidate SWH** **Subject Property: Confirmed SWH**

Significant Wildlife Habitat Assessment: Ecoregion 6E.
Table 5. Characteristics of Animal Movement Corridors

Rationale	Wildlife Species	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment Details
Amphibian Movement Corridors					
Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat [clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi]. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule[i]. <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • Field Naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Cooridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant[cxlix]. • Corridors should have at least 15m of vegetation on both sides of waterway [cxlix] or be up to 200m wide[cxlix] of woodland habitat and with gaps <20m [cxlix]. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat[cxlix]. • SWHMiST[cxlix] Index #40 provides development effects and mitigation measures.	Amphibian breeding habitat has been confirmed on the subject property in previous studies and movement corridors have been identified. Movement studies completed in 2022 confirmed similar movement patterns. However, suitable corridors between habitats are not significant. **Study Area: Candidate SWH** **Subject Property: Not SWH**
Deer Movement Corridors					
Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule[i]. • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion [clxxxii, clxxxiii, cxlix, cxciv]. • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center (NHIC) • Reports and other information available from CAs • Field Naturalist Clubs	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering yard should be unbroken by roads and residential areas. • Corridors should be at least 200m wide[cxlix] with gaps <20m[cxlix] and if following riparian area with at least 15m of vegetation on both sides of waterway[cxlix] . Shorter corridors are more significant than longer corridors[cxlix] • SWHMiST[cxlix] Index #39 provides development effects and mitigation measures.	Deer wintering habitat has not been identified by MNRF. **Study Area: Candidate SWH** **Subject Property: Not SWH**

Appendix IV
Approved Terms of Reference

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

August 9, 2022 **Project No. 2778**

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CC: Scott Wilson
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Dear: Leah Lefler & Ben Kissner

RE: Southgate Business Park, Guelph ON
Environmental Impact Study - Terms of Reference

On behalf Natural Resource Solutions Inc. (NRSI), I am pleased to provide the following Terms of Reference (TOR) for an Environmental Impact Study (EIS) associated with the proposed industrial development of Southgate Business Park at 384-352 Crawley Road in the City of Guelph, hereafter referred to as the subject property (Map 1). This TOR has been revised from the original submission to address comments from the City of Guelph and Grand River Conservation Authority (GRCA). A table outlining the comments and how they have been addressed is provided in Appendix I.

Project Background

A number of studies have been completed on the subject property to date to inform the original Draft Plan of development. Studies completed by NRSI included an EIS in 2007, Pre-construction Terrestrial and Wetland Monitoring from 2006-2010, and an Environmental Implementation Report (EIR) in 2012. The EIS was approved by the City and GRCA, however the EIR was not. Aboud & Associates also completed environmental studies in 2020 in relation to a tree permit application focusing on the plantation and hedgerows within the southwestern portion of the subject property. More recently, on May 30th, 2022 City of Guelph Council members approved a motion to commit to the prioritization of a plan of subdivision within 12 months following a complete application. This decision includes a tree compensation requirement of a total of 35,000 trees, $200,000 cash-in-lieu tree compensation, conveyance of

natural heritage system lands (including 4.45 ha of developable lands), and all appropriate road and infrastructure upgrades. This EIS will form part of the complete application.

The subject property is approximately 81.7ha in area and is bordered by Crawley Road to the southwest, Maltby Road West to the south, open industrial lands (developed and undeveloped) to the west, and woodlands and agricultural fields to the north (Map 1). The subject property contains active agricultural fields, plantation, Significant Woodlands and other treed areas, Provincially Significant Wetlands (PSW), and open savanna habitats. Many of these features comprise the City of Guelph's Natural Heritage System (City of Guelph 2022).

The wetlands, part of the Mill Creek Puslinch PSW complex, are regulated by the Grand River Conservation Authority (GRCA) under Ontario Regulation 150/06 and permitting will be required for development proposed within 120m. Three unevaluated wetlands are present within the subject property for which their regulated area is considered to be within 30m.

The proposed development is to planned to include industrial land uses, parking areas, roadways and stormwater management facilities.

As the subject property contains wetlands regulated by the GRCA and Natural Heritage System features identified by the City of Guelph (Significant Natural Areas, Ecological Linkages, Wildlife Crossings, and Restoration Areas), an EIS is required to characterize the natural features and assess potential impacts from the proposed development. A Tree Inventory and Preservation Plan (TIPP) is also required by the City of Guelph because tree removals are likely required within the subject property to facilitate the proposed development.

The following TOR has been prepared in accordance with:

- Provincial Policy Statement (PPS) (MMAH 2020),
- Grand River Conservation Authority Policies and Procedures for Compliance with the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation Ontario Regulation 150/06 (GRCA 2009),
- Grand River Conservation Authority Environmental Impact Study Guidelines and Submission Standards for Wetlands (GRCA 2015),
- City of Guelph Official Plan (2022 Consolidation),
- The Corporation of The City of Guelph, Tree By-Law Number (2010)-19058,
- City of Guelph Tree Technical Manual (2019); and
- City of Guelph's Guidelines for the Preparation of Environmental Impact Studies (City of Guelph 2020).

Associated Studies

To ensure a comprehensive analysis of potential environmental impacts and to meet both the City and GRCA's EIS requirements, associated reporting will be completed by the consulting team to provide detailed information on site topography, drainage, hydrology, soils and hydrogeological conditions. This will supplement the natural characterization reporting to be completed by NRSI and will inform the impact assessment for the EIS and TIPP. Technical support work to be completed will include:

- Hydrogeology study (GM BluePlan)
- Servicing and Stormwater Management Report (AECOM)
- Grading and engineering (AECOM)
- Planning (Astrid J. Clos Planning)

Hydrogeology studies will include a detailed monitoring program to inform a wetland water balance on a monthly basis. This information will be used to develop an appropriate concept plan, including placement and design of a stormwater management system. The EIS will summarize this information and include an analysis of impacts and recommend suitable mitigation measures to ensure protection of the natural features.

The approach to stormwater management, being completed by AECOM, will have considerations for the targets identified in the subwatershed studies that cover these lands and will identify opportunities for Low Impact Development (LID) where feasible. The EIS will review the proposed approach and assess potential impacts to natural features based on the design. Opportunities for mitigation will be highlighted where appropriate.

Phase 1. EIS Scoping - Natural Heritage Background Information Review

The background information review for this study focused on characterizing the physical and natural heritage features of the subject property and study area. While "subject property" refers to the property located at 384-352 Crawley Road, the "study area" includes the adjacent lands up to approximately 120m (Map 1). The extent of each study component is described below along with the approach to characterization.

Collection and Review of Background Information

NRSI collected existing background information on the natural heritage features for subject property and study area to guide the study approach outlined in this TOR. Background natural heritage features information was compiled from the following sources:

- City of Guelph Official Plan (2022 Consolidation),
- City of Guelph Locally Significant Wildlife List (City of Guelph 2012),
- Guelph Natural Heritage Study (Dougan and Associates 2009),
- Clair-Maltby Secondary Plan and Master Servicing Plan CEIS Phase 1 / Phase 2 Characterization Report (Wood & BA Consulting Group 2022),
- Clair-Maltby Secondary Plan and Master Environmental Servicing Plan (CMSP / MESP) and Comprehensive Environmental Impact Study (CEIS). Phase 3 Impact Assessment and Management Plan (Wood et al., 2022),
- The Hanlon Creek Watershed Plan (MMM and LGL 1993),
- Hanlon Creek State-of-the-Watershed Study (Peil et al. 2004),
- Mill Creek Subwatershed Plan (CH2m Gore et al. 1996),
- Southgate Business Park EIS (NRSI 2007),
- Southgate Business Park EIR (NRSI 2012) and EIR Addendum (NRSI 2014)
- Southgate Business Park Environmental Study Report (Aboud & Associates 2020),
- GRCA Interactive Mapping Tool (2022),
- Make a Map: Natural Heritage Areas online mapping tool,
- Government of Canada Species at Risk Act (SARA) Registry (2021),
- Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2006),
- ebird (Cornell Lab of Ornithology 2021),
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2019),
- Atlas of the Mammals of Ontario (Dobbyn 1994),
- Department of Fisheries and Oceans Canada - Aquatic SAR Mapping (DFO 2021),
- Ontario Butterfly Atlas (MacNaughton et al. 2021), and

- Ontario Odonata Atlas (MNDMNRF 2022).

The wildlife and insect atlases listed above provide data based on 10x10km survey squares. Information was compiled from the atlas squares that overlap the study area (squares 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,).

The background information will be integrated with original updated data collected by NRSI during the 2022 field surveys to inform the characterization component of the EIS.

Species at Risk and Species of Conservation Concern Screening

Initial wildlife species lists for the area were developed using these background sources and informed a desktop screening exercise to determine the potential for Species at Risk (SAR) and Species of Conservation Concern (SCC) to occur within or adjacent to the subject property. Full results of the SAR and SCC screening is provided in Appendix II.

Significant Wildlife Habitat Screening

Based on available background information, a desktop Significant Wildlife Habitat (SWH) screening exercise was also completed to identify a preliminary list of candidate SWH types (MNR 2000, MNRF 2015a) which may be present within or adjacent to the subject property, and which will be assessed through the field program. The full SWH screening is provided in Appendix III. Any SWH confirmed through field surveys or previously identified through other study will be carried forward into the EIS.

Phase 2. Natural Heritage Characterization

A multi-season (spring, summer, fall, and winter) field inventory program has been developed to include assessment of on-site and adjacent species and habitats. Inventories of wildlife and vegetation on the subject property and adjacent habitats will include the following specific surveys. Proposed monitoring station locations are shown on Map 2. Where possible, data from Aboud & Associates recent surveys (2020) will be integrated and surveys are not proposed to be duplicated in habitats that have been recently assessed. Given the seasonal timing windows, some surveys have already begun or are complete, as outlined below.

Winter Wildlife Movement Surveys

Three winter wildlife surveys occurred during the winter months (December-March) within 24-48 hours of a fresh snow fall when snow depth was >10cm on average. These surveys were completed on Feb 8, 2022, March 3, 2022, and March 14, 2022. The subject property was surveyed for wildlife tracks, travel corridors, and other evidence of use by wildlife, and mammal species in particular. Upon encountering tracks, the direction of movement, number of individuals, species, and behaviour was recorded where possible. Observations were mapped to identify wildlife movement patterns at a site-level scale.

Raptor Wintering Surveys

Five raptor wintering surveys were completed between December-March following *Bird and Bird Habitats: Guidelines for Wind Power Projects* (MNR 2011). These surveys occurred on Feb 8, 2022, March 3, 2022, March 14, 2022, March 16, 2022 and March 29, 2022. Suitable treed habitats were surveyed for raptor nests and raptor observations were noted.

Wildlife Camera Surveys

To assess wildlife movement and gain information on movement patterns, nine wildlife cameras were installed in key locations throughout the subject property. The cameras are proposed to be utilized throughout the entire course of monitoring (February-December). Photos from the

wildlife cameras will be analyzed to determine the direction of movement and behaviour of any wildlife observed.

Vegetation Community Mapping
The vegetation communities including soils will be updated (characterized and mapped) by NRSI biologists using the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). This will include details about the vegetation communities such as species composition, dominance, uncommon species or features, etc.

The wetland hydrology and associated functions will be assessed. The three unevaluated wetlands within the subject property will be evaluated following OWES protocols (MNR 2014). The results of the evaluation exercise will be sent to the MNDMNRF for review.

Vascular Flora Surveys
Multi-season vascular flora inventories will involve surveying plant species in vegetation communities within the subject property in spring, summer, and fall. Any rare species or vegetation communities and their location(s) will be recorded with a handheld GPS unit.

Boundary Delineation and Mapping
The boundaries of the wetlands in and adjacent to the subject property will be delineated, flagged and surveyed with a high-accuracy GPS unit by one of NRSI's Certified Wetland Evaluators, using the Ontario Wetland Evaluation System (OWES) (MNR 2014). The flagged wetland boundaries will be reviewed in the field with GRCA and City of Guelph staff.

Significant Woodland dripline boundaries will be delineated, flagged and surveyed with a high-accuracy GPS. If requested, the flagged woodland boundaries may be reviewed in the field with City of Guelph staff.

The City's mapped Significant Landform boundary will be delineated in the field by NRSI's Ecohydrologist who has experience and qualifications to assess the feature. Refinements will be made based on site conditions, and the boundary will be flagged. The flagged boundary will be surveyed using a high-accuracy GPS by a qualified NRSI staff member. The flagged landform boundaries will be reviewed in the field with City of Guelph staff.

Boundaries will be flagged according to Official Plan designation criteria and policy. The locations of proposed boundary survey are shown on Map 2. These areas are in the proximity of proposed development; boundaries that are not near proposed development are not proposed to be surveyed. If additional significant vegetation communities within the proximity of the proposed development are identified throughout the course of the field survey program, they will be flagged and surveyed as well. If any other significant natural areas and natural areas are identified through the course of the field program are identified, they will be flagged and surveyed as well.

Tree Inventory
A comprehensive tree inventory will be completed by Certified Arborists/Registered Forester, accounting for trees ≥ 10cm Diameter-at-Breast-Height (DBH) that have the potential to be impacted by the proposed development. Each inventoried tree will be marked with a numbered aluminum forestry tag and its location will be recorded along with the following information:

- Tree tag number,
- Species,
- DBH measurement (cm),

- Crown radius (m),
- Number of stems,
- Overall health (excellent, good, fair, poor, very poor, dead),
- Potential for structural failure (improbable, possible, probable, imminent),
- Tree location (on-site, off-site, boundary), and
- General comments (i.e., disease, aesthetic quality, development constraints, sensitivity to development).

All information gathered during the tree inventory will be used to prepare a TIPP that will be submitted along with the EIS, summarizing the findings of the tree inventory, and comparing the tree layout to the proposed development plan. The ownership of trees will also be identified for trees within 6m of property lines.

Breeding Bird Surveys

In accordance with OBBA methods (OBBA 2021a, OBBA 2021b), three breeding bird surveys will be conducted at least 10 days apart between late May and early July. Species will be documented through 10-minute point counts and recorded with standard breeding evidence. One breeding bird survey has already been completed, on June 6, 2022. These surveys, along with habitat characterization, will allow for the identification of any SAR/SCC birds or SWH for birds present within or adjacent to the subject property.

Marsh Breeding Bird Surveys

Two evening marsh breeding bird surveys will be conducted at least 10 days apart between late May and early July as per the Marsh Monitoring Protocol (BSC 2009a), 4 hours before sunset until 30 minutes after sunset. One survey has already been completed, on May 25, 2022. The surveys will consist of 15-minute call-playback point counts of common marsh bird species, completed where suitable marsh habitat is present within the subject property. All birds observed, as well as the highest level of breeding evidence exhibited for each species, will be recorded.

Common Nighthawk Surveys

Two evening surveys will be completed in suitable habitat for Common Nighthawk (*Chordeiles minor*). Surveys will occur between June 15 and July 15, at least 10 days apart, 30 minutes before sunset until 1 hour after sunset. Six minute point counts will be completed, following the Ontario Breeding Bird Atlas Nightjar Survey protocol (Birds Canada 2021). Surveys will occur on evenings with good visibility, little precipitation, low winds, and a maximum temperature of 30°C.

Anuran Call Surveys

Three anuran (frog and toad) point count surveys will be completed following the Marsh Monitoring Program Protocol for Surveying Amphibians (BSC 2009b). Two surveys have already been completed on April 20, 2022 and May 25, 2022. The last survey will occur in June 2022. Surveys are conducted at least one-half hour after sunset, and when the air temperatures are >5°C, >10°C and >17°C, respectively.

Egg Mass Surveys

Two egg mass surveys were completed on April 13, 2022 and May 17, 2022 to inform the presence of amphibian breeding habitat. Surveys included a visual scan of the edges of wetland habitats for egg masses. Species were identified where possible.

Turtle Basking Surveys

Five visual basking surveys for turtles were conducted to assess the presence of turtle species, with focus on Blanding's Turtle (*Emydoidea blandingii*). The surveys occurred on April 12, April 28, May 11, May 17, and June 2, 2022. These surveys are consistent with the methods outlined in the *Occurrence Survey Protocol for Blanding's Turtle in Ontario* (MNRF 2015b) which is suitable for identifying all turtle species. Turtle Visual Encounter Surveys (VES) will also be completed in suitable habitats.

Snake Surveys

Ten snake VES will be completed following *Survey Protocol for Ontario's Species at Risk Snakes* (MNRF 2016) during suitable weather conditions within suitable habitats (i.e., along woodland and wetland edges and within open natural areas) to assess for the presence of Eastern Ribbonsnake (*Thamnophis sauritus).* Cover objects such as logs, rocks, etc. will be checked. Four surveys have been completed to-date, on April 28, May 11, May 17, and June 6, 2022.

Snake coverboards were installed in April 2022 within suitable habitats on the subject property and will be checked until late fall (October/November). The boards have their upper surfaces painted black to absorb heat. They will be checked in the morning or late evening when conditions are most appropriate to observe snakes basking underneath the boards.

Salamander Movement Surveys

Temporary light-duty silt fences has been installed in key locations to assess salamander and other small amphibian/animal movement. These surveys will assist in determining amphibian movement corridors. Pitfall traps were installed on either side of the fence, spaced approximately 10m apart. Fences were installed in a maximum of 50m stretches with approximately 10m gaps in between to allow for movement between habitats when traps are not open/being checked. Pitfall trap will remain closed until a suitable weather event is predicted, at which point traps will be opened in the evening and checked the following morning. Five morning checks have been completed in the month of April. The fencing and traps will remain in place until approximately the end of October, when traps will be selectively opened during good weather events to document later season movement. Depending on weather, trap checks will be conducted once in May, once in June, twice in September, and twice in October.

Insect Surveys

Three area searches designed specifically for the Yellow-banded Bumble Bee (*Bombus terricola*), a provincially and federally listed species of Special Concern with records in the City of Guelph, will occur in late July and early August. At the recommendation of the MNRF, surveys will follow the Rusty-patched Bumble Bee Survey Protocol (see Appendix 3 in Colla and Taylor-Pindar 2011) and will occur during suitable survey conditions (i.e., warm, sunny, and little wind). These surveys will occur during suitable conditions for odonates and lepidoptera as well. Therefore, all other odonates and lepidoptera species encountered during these surveys will be documented, with a particular focus on SAR and SCC.

Bat Habitat Assessment

An assessment of trees within isolated trees and hedgerows occurred during the leaf-off period was undertaken on May 4. 2022 following MNRF protocols (2014b, 2017). Trees around the perimeter of the Sugar Maple forest (park block) near the proposed development were also assessed on May 26, 2022.

The following information was collected for each standing live or dead trees ≥10 cm DBH with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark to identify suitable maternity roost trees:

- Species;
- DBH (cm);
- Decay class (Watt & Caceres 1999);
- Canopy cover (%);
- Approximate tree height (m); and
- Roost tree attributes:
- Number, type, and height of cavities;
- Presence of loose bark; and
- Evidence of use by predators or other species.

Candidate bat roost trees were identified within these areas; NRSI has had correspondence with MECP and they have indicated that bat acoustic monitoring is required in order to determine whether impacts to SAR bats are expected as a result of proposed tree removals. Bat acoustic monitoring will occur in June 2022 and will focus on treed areas proposed for removal, which includes hedgerows, clusters of isolated trees, and targeted locations within the plantation. The proposed monitoring approach has been approved by MECP (Appendix IV).

During the full tree inventory, Maples (*Acer* sp.) or Oaks (*Quercus* sp.) within the subject property will be also identified as potentially suitable Tri-colored Bat (*Perimyotis subflavus*) roosting sites (i.e., may contain dead leaf clusters), where appropriate.

Habitat for bat SAR may be present within the woodlands and treed features associated with the PSW's and Significant Natural Areas that are likely to be retained. Therefore, focused plot assessment surveys and acoustic monitoring for bat SAR to identify potential maternity roosts are not deemed necessary.

Aquatic Habitat Assessment

An aquatic habitat assessment was completed by an aquatic biologist on June 2, 2022 for open water habitats and drainage features within the subject property. This assessment included documenting and mapping aquatic habitat features, adjacent land uses, in-water habitat and cover, riparian and shoreline habitat and cover, aquatic vegetation, and important habitat features. The aquatic features will be assessed in terms of their potential to provide fish habitat and the quality of habitat available. Headwater Drainage Feature assessments are not proposed as part of this field program because all drainage features coincide with/are adjacent to wetlands, which are to be retained and will have water balance maintained. Additionally, the drainage features on this property would not meet the definition of a Headwater Drainage Feature, as defined in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA and CVC 2014).

Incidental Wildlife

In addition to the targeted surveys noted above, all wildlife species observations will be recorded during field surveys. This includes direct observations, as well as signs such as dens, tracks, scats, etc.

All required wildlife survey permitting will be obtained to conduct the surveys mentioned above.

Natural Feature, Mitigation and Constraints Assessment

The results of the field surveys will be combined with the background information to provide a detailed summary of the existing natural features that occur within and adjacent to the subject property. This will include detailed vegetation community descriptions and mapping, and summaries of wildlife species present within the subject property and adjacent areas.

The significance of natural heritage features in the study area will be evaluated in the context of federal, provincial, and municipal policy. The Significant Landform that will be flagged and surveyed will be assessed using a Digital Elevation Model to create slope classes, consistent with the methodology used by the City of Guelph (2022).

If targeted surveys are not undertaken for specific SWH, a conservative approach will be undertaken where suitable habitat is present and those areas will be acknowledged as candidate SWH. All other aspects of natural feature significance or sensitivity identified through the field surveys will be incorporated into this assessment, and provided to the client to inform their plans.

Wildlife Crossings currently shown on the City of Guelph's Official Plan (2022) within the Natural Heritage System will also be assessed in terms of the results of the detailed field surveys. Locally significant species habitats will be identified and mapped.

Phase 3. Impact Assessment

Environmental Impact Study Report

An EIS report will be prepared that includes a description and context of the study area, project methodology, policy discussion (including federal, provincial, and local policies), field survey methodology and results, detailed existing conditions (including physical characteristics such as geology, soils, hydrology, hydrogeology, vegetation, wildlife, and aquatic habitat), an assessment of significance and sensitivity of natural features and hazards, impact analysis, and recommendations. The results of the natural feature assessment will form the existing conditions of the EIS, including survey results, delineated wetland and other vegetation communities, and final SAR, SCC and SWH screenings.

The proposed development will be discussed in relation to relevant current policies and regulations, including the GRCA Wetlands policy, the City of Guelph Official Plan (2021 Consolidation), City of Guelph Tree By-law (2010)-19058, and the Provincial Policy Statement (OMMAH 2020). Recommendations from relevant subwatershed studies will also be assessed and incorporated.

A buffer analysis will be completed for any identified natural features or habitats on the property. These buffers will be mapped and shared with the project team. Candidate and confirmed SWH identified within and adjacent to the subject property will also be mapped.

Impact Analysis, Mitigations, and Enhancement

The proposed development will be informed by the natural features and ecological functions on the subject property. An impact analysis will be completed based on the proposed site plan. Any areas of overlap between significant natural features, habitat areas, and the development will be discussed with the client and options for avoiding or minimizing impacts will be recommended. The impact of the development will be determined based on the footprint of the proposal as well as indirect effects such as changes to wetland water balance (including runoff,

infiltration, and evapotranspiration), impacts to wildlife, construction and occupancy impacts. Information from the TIPP will be incorporated into the impact analysis.

A buffer analysis will be completed to determine appropriate buffer widths, in consultation with the project team, and in accordance with Official Plan policy.

The analysis will consider potential direct (e.g., habitat removal), indirect (e.g., construction-related impacts, hydrological), induced (e.g., post-construction human use), and cumulative impacts on the existing natural features. The impact analysis will be prepared based on details of the proposed development, including grading details, the Stormwater Management Plan, and other suitable documents, where available. Impacts on site hydrology, surface drainage patterns, and recharge zones that sustain the wetlands in the study area will also be discussed. NRSI will incorporate and summarize the results of other technical studies and plans to be completed by other professional team members that are relevant to the impact analysis. The buffer analysis will be included within the EIS report. Proposed trail alignments will be assessed to determine conformance with Official Plan policies and potential impacts. Mitigation measures (such as trail design and educational signage) will be determined to inform detailed design.

Recommendations will be provided to avoid, or otherwise minimize or mitigate adverse impacts to natural features associated with the proposed development. Recommendations with regards to mitigation of all identified impacts will be made and opportunities for habitat enhancement and restoration (e.g., the installation of nesting structures for birds and bats, planting native species to enhance vegetation communities) will also be highlighted.

Where applicable, recommendations will be provided for during-construction or post-construction monitoring, as well as ecological restoration, enhancement, or management. The EIS will identify surveys and tasks/items to be considered and detailed in an Environmental Implementation Report (EIR) prior to Site Plan approval. This will include specific guidance for mitigation measures such as signs for environmental outreach and education, and recommendations going forward. It will also include specific recommendations that should be carried forward from the EIS with regards to management of the natural features and landscape drawings (including grading and drainage plans).

Tree Inventory and Preservation Plan (TIPP)

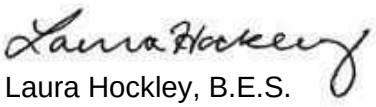
Inventoried trees will be mapped and the location of each tree will be compared to the proposed development plan, including the preliminary grading plan to determine which trees can be retained, removed, or where feasible, relocated.

A TIPP report will be developed in tandem with the final plans, with an effort to retain a maximum number of trees throughout the development. The plan will identify individual trees to be retained, removed or relocated, including their dripline, location and type of tree protection fencing and location of information signs along the tree protection fencing. The TIPP report will be prepared by a Certified Arborist or Registered Professional Forester and appended to the EIS, and will provide a summary of tree inventory results and recommendations for tree management, mitigation and compensation, if required. It is expected that, at the EIR stage, tree retention analysis will be completed again based on final grading plans.

A Vegetation Compensation Plan (VCP) will be included with the EIS that includes recommendations and guidance from the Tree Technical Manual (City of Guelph 2019). The VCP will outline the areas and locations of proposed compensation plantings, species and size of planting material, planting standards, site preparation, maintenance, and monitoring/objectives.

Should you have any questions or comments regarding this letter, please do not hesitate to contact the undersigned.

Sincerely,
Natural Resource Solutions Inc.



Laura Hockley, B.E.S.
Environmental Analyst

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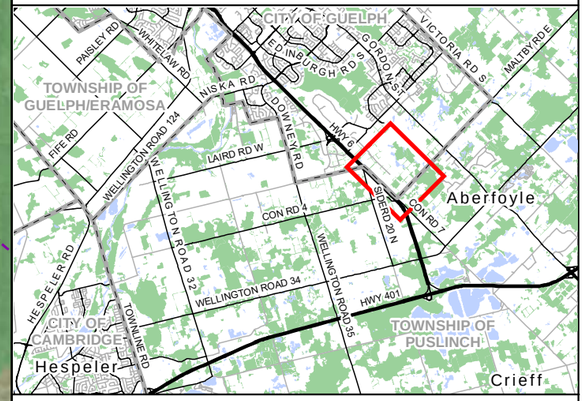
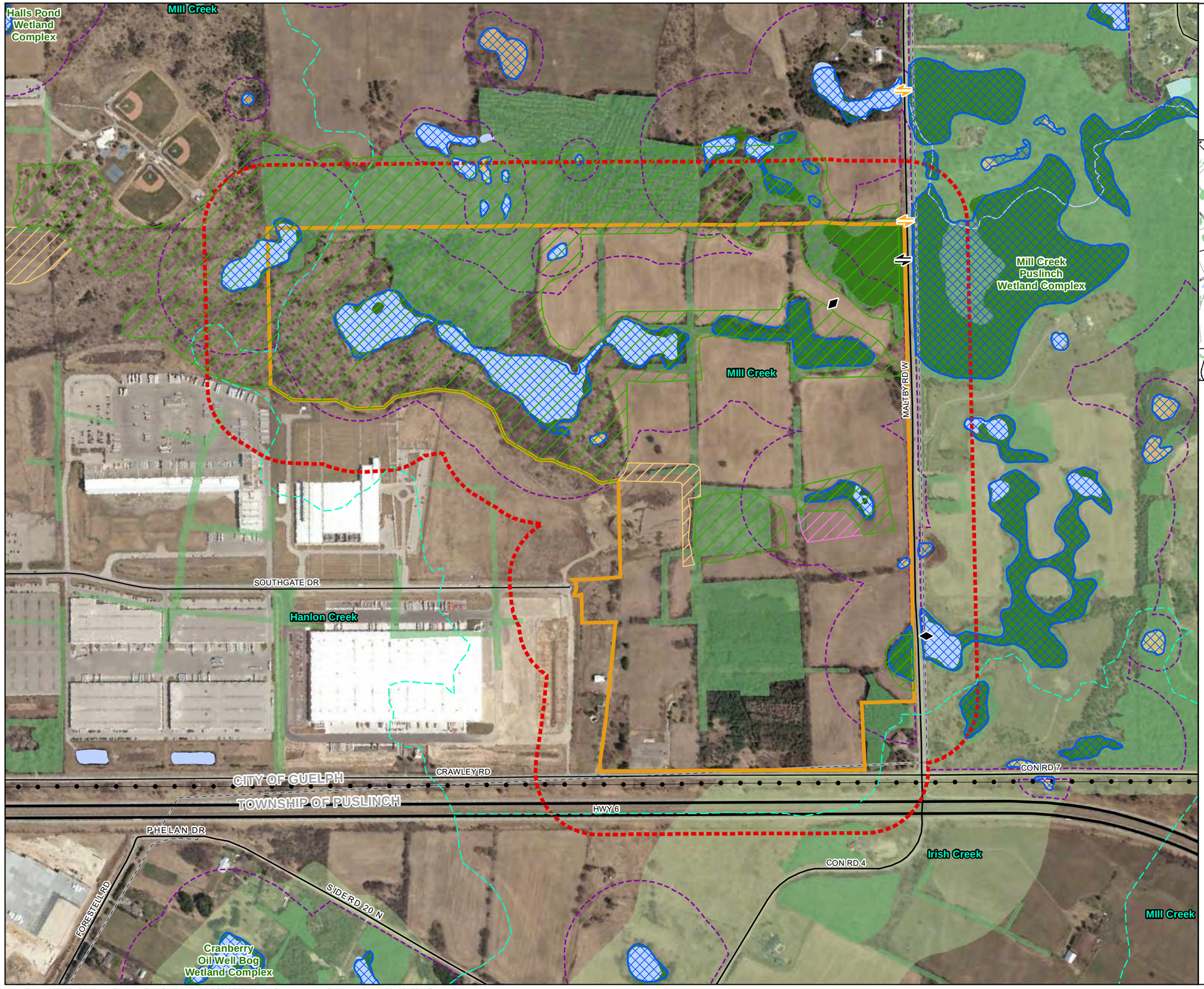
MAPS

Map 1

Southgate Business Park EIS

Study Area and Natural Features





Legend

- Study Area
- Subject Property
- City of Guelph Boundary
- Utility Line
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse (MNDMNRF)
- Water Body (MNDMNRF)
- Provincially Significant Wetland (PSW) (MNDMNRF)
- Unevaluated Wetland (MNDMNRF)
- Regulated Wetland (GRCA)
- Wooded Area
- Regulation Limit (GRCA)
- Floodplain (GRCA)
- Subwatershed (Wood 2022) (approximate)
- Growth Plan Natural Heritage System

Natural Heritage System (City of Guelph 2022)

- Significant Natural Areas
- Ecological Linkages
- Restoration Areas
- Amphibian Crossings
- Deer Crossings
- Other Wildlife Crossing Opportunities

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Project: 2778 Date: August 2, 2022	NAD83 - UTM Zone 17 Size: 11x17" **1:7,000**

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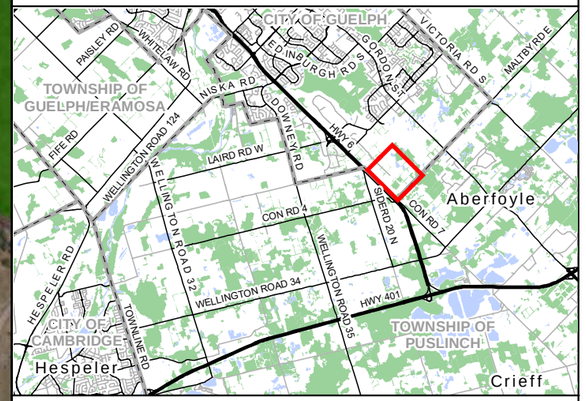
Map 2

Southgate Business Park EIS

Monitoring Stations



Legend

- Subject Property
- Provincially Significant Wetland (PSW)
- Unevaluated Wetland
- Proposed Wetland Boundary Survey and Confirmation*
- Proposed Woodland Boundary Survey and Confirmation*
- Winter Raptor Nesting Transect
- Salamander Drift Fencing (pitfall traps approximately every 10m on either side)
- General Wildlife Movement Camera
- Anuran Call Survey Station (ANR)
- Breeding Bird Monitoring Station (BMB)
- Snake Cover Board Location (SNK)
- Marsh Breeding Bird Monitoring Station (MBB)
- Common Nighthawk Monitoring Station (CONI)
- Turtle Basking Survey Pond (BSK)

*Note: Significant Landform boundary proposed to be surveyed and confirmed (not shown)

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2778
Date: August 9, 2022

NAD83 - UTM Zone 17
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APPENDIX I

Agency Comment Table

City of Guelph (Leah Lefler) Comments on Terms of Reference Submission 1 (July 21, 2022

Comment # Reference	Comment	NRSI Response
1	Please update the EIS TOR to note that environmental planning staff should be present during the flagging of wetland, woodland, and significant landform boundaries. Note that the approach used to confirm the boundaries of the natural heritage system must follow Official Plan designation criteria and policy.	Page 5 has been updated to reference that City staff will be present for the boundary flagging confirmation and that Official Plan designation criteria and policy will be used.
2	Page 5 of the EIS TOR notes that, if identified through the course of the field survey program, additional significant vegetation communities will be flagged and surveyed. This should be expanded to include any additional significant natural areas and natural areas that are identified through the course of the field survey program.	Page 5 has been updated to include the flagging of additional significant natural areas and natural areas, as required.
3	Under Phase 2 Natural Heritage Characterization, please include characterization of wetland hydrology and associated functions, including the three unevaluated wetland features identified in the EIS TOR. Further, a complexing exercise following the Ontario Wetland Evaluation System protocol should be completed for the three unevaluated wetland features. The results of the complexing exercise should be sent to the Ministry of Northern Development, Mines, Natural Resources and Forestry for review. Please note that this evaluation is needed to determine appropriate buffer widths based on Official Plan policy.	Pages 9 & 10 have been updated to include additional characterization and assessment of wetlands. Page 5 has been updated to include the evaluation of the unevaluated wetlands within the field program.
4	Please provide documentation of correspondence with the Ministry of Environment, Conservation and Parks regarding bat Species at Risk and proposed survey methodologies. Further, please confirm MECP's position on the requirements for surveying bat SAR habitat within treed areas and areas of woodland that are proposed for removal.	Appendix IV includes correspondence with MEPC regarding the approach to bat monitoring. MECP has confirmed that acoustic monitoring is required for any treed areas containing candidate SAR bat habitat, including hedgerows.
5	Please clarify if Headwater Drainage Feature assessments are proposed as a component of the Aquatic Habitat Assessment.	Page 8 has been updated to clarify that Headwater Drainage Feature assessments have not been completed as part of the field program.
6	In the Impact Analysis, Mitigations and Enhancement section of the EIS TOR, please expand "changes in drainage" to explicitly reference changes to wetland water balance including runoff, infiltration, and evapotranspiration	Pages 9 & 10 have been updated to include additional assessment of wetlands.
7	The Impact Analysis, Mitigations and Enhancement section should be updated to include an assessment of appropriate buffer widths and the need for	Page 10 has been updated to include assessment of appropriate buffer widths.

	established buffers, consistent with the buffer policies in Section 4 of the Official Plan.	
8	Please update the Impact Analysis, Mitigations and Enhancement section to include an assessment of policy conformance and evaluation of impacts associated with proposed trail alignments and recommended mitigation measures to inform detailed design, such as educational signage.	Page 10 has been updated to include additional assessment of trail alignments and mitigation measures.
9	Please explain why the more southerly portion of woodland, adjacent to Crawley Road is not mapped as “Wooded Area” on Map 1. Based on the air photo and based on the findings of previous studies, the extent of wooded area is much larger than currently mapped.	Map 1 shows wooded areas, as mapped by the MNDMNRF. Map 1 has been updated to reference this data source. It is understood that this wooded area is larger than what is mapped.
10	Please note that watershed boundaries were updated through the Clair-Maltby Secondary Plan process. Refer to the Phase 1 Characterization report for the refined limits of Mill Creek Subwatershed and Hanlon Creek Subwatershed.	Noted. Map 1 has been updated to include the revised subwatershed boundaries from the CMSP Phase 1 Characterization report.
11	Please update Map 2 to indicate that the woodland located in the centre of the subject property (referred to as “the plantation” in the EIS TOR) requires a woodland boundary survey and confirmation.	Map 2 has been updated to include the plantation in the woodland boundary survey/confirmation.
12	Please update Map 2 to indicate that the significant landform boundary is to be confirmed and surveyed. This could be mapped as an approximate location or added as a note on Map 2.	Map 2 has been updated to indicate that the significant landform will also be surveyed and confirmed with City staff.
13	In addition to a Tree Inventory and Preservation Plan, a detailed Vegetation Compensation Plan is required and should be reflected in the EIS TOR. The VCP should be prepared following guidance provided in Guelph’s Tree Technical Manual and must demonstrate where the required compensation plantings will be installed, species and size of planting stock, planting standards and site preparation, maintenance, and monitoring.	Page 10 has been updated to include the preparation of a Vegetation Compensation Plan as part of the EIS.

Grand River Conservation Authority (Fred Natolochny) Comments on Terms of Reference Submission 1 (July 4, 2022)

Comment # Reference	Comment	NRSI Response
1	The three unevaluated wetland features should be characterized and a complexing exercise following the Ontario Wetland Evaluation System protocol should be sent to the Ministry of Northern Development, Mines, Natural Resources and Forestry for review. The confirmed status by the MNDMNRF will help inform which GRCA policies apply and help develop suitable development setbacks and buffer treatments.	Page 5 has been updated to include the evaluation of the unevaluated wetlands within the field program.
2	The wetland limits on the property should be flagged and subsequently verified by the GRCA staff.	Noted. Page 5 includes reference to GRCA staff confirmation of flagged wetland boundaries.
3	The supporting technical studies should also assess the impacts from runoff of road salts to the adjacent wetlands and water table.	Noted.

APPENDIX IV

MECP Guidance on Bat Monitoring Approach

Subject: Re: bat SAR guidance
From: Heather Fotherby <hfotherby@nrsi.on.ca>
Date: 5/5/2022, 5:25 PM
To: "Shepherd, Mandy (MECP)" <Mandy.Shepherd2@ontario.ca>
CC: Laura Hockley <lhockley@nrsi.on.ca>

Hi Mandy,

Thanks so much for looking into this so quickly!

We will plan to monitor the hedgerows as recommended and will use our professional judgement to determine station locations.

We will also plan to monitor the area that was previously assessed by a different consulting company. To confirm, should we be aiming to stick to the requirement to place 4 stations per ha per ELC Ecosite? Or, if in our professional judgement, we are certain that a lower number of acoustic monitoring stations would be sufficient to capture this vegetation community, would this approach be accepted?

Thanks also for asking about the use of exit surveys. That's good to know that you typically advise against using them, but I'm assuming this would be on a case by case basis as well.

Thanks again for your input and guidance, we really appreciate it! We'll let you know if we have any other questions.

Regards,

Heather

Heather Fotherby M.Sc. P.Biol.
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Over 20 years of environmental consulting excellence

On 05-May-22 3:13 PM, Shepherd, Mandy (MECP) wrote:

> Just to follow up, I've attached our bat survey guidance documents for you as well.
>
> ---
>
> **From:** Shepherd, Mandy (MECP)
> **Sent:** May 5, 2022 3:09 PM
> **To:** Heather Fotherby <hfotherby@nrsi.on.ca>
> **Cc:** Laura Hockley <lhockley@nrsi.on.ca>
> **Subject:** RE: bat SAR guidance

Hi Heather/Laura,

Thanks again for meeting with me today. I spoke to my colleagues about the acoustic monitoring station set up, and they advised that you use your best judgement to determine locations that would be most likely to capture movement/use of the area – hedgerows are a bit difficult because it's not as straightforward with it not being a large continuous area (#/Ha). The guidance from MECP is to use the number/locations that would capture it as effectively as possible, based on your professional opinion. And as mentioned earlier, I would advise conducting surveys for the area that was previously assessed to ensure that nothing was missed.

I asked about exit surveys, and I was informed that the accuracy of them is not very high and so we typically do not advise using them. So we typically focus on acoustic monitoring to determine presence, and based on the risk of impact (number of trees, amount of bats detected, amount of continuous habitat in the area, etc.) we would advise on how to proceed with work/if authorization is necessary.

As I mentioned in the call, it is all heavily case by case basis.

I hope that was helpful, if you have any other questions please let me know.

Thanks,
Mandy

Mandy Shepherd
A/Fish and Wildlife Technical Specialist, Permissions Section
Species at Risk Branch
Ministry of the Environment, Conservation and Parks (MECP)
Peterborough, ON K9J 3C7

Please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Heather Fotherby <hfotherby@nrsi.on.ca>
Sent: May 4, 2022 4:30 PM
To: Shepherd, Mandy (MECP) <Mandy.Shepherd2@ontario.ca>
Cc: Laura Hockley <lhockley@nrsi.on.ca>
Subject: Re: bat SAR guidance

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Mandy,

I would like to follow-up with my previous email below. We now have a specific project where there are a few isolated trees and hedgerows where we have documented candidate roost trees that are proposed for removal. I am wondering if we can use this project as an example to discuss MECP's approach to addressing bat SAR with regards to isolated and hedgerow candidate roost trees.

We are submitting an order for additional bat acoustic equipment this week, and if possible, it would be greatly appreciated if we could set up a time to discuss this project either tomorrow

afternoon (Thursday May 5th), or on Friday May 6th.

I have attached a summary of the results of our bat habitat assessment as well as a map that shows the identified candidate roost tree locations and areas of proposed tree removals. We would like to confirm with you whether or not bat passive acoustic monitoring should be completed as part of this project, or if removal of the candidate roost trees outside of the bat active period (April 1 - Sept 30) would be sufficient to avoid contravention of the ESA.

Thanks!

Heather

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Over 20 years of environmental consulting excellence

On 28-Apr-22 8:45 PM, Heather Fotherby wrote:

> Hi Mandy,
>
> This isn't in relation to a specific project or proposed development. I am just hoping to ask someone a few general questions regarding isolated trees or trees within hedgerow features that contain potential roosting habitat for bats. Perhaps we could set up a video conference call? I would be happy to schedule a zoom call for us, but I have heard that it might be easier for MECP staff to use Microsoft Teams?
>
> Thanks!
>
> Heather

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On 28-Apr-22 11:46 AM, Species at Risk (MECP) wrote:

Hi Heather,

Can you please provide more information about the location and some background information (is this to inform removal/a development project etc.)?

Thanks,
Mandy

Mandy Shepherd
A/Fish and Wildlife Technical Specialist, Permissions Section
Species at Risk Branch
Ministry of the Environment, Conservation and Parks (MECP)
Peterborough, ON K9J 3C7
Please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Heather Fotherby <hfotherby@nrsi.on.ca>
Sent: April 14, 2022 1:06 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: bat SAR guidance

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

I am hoping to speak to someone that can provide some guidance on bat SAR habitat, and specifically with regards to isolated trees or trees within a hedgerow feature that contain potential roosting habitat for bats. Would it be possible to set up a phone call with someone that would be able to answer some general questions?

Thanks!

Heather

--

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Appendix V
Tree Inventory and Preservation Plan

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

384 Crawley Road, Guelph (Parts of Lot 13, 14, and 15 Concession 7)

Prepared for:

Industrial Equities Guelph Limited Partnership
161 Bay Street
Suite 3930
Toronto, ON
M5J 2S1

Project No. 2778 l April 2023

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan

Project Team:

David Stephenson	Senior Biologist, Certified Arborist, Project Advisor
Laura Hockley	Ecologist, Project Manager
Sophia Munoz	Terrestrial & Wetland Biologist, Certified Arborist
Jeremy Bannon	Terrestrial & Wetland Biologist, Certified Arborist, Project Advisor
Jason Sousa	GIS Specialist

Report submitted on April 24, 2023.

Sophia Munoz
ISA Certified Arborist (ON-2588A)

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Industrial Equities Guelph Limited Partnership (the "Landowner") to complete a Tree Inventory and Preservation Plan (TIPP) in support of a Phase 1 Site Plan Application for the property located at 384 Crawley Road in Guelph, Ontario (herein referred to as the subject property).

The subject property is located in the south end of the City of Guelph and is bounded by Crawley Road on the west and Maltby Road to the south. The northern limit of the property is bounded by cultural meadow and industrial land. The eastern boundary stretches through agricultural land, to the east of the white pine coniferous plantation (Map 1). The study area is mainly comprised of abandoned and cultivated fields, hedgerows, plantations, woodlands, wetlands, and cultural thickets.

This TIPP was conducted in accordance with the Tree Technical Manual (City of Guelph 2019) and the City of Guelph By-law (2010)-19058 (City of Guelph 2010). The Tree Technical Manual (2019) was developed by the City to support and supplement existing policies by promoting best practices for tree management, presenting standards for tree-related plans and reports, and promoting the maintenance and enhancement of Guelph's tree canopy. The Tree By-law states that if an owner wishes to destroy or injure a regulated tree and if none of the exemptions set out in the by-law are applicable, then the owner shall submit the information required in Part 5 of the by-law, including a Landscaping, Replanting and Replacement Plan. Within the By-law, a regulated tree is defined as:

> "*a specimen of any species of deciduous or coniferous growing woody perennial plant, supported by a single root system, which has reached, or could have reached a height at least 4.5m from the ground at physiological maturity, is located on a lot that is greater than 0.2 hectares (0.5 acres) in size and has a DBH [*diameter at breast height] of at least 10cm".

As per the City of Guelph Official Plan (2022), Section 4.2 indicates that a TIPP may be required in conjunction with an Environmental Impact Study (EIS) and/or Environmental Implementation Report where development or site alteration is proposed within the Natural Heritage System. A Vegetation Compensation Plan, in accordance with the

policies of Section 4.1.6.4, shall be required for the replacement of all healthy, non-invasive trees measuring over 10cm DBH that are proposed to be removed as part of development or site alteration.

This report provides the findings of the tree inventory, analysis of construction plans against the overall health and the structural integrity (referring to the potential for structural failure) of trees, protection measures for trees to be retained, and recommended mitigation and compensation measures. The tree data and mapping has been compared to the layout of the proposed draft plan of subdivision and preliminary grading plan prepared by AECOM Canada Inc. (2023). The TIPP shows this proposed grading, road, development, and trees inventoried (Map 2).

The existing overall health and/or potential for structural failure was compared to the layout and grading to determine whether existing trees would be impacted by the proposed undertaking. Avoidance, mitigation, and protection measures for trees were examined to determine which trees would be impacted and which could be retained.

In compliance with the Tree Technical Manual, this report summarizes the following:

- findings of the tree inventory,
- assessment of overall health and potential for structural failure of inventoried trees,
- tree retention analysis based on the proposed development concept plan,
- protection measures for trees to be retained and,
- recommended mitigation and compensation measures.

1.1 Proposed Development

NewCold Advanced Cold Logistics has entered into an Agreement of Purchase and Sale with The Landowner and is proposing an industrial development that includes industrial land uses, parking areas, roadways and stormwater management facilities. At this time, 6 phases of development have been identified, however, area stripping and pre-grading operations for Phases 1-4 is proposed to occur prior to construction of Phase 1. Vegetation removal within all developable lands (Phases 1-6) is proposed within Phase 1 as well (Map 1). The Phase 1 Site Plan Application addresses all works proposed prior to and within Phase 1 of development.

A potential future trail block is identified through the existing and proposed natural heritage system. If implemented, it is recommended that this trail follow existing grades to the extent possible to minimize grading. A separate TIPP would be required at the detailed design stage, once the trail design has been confirmed.

2.0 Tree Inventory and Methodology

An inventory of all trees ≥10 cm in Diameter at Breast Height (DBH) within the property as well as those along the boundary with the potential to be impacted by construction was completed by NRSI Certified Arborists and Registered Professional Foresters (RPF) between July 12 and December 19 2022. All inventoried trees within the subject property were tagged with a pre-numbered aluminum forestry tag and assessed by a Certified Arborist or RPF. Trees located off-property were instead assigned a unique alphanumeric identifier. Trees located within the cultural plantation (CUP3-2) are accounted for in a separate area-based compensation calculation, and therefore were not individually inventoried. The location of inventoried trees was surveyed using a mapping-grade SXBlue II GNSS GPS unit by the Certified Arborist or RPF and are shown on Map 2. A complete list of the trees that were assessed and their overall health and potential for structural failure is included in Appendix I.

The following information was recorded for each tree:

- Tree location;
- Species (common and scientific name);
- Tag number
- DBH (cm);
- Crown radius (m);
- General health (excellent, good, fair, poor, very poor, dead);
- Potential for structural failure (improbable, possible, probable, imminent);
- General comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development, etc.).

The overall health of each tree and potential for structural failure was assessed based on the criteria outlined in Appendix III. In carrying out these assessments, NRSI has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out these assessments. The assessments have been

made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. None of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken. The conditions for this assessment, including restrictions, professional responsibility, and third-party liability can be found in Appendix II.

2.1 Plantation Assessment

In 2011, NRSI completed a tally of trees within the large CUP3-2 plantation for the detailed design-level tree inventory for this property under previous development applications. This included a row-by-row tally of trees with an assessment of overall health condition. In 2018, more current conditions were included in a Plantation Management Plan prepared by Williams & Associates, which includes plantation compartment areas, densities, and species composition. Additional tallies were not completed in 2022 for this report because an area replacement approach is proposed which will compensate for tree removals in this feature, and, as such, individual tree location and health/hazard information will not be provided/updated. For the purposes of understanding the composition of the coniferous portion of this plantation feature, the information provided by Williams & Associates (2018) will be utilized in this report.

2.2 Bat Habitat Assessments

Four bat species known from the area are listed as Endangered provincially and are afforded general habitat protection under the *Endangered Species Act* (2007). Bat Species at Risk (SAR) include Eastern Small-footed Myotis (*Myotis leibeii*), Little Brown Myotis (*Myotis lucifigus*), Tri-colored Bat (*Perimyotis subflavus*), and Northern Myotis (*Myotis septentrionalis*.

These species are known to roost in tree cavities, hollows, or under loose bark, as well as within buildings (MNRF 2015). As part of the Environmental Impact Study (EIS) completed in 2022/2023, NRSI biologists visually scanned all trees ≥10cm DBH for the presence of features (i.e. cavities, loose bark, etc.) that may provide bat maternity colony habitat. The discussion of bat habitat assessment methodology is provided in the EIS.

Acoustic monitoring for bats was carried out in the vicinity of the candidate bat roost trees between late May and early July 2022. The results of the acoustic monitoring are provided in the EIS report (NRSI 2023). To avoid unintentionally harming SAR bats during tree removal (thereby ensuring compliance with the *Endangered Species Act*), tree removals are recommended to occur between October 1 and March 31, which is the period outside of the active bat season (generally April 1 to September 30). This approach must be confirmed with the Ministry of Environment, Conservation and Parks (MECP) to ensure the proposed tree removals remain in compliance with the *Endangered Species Act*, 2007.

3.0 Summary of Tree Inventory

In total, 2131 trees were inventoried, comprising 47 species. Of the inventoried trees, 1423 (67%) are native, 696 (33%) are non-native, and 12 are undetermined. A complete list of inventoried trees is provided in Appendix I and tree locations within the study area are shown on Map 2.

Appendix IV provides a list of tree species inventoried within the subject property, whether they are native or non-native and their overall health. A summary of the overall health of trees inventoried within the study area, along with their potential for structural failure can also be found in Appendix IV. A majority of the trees (67%) inventoried were in fair or better health with an improbable potential for structural failure.

Butternut (*Juglans cinerea)* trees were identified within the subject property during the tree inventory and through other surveys conducted by NRSI biologists to inform the EIS. Butternut is listed as Endangered both provincially and federally (Government of Canada 2021, MECP 2022). A total of 4 Butternut were observed in the vicinity of the proposed development, and a Butternut Health Assessment was completed for each tree and submitted to the MECP (NRSI 2023). The field hybridity test determined that all trees were Butternut hybrids which are not afforded protection under the *Endangered Species Act*.

3.1 Plantation

Williams & Associates (2018) identified two major compartments that total 4.36 hectare (ha) within the plantation located in the southwestern area of the subject property. The first compartment is a 2.57 ha Pine/Spruce Plantation. This compartment was divided into three subcompartments dominated by Norway Spruce (*Picea abies*), Eastern White Pine (*Pinus strobus*), and Red Pine (*Pinus resinosa*). The tree tally estimated 4789 trees with an average size of approximately 25 cm DBH and a density of 2000 trees per ha. The second compartment is a 1.79 ha Mixed Plantation. The most common species were White Spruce (*Picea glauca*), Eastern White Pine, and Tamarack (*Larix decidua*). The tree tally counted 1913 trees with an average size of approximately 20 cm DBH and variable density.

The full area of the plantation community as assessed by NRSI and indicated in Map 1 is 5.49 ha. This area includes the two plantation compartments as well as the narrow

hedgerows of deciduous trees that bisect and border these compartments. The inventoried sections of this adjacent deciduous hedgerow and forest community had an approximate density of 500 trees/ha. Applying this density to the remaining 1.13 ha of deciduous hedgerows produces an estimate of 565 additional trees. Therefore, the whole of the 5.49 ha plantation is estimated to contain a total of 7267 trees. This is similar to the original tally completed for the 2012 EIR.

4.0 Tree Removal and Retention Analysis

The tree removal and retention analysis in this report is based on the following considerations:

1) Trees identified as having a probable or imminent potential for structural failure or poor or very poor health and/or are dead may be identified for removal. The removal of these trees may be recommended for safety, especially where they may pose a safety risk to the adjacent development.

2) Trees that require removal based on the proposed development plan. This was determined by comparing the location of the trees to the location of the components of the development proposal as shown on Map 2. The current retention analysis reflects the proposed site plan available at the time of reporting.

A total of 1704 trees are required or recommended for removal to facilitate the proposed construction.

Among these are 38 inventoried trees located off-property or along the property boundary which are expected to require removal due to the extent of the construction impact. All of these trees have a possible to improbable potential for structural failure, and range in size from roughly 13 cm to 103 cm DBH. This includes 5 dead trees and 6 trees that have been identified as being in poor or very poor health. The remaining 27 trees are in fair to good condition but require removal to accommodate the grading which extends up the property line and into the dripline of these trees. Written permission from the landowners to remove these trees will be required by the City of Guelph to approve this plan.

Among the removals, 12 trees are located within the dripline of trees to be retained. The root flares or other roots of these trees should not be pulled out, to avoid any additional disturbance to the root zones of nearby retained trees. Therefore, it is recommended that the tree stumps be grinded in place.

410 inventoried trees are anticipated to be retained. This includes trees that are in good to very poor condition or dead and that range in size from 10 cm to 122 cm DBH. In some cases, trees have been recommended for retention despite the expectation that a

minor portion of the root system could be affected by the proposed construction activities. This recommendation has been made with the intent of retaining as many existing trees as possible, and anticipating that the affected trees will tolerate the proposed impacts. Written consent from the landowner should be acquired prior to the onset of construction for these impacted trees that are located off-property or along the property boundary.

In addition to the tree removals, 21 trees within retained areas located near the limits of disturbance have been identified for topping (ie. severe pruning of upright stems). Topping these trees to a height of 2m, or lower if required to minimize the hazard, minimizes the disturbance to the area while maintaining the tree's ability to serve as wildlife habitat.

To increase the retention of high-quality trees located within the development footprint, select trees have been identified for relocation. 17 native trees in good condition that range in size from 12.5 to 23.2 cm DBH are proposed to be transplanted via tree spade within the subject property (Map 2). This is intended to enhance the restoration of the woodland compensation area by including the establishment of more mature trees to improve size composition, increase immediate canopy cover, and provide more suitable habitat for SAR bats.

5.0 Tree Compensation and Restoration Plan

Compensation shall be provided to the City of Guelph when development requires the removal of trees equal to or greater than 10 cm DBH that are not exempt under the Tree By-law. According to City of Guelph Tree By-law (2010)-19058, trees exempt from compensation include:

- "A tree having no living tissue, having 70% or more of its crown dead, or being infected by a lethal pathogen, fungus or insect (including the Emerald Ash Borer or the Asian Longhorned Beetle), and where required, a certificate issued by an Arborist, confirming this justification for Destruction or Injuring, has been submitted to an Inspector" [Part 4, section (a)],
- "A tree which is Hazardous, and where required, a certificate issued by an Arborist, confirming this justification for Destruction or Injuring, has been submitted to an Inspector" [Part 4, section (b)]
- "A specimen of Rhamnus cathartica (common buckthorn), Rhamnus frangula (European or glossy buckthorn), Alnus glutinosa (black alder), Elaeagnus umbellate (autumn olive), or Morus alba (white mulberry)" [Part 4, section (g)],
- "A fruit tree that is capable of producing fruit for human consumption" [Part 4, section (h)].

Trees proposed for removal that have a probable or imminent potential for structural failure and/or are in poor to very poor health and/or are dead are exempt pursuant to Section 4 of the City's tree by-law and do not require compensation. Table 1 provides a summary of the trees inventoried throughout the property, the total number proposed for removal, and the proposed compensation plan. Compensation may be provided in a combination of differently sized replacement trees and is recommended to be a minimum 5:1 replacement ratio. A complete list of inventoried trees, including a determination of whether trees require compensation, is provided in Appendix I.

Table 1. Summary of Trees to be Removed* and Recommended Compensation Plan

Tree Inventory	Total
Total number of trees inventoried	2131
Total number of trees to be transplanted on-site	17
Total number of trees to be removed	1725
→ Number of non-native trees to be removed	638
→ Number of native trees to be removed	1078
→ Number of exempt trees to be removed (in poor to very poor health and/or a probable or imminent potential for structural failure and/or fruit trees)	586
→ Number of non-exempt trees to be removed	1139
Minimum number of compensation trees required (5:1 replacement ratio)	**5695**
Tree Plantation	
Total area of plantation to be removed	5.49ha
Area of replacement woodland provided (minimum 1:1)	**5.49ha**

*Includes trees to be fully removed, have stumps grinded, or be topped.

The 5.49 ha plantation feature is also proposed to be compensated by a minimum 1:1 woodland area feature replacement within the subject property.

Compensation plantings are recommended to occur primarily in the eastern portion of the subject property within the existing agricultural fields and within areas buffering natural features to be retained. A woodland feature is proposed to be created in the 5.49 ha Woodland Compensation Area as shown in the EIS Appendix XII to compensate for the removal of the large plantation (NRSI 2023). 6500 trees are proposed to be planted at approximately 1200 stems/ha and 1650 shrubs are proposed to be planted at approximately 300 stems/ha within this planting area over the course of 3 years, with an overall target density of 1000 trees/ha, consistent with the Forestry Act definition of a woodland. This objective will be measured over 7 years of monitoring. Within buffer and landform areas, individual tree compensation will be provided within 5.55 ha, which is proposed to include 5,695 trees at 1000-1600 trees/ha (3-2.5m spacing). A minimum of 12,195 trees and 1650 shrubs will be provided as compensation, for a total stem count of 13,845. Table 2 provides a breakdown of the total compensation trees being provided within the subject property.

Table 2. Summary of All Tree Compensation

Compensation Approach	Number of Compensation Stems Provided
Replacement of individually inventoried trees	5695 trees
Plantation replacement	6500 trees, 1650 shrubs

Replacement plantings will consist of species native to the City of Guelph and will not include any species that are listed as invasive. The use of hardy species will ensure successful early establishment and minimize the potential for invasive species proliferation. The EIS (NRSI 2023) outlines other restoration activities to occur within the subject property, along with recommended tree sizes and seed mixes.

17 native, high-quality trees within the development footprint have been identified for transplanting to the woodland compensation area. This is intended to enhance the restoration of the woodland compensation area by including the establishment of more mature trees to improve size composition and increase immediate canopy cover.

Exact details on the monitoring of plantings and transplants are provided in the EIS Appendix XII Restoration Plan (NRSI 2023).

6.0 Tree Protection Measures and Recommended Mitigation

During the construction process, efforts will be made to protect the health and root systems of trees that have been assessed for retention in this plan. The Landowner, or their designate (e.g. construction inspector or site manager), must ensure that all employees and contractors are informed of the meaning and importance of tree protection measures and the ways in which trees to be retained are identified.

6.1 Prior to Construction

Tree Protection Fencing (TPF) should be situated where trees are adjacent to the limit of disturbance/grading. A combined heavy-duty Erosion and Sediment Control (ESC) fence (i.e. silt fence) and TPF is recommended where trees are situated adjacent to the limit of disturbance. TPF may take the form of 1200mm high paige-wire fencing secured to iron T-bar posts at 2400mm on centre, in accordance with the Tree Technical Manual (section 4.3 and Tree Protection Zone Fence Detail UF 1.1). Signage, as per the City of Guelph Tree Protection Zone Information Signage (UF 1.2), indicating the purpose of protection fencing will be attached to the paige-wire fencing every 20m. Recommended fencing locations and sign layout as per the Tree Technical Manual (2019) are shown on Map 2.

The TPF should be installed and maintained by the developer or its designate prior to any construction activities (rough grading, vegetation and tree removal) in order to protect the root systems. Upon receipt of a detailed development and grading plan, the TIPP is to be reviewed and approved by the City of Guelph. Following approval of the TIPP, and prior to any on-site construction, fence installation and location shall be inspected by a qualified environmental consultant. They are to submit written verification to the City that all of the recommended tree protection measures have been installed in accordance with the TIPP.

6.1.1 Migratory Birds Convention Act

The removal of trees has the potential to disrupt nesting birds. The *Migratory Birds Convention Act* (MBCA) directs that all tree removals occur outside of the core nesting period for migratory birds as established by the Canadian Wildlife Service (CWS) (Government of Canada 1994). This period extends from April 1 – August 31. All developers/consultants/contractors, etc. are legally obligated to carry out due diligence

to protect migratory birds from harm during all construction projects. Despite this, certain circumstances may require tree and vegetation removals occur within the nesting period, such as those in which tree removals and construction is associated with the provision of public safety.

For any tree or vegetation removal which occurs during the nesting period, nest surveys must be conducted by a qualified biologist within small, simple habitat areas (i.e. individual isolated trees as found within the construction area) just prior to the removal activity (less than 48hrs prior to) to ensure that nesting birds are not present. Should a nest be identified within a tree(s) to be removed, there shall be no removal or construction activity until sign-off is obtained from the qualified biologist that the nest is no longer active. Trees identified as having no nesting activity can be removed; however, tree removal is to occur within 48 hours of the nest search. If tree removal does not occur within this time frame, additional nest searches are to be conducted. In the event a nest survey is conducted, a clearance memo will be prepared for your records. The memo will indicate that a qualified biologist undertook the surveys as proof of due diligence.

6.1.2 Species at Risk Bat Habitat

The destruction of Species at Risk (SAR) bats and their habitat is prohibited under the *Species at Risk Act* (SARA) (Government of Canada 2002). Since tree removal has the potential to directly impact bat roosting habitat, it is recommended this activity occur outside of the active roosting season (April 1 – September 30), to avoid the destruction of habitat and associated contravention of the Act. Further details regarding the presence of SAR bats and mitigation measures can be found in EIS (NRSI 2023).

6.2 During Construction

An Arborist is to be on-site during any vegetation removal activities to ensure that trees identified for retention are not removed or damaged. It will be especially important for an Arborist to be on-site during any removals that are adjacent to the protected natural features. The Arborist should be on-site to ensure that the TPF is functioning as intended and that tree and vegetation removal is in accordance with this TIPP and the timing windows described above. The TPF should be inspected on a regular basis throughout the construction period (i.e., once a month) or depending on frequency of works adjacent to fencing.

The recommended TPF is to be maintained by the Landowner or its agents during the entire construction period to ensure that trees being retained (including their root systems) are protected. Minor construction damage (e.g., damage to limbs or roots) to trees to be retained must be pruned using proper arboricultural techniques. Root pruning, if necessary, should be performed by a Certified Arborist using an appropriate implement to make proper pruning cuts and encourage callous root growth. Should any of the trees intended to be retained be seriously damaged or die as a result of construction activities, the Client staff should be consulted to determine a plan of action, such as treatment or compensation.

Areas protected by TPF shall remain undisturbed and shall not be used for temporary storage, placement or excavation of fill or top soil, the storage of construction materials or equipment, or the storage of debris. Recognizing the root system of a tree often extends well beyond its dripline (i.e., outside the protected area), construction contaminants such as fuels, oils, etc. should be kept clear of areas protected by the TPF.

6.3 Post-Construction

It is recommended that the TPF be removed upon completion of construction activities and adjacent areas are stabilized with a suitable vegetative cover to the satisfaction of the Environmental Inspector or qualified biologist. Removal of TPF and revegetation will permit increased root development for the remaining trees. A Certified Arborist must inspect all retained trees and their rooting area, and recommend remediation work if conditions require it. A post-construction remediation plan may be required if damage to retained trees is noted. Following remediation activities, if needed, a final assessment should be done to ensure all protocols were met.

7.0 Summary

NRSI was retained by Industrial Equities Guelph Limited Partnership to complete a Tree Inventory and Preservation Plan (TIPP) to support the Phase 1 Site Plan Application for the proposed Southgate Business Park located in Guelph, Ontario.

NRSI Certified Arborists and RPFs conducted an inventory and assessment of trees within the subject property between July and December 2022. Of the 2131 trees inventoried, 1725 are designated for removal. Among these are 38 off-property and boundary trees, whose removal is contingent on receiving landowner permission. The large plantation (CUP3-2) was also considered within this report to determine compensation requirements. The current retention analysis reflects the proposed site plan and grading plans available at the time of reporting.

It is recommended that all proposed tree removals occur in consideration of general timing windows for migratory birds and species at risk bats. It is required that written permission from impacted adjacent landowners be sought out and granted in advance of any boundary or off-property tree injuries or removals. TPF is to be installed prior to any on-site work, in order to provide adequate protection for retained trees and their root systems. All TPF is to conform to the specifications of the Tree Technical Manual (section 4.3 and Tree Protection Zone Fence Detail UF1.1).

A total of 5695 replacement trees are proposed to compensate for the removal of 1725 inventoried trees, 586 of which are exempt from compensation requirements. Additionally, 5.49 ha of woodland will be created to provide compensation for the plantation removal, which is proposed to include the planting of 6500 trees and 1650 shrubs, along with other restoration activities. Replacement plantings should consist of site-appropriate native and/or approved street tree species.

8.0 References

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APPENDIX I

Southgate Business Park, Guelph – Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
1A	Blue Spruce	*Picea pungens*	Non-native	1	35.0	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor self pruning.
2A	Blue Spruce	*Picea pungens*	Non-native	1	35	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor self pruning.
3A	Blue Spruce	*Picea pungens*	Non-native	1	35	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor self pruning.
4A	White Fir	*Abies concolor*	Non-native	1	30	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; dead lower branches.
5A	Manitoba Maple	*Acer negundo*	Native	1	54	7.0	Possible	Poor	Subject	Remove	Grading	No	40% dieback; dead branches; epicormic shoots.
6A	Manitoba Maple	*Acer negundo*	Native	1	14	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
8A	Sugar Maple	*Acer saccharum*	Native	1	54	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Large trunk wound with conk, cavity and decay at 1-1.5m, mostly compartmentalized; large crown.
9A	Manitoba Maple	*Acer negundo*	Native	1	76	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Leaning south; frass at base; rot in branch union.
10A	Common Apple	*Malus pumila*	Non-native	1	25	3.5	Possible	Poor	Subject	Remove	Grading	No	Large trunk wound; 70% deadwood.
11A	Common Apple	*Malus pumila*	Non-native	1	23	5.0	Possible	Poor	Subject	Remove	Grading	No	Major dieback; minor lean north.
12A	White Birch	*Betula papyrifera*	Native	2	35.4+32.1	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Large full crown; included bark.
13A	White Birch	*Betula papyrifera*	Native	2	30.5+20	5.0	Improbable	Good	Subject	Remove	Grading	Yes	
14A	White Birch	*Betula papyrifera*	Native	3	27+25.7+24.3	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Large full crown.
15A	White Birch	*Betula papyrifera*	Native	1	26	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Large full crown.
16A	White Birch	*Betula papyrifera*	Native	2	24.6+22.6	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor lean west; minor water sprouts.
17A	Sugar Maple	*Acer saccharum*	Native	1	18	4.0	Improbable	Good	Subject	Transplant	Grading	No	Tall narrow healthy crown.
18A	Sugar Maple	*Acer saccharum*	Native	1	41	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
20A	Tulip Tree	*Liriodendron tulipifera*	Native	1	19	2.0	Possible	Poor	Subject	Remove	Grading	No	Vertical seam; small dead branches. T-bar installed near base, indicating of planted origin.
21A	Sugar Maple	*Acer saccharum*	Native	1	45	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown with good form.
22A	Eastern White Cedar	*Thuja occidentalis*	Native	1	36	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed.
23A	Eastern White Cedar	*Thuja occidentalis*	Native	3	14.9+14.5+11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; minor dieback
24A	Eastern White Cedar	*Thuja occidentalis*	Native	3	25+18+17	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; healthy crown.
25A	Eastern White Cedar	*Thuja occidentalis*	Native	2	18.5+17.4	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; healthy crown.
26A	Scots Pine	*Pinus sylvestris*	Non-native	1	29	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback;.
27A	Scots Pine	*Pinus sylvestris*	Non-native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Moderate dieback.
30A	Norway Maple	*Acer platanoides*	Non-native	1	36	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
31A	Mountain-Ash species	*Sorbus sp.*	**	1	38	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; leader with trunk wound.
32A	Norway Maple	*Acer platanoides*	Non-native	1	42	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; one dead leader.
39A	Manitoba Maple	*Acer negundo*	Native	1	47	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Large crown slightly asymmetrical towards north.
40A	Manitoba Maple	*Acer negundo*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Forked crown; secondary growth out of stump; decay starting to progress throughout.
41A	Manitoba Maple	*Acer negundo*	Native	3	45+36.5+34.3	6.0	Possible	Very Poor	Subject	Remove	Grading	No	Multiple failed branches; epicormic growth throughout; branch dieback; larger stem leaning over adjacent field.
44A	Manitoba Maple	*Acer negundo*	Native	2	34.8+32.2	5.5	Possible	Fair	Subject	Remove	Grading	Yes	Basal wound from previous lost leader; one leader with longitudinal crack.
45A	Manitoba Maple	*Acer negundo*	Native	1	48	4.0	Improbable	Poor	Subject	Remove	Grading	No	Multiple large dead branches; minor lean; epicormic growth.
47A	Manitoba Maple	*Acer negundo*	Native	1	24	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Some dieback; epicormic growth.
48A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines overtaking crown; competing with buckthorn.
49A	Manitoba Maple	*Acer negundo*	Native	2	22.5+13.1	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead and broken lower branches; asymmetrical towards south.
50A	Manitoba Maple	*Acer negundo*	Native	1	31	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; asymmetrical towards west; 40 degree lean.
51A	Manitoba Maple	*Acer negundo*	Native	1	17	6.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; asymmetrical towards south; slight lean.
52A	Manitoba Maple	*Acer negundo*	Native	1	37	4.0	Probable	Very Poor	Subject	Remove	Grading	No	Primarily failed; fruiting bodies; amidst large blowdown pile; epicormic growth.
55A	American Basswood	*Tilia americana*	Native	2	43.1+31	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Failed leader with decay at base; codominant stems; asymmetrical crown; diseased leaves.
56A	Sugar Maple	*Acer saccharum*	Native	1	75	6.0	Probable	Fair	Subject	Remove	Grading	No	Large decaying trunk cavity; fused leaders; failed second leader and structural branch; 5% dieback.
57A	Sugar Maple	*Acer saccharum*	Native	1	33	4.0	Probable	Fair	Subject	Remove	Grading	No	Large, decaying trunk cavity; 5% dieback; decay at failed branch unions.
58A	Sugar Maple	*Acer saccharum*	Native	1	30	6.0	Possible	Poor	Subject	Remove	Grading	No	Girdling from fence; reaction wood around numerous failed branches; leader overextended east; little foliar growth.
59A	American Basswood	*Tilia americana*	Native	2	49.7+45.8	4.5	Possible	Fair	Subject	Remove	Grading	Yes	Diseased leaves; suppressed crown; codominant stems; included bark; slight lean.
60A	American Basswood	*Tilia americana*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage.
61A	Sugar Maple	*Acer saccharum*	Native	1	18	3.0	Possible	Poor	Subject	Remove	Grading	No	Girdling and reaction wood around wire fence; self-corrected stem; rusting of leaves.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
62A	Sugar Maple	*Acer saccharum*	Native	1	47	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown concentrated west; irregularly arched scaffold branch; decay in fused upper branches; 5% dieback.
63A	American Basswood	*Tilia americana*	Native	3	45+37.2+29.7	5.5	Possible	Poor	Subject	Remove	Grading	No	Failed, decayed leader; decaying basal wound on stem; overextended leader; diseased leaves.
64A	American Basswood	*Tilia americana*	Native	3	64.4+53+51.2	6.0	Probable	Poor	Subject	Remove	Grading	No	Diseased leaves; epicormic growth; failure and decay of major stem, with basal decay of adjoining leader; fused trunks of smaller leaders.
65A	Sugar Maple	*Acer saccharum*	Native	1	21	3.0	Probable	Poor	Subject	Remove	Grading	No	Girdling from wire fence; reaction wood surrounded wire; 10% dieback; dead lower branches.
67A	Black Cherry	*Prunus serotina*	Native	1	12	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed crown; dead lower branches; minor vine growth.
68A	Black Cherry	*Prunus serotina*	Native	1	23	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Healthy; suppressed on east and west.
69A	Black Cherry	*Prunus serotina*	Native	1	32	5.5	Improbable	Good	Subject	Remove	Grading	Yes	Tall healthy crown; suppressed on east.
71A	American Basswood	*Tilia americana*	Native	7	54.2+40.4+32.0+ 22.8+20.5+19.9+ 19.0+11.6	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large, mature tree; some crown dieback and defoliation; decay in old limb loss wound
72A	American Basswood	*Tilia americana*	Native	2	43.6+16.6	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	2nd stem dead with decay in stem, remaining stem has good canopy, codominant leaders intertwine
73A	Common Pear	*Pyrus communis*	Non-native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	No	Healthy crown; slightly suppressed.
74A	Black Cherry	*Prunus serotina*	Native	2	19.8+14.9	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; slightly suppressed towards northwest.
75A	Sugar Maple	*Acer saccharum*	Native	1	91	9.5	Possible	Poor	Subject	Remove	Grading	No	Full crown; 5% deadwood; extensive, old trunk cavity with opening at top
76A	Black Cherry	*Prunus serotina*	Native	1	11	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Competition for sunlight, minor shade pruning.
77A	Sugar Maple	*Acer saccharum*	Native	1	70	9.0	Improbable	Fair	Subject	Remove	Grading	Yes	Beautiful, mature tree; history of branch failure in lower scaffold; slightly asymmetrical crown due to competition with adjacent trees; crown otherwise relatively vigorous
80A	Sugar Maple	*Acer saccharum*	Native	2	63.6+56.8	8.0	Improbable	Poor	Subject	Remove	Grading	No	2nd stem dead with decay and armilaria, few scaffold branches lost, cavity, codominant leaders
82A	Black Cherry	*Prunus serotina*	Native	1	54	6.0	Possible	Poor	Subject	Remove	Grading	No	Decay where tree grew around old barbed wire; open cavity in main stem; history of branch failure; some crown dieback
83A	Manitoba Maple	*Acer negundo*	Native	1	15	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; phototrophic growth with 10 degree lean towards field; minor crown dieback
84A	Black Cherry	*Prunus serotina*	Native	1	84	8.0	Probable	Poor	Subject	Remove	Grading	No	Major trunk and basal decay; 2 codominant stems with partial crotch split; large but sparse crown; 40% deadwood.
85A	American Basswood	*Tilia americana*	Native	2	35.2+36.8		Possible	Dead	Subject	Remove	Grading	No	1 stem broken off at 3m, decay throughout both stems
86A	American Basswood	*Tilia americana*	Native	5	50.5+45.5+46.0	9.0	Improbable	Good	Subject	Remove	Grading	Yes	codominant stems with included bark, minor cavities, supercanopy tree
89A	American Basswood	*Tilia americana*	Native	2	20.2+18	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; minor browning leaves.
90A	American Basswood	*Tilia americana*	Native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning of leaf edges; some crown dieback and defoliation
92A	Common Pear	*Pyrus communis*	Non-native	1	14	3.0	Improbable	Poor	Subject	Remove	Grading	No	Crown dieback; suppressed; vines present.
93A	American Basswood	*Tilia americana*	Native	1	14	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Full crown; minor browning leaves.
94A	American Basswood	*Tilia americana*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Relatively minor crown dieback and defoliation; slightly asymmetrical crown due to competition with adjacent tree
95A	American Basswood	*Tilia americana*	Native	1	16	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Insect herbivory, codominant leaders.
96A	Sugar Maple	*Acer saccharum*	Native	1	96	11.0	Improbable	Fair	Subject	Remove	Grading	Yes	Beautiful, mature tree; relatively full, open growth crown; self pruning in lower scaffold; evidence of some decay in upper stems however overall good structure
97A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	one sided crown due to competition for sunlight, phototrophic growth, insect herbivory
98A	American Basswood	*Tilia americana*	Native	3	43.2+39.9+26.3	6.5	Possible	Poor	Subject	Remove	Grading	No	Woodpecker cavities throughout trunk; included bark; 2 trunks with lost leaders; suppressed towards Crawley.
99A	Sugar Maple	*Acer saccharum*	Native	1	119	9.0	Possible	Poor	Subject	Remove	Grading	No	Major leader failure leaving deep 1m tall cavity; asymmetrical crown towards west; 10% deadwood.
100A	American Basswood	*Tilia americana*	Native	1	17	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Insect herbivory; dead lower branches.
106A	Sugar Maple	*Acer saccharum*	Native	1	71	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Large crown; no major defects.
107A	American Basswood	*Tilia americana*	Native	1	15	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some dieback; vines in crown.
108A	American Basswood	*Tilia americana*	Native	1	32	3.0	Possible	Poor	Subject	Remove	Grading	No	Black bark at base; branch dieback; epicormic growth; cavity forming at butt.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
109A	American Basswood	*Tilia americana*	Native	1	44	4.0	Possible	Poor	Subject	Remove	Grading	No	Cavity forming at base; epicormic growth branch dieback; previously failed branches.
110A	Hop Hornbeam	*Ostrya virginiana*	Native	2	24.3+21.4	4.0	Possible	Very Poor	Subject	Remove	Grading	No	Considerable decay and deadwood throughout; previously failed branches; cavity in midstem.
111A	American Basswood	*Tilia americana*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Early leaf drop; browning leaves; crown dieback.
112A	American Basswood	*Tilia americana*	Native	1	42+26+22.4	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Early leaf drop; browning leaves.
113A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; 20% necrotic foliage.
114A	Scots Pine	*Pinus sylvestris*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor necrotic foliage.
115A	Scots Pine	*Pinus sylvestris*	Non-native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor necrotic foliage.
116A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed; minor necrotic foliage.
117A	Scots Pine	*Pinus sylvestris*	Non-native	1	27	4.0	Improbable	Dead	Subject	Remove	Grading	No	Fruiting bodies on trunk; peeling bark; no needles but main branches attached.
118A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor necrotic foliage; small crown.
119A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor necrotic foliage.
120A	Scots Pine	*Pinus sylvestris*	Non-native	1	25	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Twisted trunk; peeling bark; numerous dead branches.
121A	Scots Pine	*Pinus sylvestris*	Non-native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches.
122A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor necrotic foliage.
123A	Scots Pine	*Pinus sylvestris*	Non-native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed.
124A	Scots Pine	*Pinus sylvestris*	Non-native	1	30	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches.
125A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; thin crown; numerous dead branches.
126A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; thin crown; numerous dead branches.
127A	Scots Pine	*Pinus sylvestris*	Non-native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; thin crown; numerous dead branches.
128A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; thin crown; numerous dead branches.
129A	Scots Pine	*Pinus sylvestris*	Non-native	1	22	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed to north.
130A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed to north.
131A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed on north.
133A	Scots Pine	*Pinus sylvestris*	Non-native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
134A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Lower branch dieback.
135A	Scots Pine	*Pinus sylvestris*	Non-native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; generally suppressed.
136A	Scots Pine	*Pinus sylvestris*	Non-native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; generally suppressed.
137A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; generally suppressed.
138A	Scots Pine	*Pinus sylvestris*	Non-native	1	29	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; generally suppressed.
139A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; generally suppressed.
141A	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; suppressed on northwest.
142A	Scots Pine	*Pinus sylvestris*	Non-native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; suppressed on north.
145A	American Elm	*Ulmus americana*	Native	1	28	1.0	Probable	Dead	Subject	Remove	Grading	No	Tall snag.
146A	American Elm	*Ulmus americana*	Native	1	20	1.0	Probable	Dead	Subject	Remove	Grading	No	Tall snag.
147A	American Elm	*Ulmus americana*	Native	1	62	6.0	Probable	Dead	Subject	Remove	Grading	No	Large dead canopy.
150A	Eastern White Pine	*Pinus strobus*	Native	1	19	4.0	Improbable	Good	Subject	Transplant	Grading	No	Minor sap wound.
151A	Common Pear	*Pyrus communis*	Non-native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	No	Dieback; minor rot.
152A	American Elm	*Ulmus americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Small crown; minor dieback.
153A	American Elm	*Ulmus americana*	Native	1	25	2.0	Probable	Dead	Subject	Remove	Grading	No	Tall snag.
154A	Scots Pine	*Pinus sylvestris*	Non-native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback.
155A	Common Pear	*Pyrus communis*	Non-native	2	15.4+14.5	2.5	Improbable	Fair	Subject	Remove	Grading	No	Codominant stems; minor dieback.
156A	American Elm	*Ulmus americana*	Native	1	28	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large with branches.
158A	American Elm	*Ulmus americana*	Native	1	38	3.0	Probable	Dead	Subject	Remove	Grading	No	Large branches.
160A	Scots Pine	*Pinus sylvestris*	Non-native	1	26	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; vines present; suppressed on east.
161A	Scots Pine	*Pinus sylvestris*	Non-native	1	22	2.5	Improbable	Poor	Subject	Remove	Grading	No	Lower branch dieback; vines present; suppressed on north.
162A	Scots Pine	*Pinus sylvestris*	Non-native	1	27	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; vines present.
165A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback.
166A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback.
167A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed; sparse lower crown.
168A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Sparse lower crown.
170A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.5	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; generally suppressed; sparse lower crown.
171A	Scots Pine	*Pinus sylvestris*	Non-native	1	28	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present; generally suppressed; sparse lower crown.
172A	Common Pear	*Pyrus communis*	Non-native	1	36	4.0	Improbable	Fair	Subject	Remove	Grading	No	Generally suppressed; dead lower branches; trunk wound with decay.
173A	Black Locust	*Robinia pseudoacacia*	Non-native	1	21	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; dead lower branches.
174A	Black Locust	*Robinia pseudoacacia*	Non-native	1	39	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Trunk wound from old leader failure; included bark between leaders; large crown.
175A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; vine present.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
176A	Black Locust	*Robinia pseudoacacia*	Non-native	2	12.5+12	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Generally suppressed; codominant trunks splitting at union; one trunk with old lost leader.
177A	Common Apple	*Malus pumila*	Non-native	1	31	6.0	Improbable	Fair	Subject	Remove	Grading	No	Full canopy; some grape vine within canopy.
179A	White Ash	*Fraxinus americana*	Native	1	55	7.0	Probable	Dead	Subject	Remove	Grading	No	Large leaning limbs.
181A	Common Apple	*Malus pumila*	Non-native	2	14.5+17.8	4.0	Improbable	Fair	Subject	Remove	Grading	No	Few dead branches; defoliated lower canopy.
187A	Scots Pine	*Pinus sylvestris*	Non-native	1	17	1.5	Possible	Dead	Subject	Remove	Grading	No	Main branches attached but no needles; peeling dead bark.
188A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure; few dead branches.
189A	Scots Pine	*Pinus sylvestris*	Non-native	1	18	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed; good form.
190A	American Elm	*Ulmus americana*	Native	1	22	2.5	Improbable	Dead	Subject	Remove	Grading	No	Main branches attached but no leaves; peeling bark.
191A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
192A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn.
193A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	1.0	Improbable	Poor	Subject	Remove	Grading	No	Sapsucker damage; poor form.
194A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines overtaking crown.
195A	Common Apple	*Malus pumila*	Non-native	3	18.1+17.8+16.6	2.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; multiple dead branches.
196A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed; good form.
197A	Scots Pine	*Pinus sylvestris*	Non-native	1	24	3.0	Improbable	Poor	Subject	Remove	Grading	No	Large burl at BH; woodbine up trunk; thin canopy.
198A	American Elm	*Ulmus americana*	Native	1	24	3.5	Possible	Dead	Subject	Remove	Grading	No	Crown mostly intact.
199A	American Elm	*Ulmus americana*	Native	1	21	3.0	Possible	Dead	Subject	Remove	Grading	No	Crown mostly intact.
200A	American Elm	*Ulmus americana*	Native	1	19	3.0	Possible	Dead	Subject	Remove	Grading	No	Crown mostly intact.
201A	American Basswood	*Tilia americana*	Native	3	47.3+34.8+33.9	7.0	Probable	Poor	Subject	Remove	Grading	No	Major basal decay with moderate response wood; necrotic/diseased foliage; one trunk dead; long deep cavities
202A	American Basswood	*Tilia americana*	Native	2	12.7+11.9	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage.
203A	American Basswood	*Tilia americana*	Native	2	10.3+10.3	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Highly suppressed crown.
204A	Manitoba Maple	*Acer negundo*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Trunk wound; partially suppressed crown.
205A	Black Locust	*Robinia pseudoacacia*	Non-native	2	11.5+11.2	3.5	Improbable	Good	Subject	Remove	Grading	Yes	
206A	Manitoba Maple	*Acer negundo*	Native	1	27	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean northeast; dead lower branches.
207A	Black Cherry	*Prunus serotina*	Native	1	15	3.0	Improbable	Good	Subject	Transplant	Grading	No	Good form.
208A	White Ash	*Fraxinus americana*	Native	1	55	4.0	Probable	Dead	Subject	Remove	Grading	No	EAB; dead crown mostly intact.
209A	Common Pear	*Pyrus communis*	Non-native	1	25	3.5	Improbable	Fair	Subject	Remove	Grading	No	Vines present.
210A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present; dead lower branches.
211A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
212A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Excellent	Subject	Remove	Grading	Yes	No major defects.
213A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
214A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
215A	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
216A	Snag	*Unknown sp.*	**	1	64	4.0	Probable	Dead	Subject	Remove	Grading	No	No bark remaining.
217A	Tamarack	*Larix laricina*	Native	1	22	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Some dead branches but overall good crown structure.
218A	Little-leaf Linden	*Tilia cordata*	Non-native	1	15	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Full round crown.
219A	Little-leaf Linden	*Tilia cordata*	Non-native	1	15	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some insect damage on leaves; overall good crown structure.
220A	Tamarack	*Larix laricina*	Native	1	13	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
221A	Black Cherry	*Prunus serotina*	Native	1	34	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	One old broken leader; low broad crown.
222A	Manitoba Maple	*Acer negundo*	Native	2	22.8+25.6	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Both stems leaning; twisted stems.
223A	Manitoba Maple	*Acer negundo*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Leans south; suppressed crown.
224A	Common Pear	*Pyrus communis*	Non-native	1	42	5.0	Improbable	Fair	Subject	Remove	Grading	No	Surrounded by buckthorn; woody vines in canopy.
225A	Manitoba Maple	*Acer negundo*	Native	2	21.5+16.2	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Leaning; dead lower branches; one trunk with compartmentalized longitudinal wound.
226A	Manitoba Maple	*Acer negundo*	Native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Poor branch attachment; branches growing around stem; multiple dead branches; woody vine in canopy; surrounded by buckthorn.
227A	Common Apple	*Malus pumila*	Non-native	3	20+17.8+13	3.0	Improbable	Fair	Subject	Remove	Grading	No	Epicormic growth on few stems.
228A	Black Cherry	*Prunus serotina*	Native	1	26	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	3 codominant leaders; large crown.
229A	Black Cherry	*Prunus serotina*	Native	1	31	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Poor branch attachment; some canopy dieback; large leader dead.
230A	Sugar Maple	*Acer saccharum*	Native	1	12	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Growing within cherry; asymmetrical crown.
231A	Common Pear	*Pyrus communis*	Non-native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed crown; dead lower branches.
232A	Common Apple	*Malus pumila*	Non-native	1	25	4.5	Improbable	Fair	Subject	Remove	Grading	No	Highly crooked crown; dead lower branches; suppressed on east.
233A	Common Apple	*Malus pumila*	Non-native	3	31+11.1+10.9	5.0	Improbable	Fair	Subject	Remove	Grading	No	Dead lower branches.
234A	Common Apple	*Malus pumila*	Non-native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	No	Some poor branch attachment.
235A	Common Apple	*Malus pumila*	Non-native	2	21+26	4.0	Possible	Fair	Subject	Remove	Grading	No	Twisted stems few larger dead branches.
236A	Common Apple	*Malus pumila*	Non-native	2	19.2+14.4	4.5	Possible	Very Poor	Subject	Remove	Grading	No	Only minor epicormic shoots alive.

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237A	Common Pear	*Pyrus communis*	Non-native	1	37	5.0	Improbable	Fair	Subject	Remove	Grading	No	Two leaders; some dead branches; few epicormic growth/
238A	Common Apple	*Malus pumila*	Non-native	2	15.5+15.1	5.0	Improbable	Fair	Subject	Remove	Grading	No	Crown leans heavily north.
239A	Common Pear	*Pyrus communis*	Non-native	2	22.6+19.5	5.0	Improbable	Good	Subject	Remove	Grading	No	Good form.
240A	Common Pear	*Pyrus communis*	Non-native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	No	Some poor branch attachment; dead tree leaning against trunk.
241A	Manitoba Maple	*Acer negundo*	Native	3	29.4+23.5+33.4	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Some poor branch attachment; some dead branches.
242A	Common Apple	*Malus pumila*	Non-native	2	11.3+11.2	3.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed on south.
243A	Sugar Maple	*Acer saccharum*	Native	2	18.3+12.2	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Poor V attachment of second stem; some minor defoilation.
244A	Sugar Maple	*Acer saccharum*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Healthy but suppressed crown.
245A	Sugar Maple	*Acer saccharum*	Native	1	18	0.5	Imminent	Dead	Subject	Remove	Grading	No	Fruiting bodies; sways at touch; sounds hallow; minimal branches; peeling bark.
246A	Sugar Maple	*Acer saccharum*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Healthy but suppressed crown.
247A	Common Pear	*Pyrus communis*	Non-native	1	24	3.5	Improbable	Fair	Subject	Remove	Grading	No	Longitudinal trunk split with decay, moderately compartmentalized
248A	Manitoba Maple	*Acer negundo*	Native	2	27.2+51.4	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Multiple dead branches; strong canopy.
249A	Black Cherry	*Prunus serotina*	Native	1	56	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Lower trunk wound; tall healthy crown.
250A	Sugar Maple	*Acer saccharum*	Native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on north.
251A	Sugar Maple	*Acer saccharum*	Native	1	81	8.0	Improbable	Fair	Subject	Retain		No	Signs of multiple branch failures; some wounds on few branches.
252A	Sugar Maple	*Acer saccharum*	Native	1	59	7.5	Improbable	Good	Subject	Retain		No	Upright codominant trunks; minor deadwood.
253A	Sugar Maple	*Acer saccharum*	Native	2	50.9+15.5	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some awkward branch attachment; some surface root damage; few wounds on branches.
254A	Sugar Maple	*Acer saccharum*	Native	1	84	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	Multiple leaders, good attachment; some evidence of branch failures; rew dead branches.
255A	White Ash	*Fraxinus americana*	Native	1	21	2.5	Probable	Dead	Subject	Remove	Grading	No	Heavy vine burden; EAB.
256A	Black Cherry	*Prunus serotina*	Native	2	30+10.5	4.0	Possible	Poor	Subject	Remove	Grading	No	Heavy corrected lean at base; tree fallen over base
257A	Sugar Maple	*Acer saccharum*	Native	1	86	5.0	Probable	Dead	Subject	Remove	Grading	No	Dead; no bark; evidence of feeing holes; heavy rot at base; few branches still attached, possible failures.
258A	Sugar Maple	*Acer saccharum*	Native	1	57	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards east; trunk fused with adjacent tree (259).
259A	Black Cherry	*Prunus serotina*	Native	1	58	9.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards west; minor deadwood; slight lean north; trunk fused with adjacent tree.
260A	Sugar Maple	*Acer saccharum*	Native	1	67	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some poor branch attachment; dead tree leaning against trunk; some awkward branch attachment.
261A	Sugar Maple	*Acer saccharum*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; poor branch attachment; signs of branch failures; wound at base.
262A	Sugar Maple	*Acer saccharum*	Native	1	70	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large wound at base showing rotted core; good crown structure; numerous rocks at base, wounds on surface roots.
263A	Sugar Maple	*Acer saccharum*	Native	2	13.4+17.2	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; poor branch attachment; evidence of branch failures.
264A	Sugar Maple	*Acer saccharum*	Native	1	79	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	One broken off upright codominant leader with conks and decay; lower trunk wound; tall with healthy foliage.
265A	White Ash	*Fraxinus americana*	Native	1	41	3.0	Improbable	Poor	Subject	Remove	Grading	No	Aggressive epicormic growth; main canopy very thin, numerous defoliated branches; woody vine in canopy.
266A	Black Cherry	*Prunus serotina*	Native	1	29	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Fairly sparse but healthy crown.
267A	Common Pear	*Pyrus communis*	Non-native	1	42	4.5	Improbable	Fair	Subject	Remove	Grading	No	35% deadwood.
268A	Sugar Maple	*Acer saccharum*	Native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Multiple wounds on branches; two leaders with good attachment.
269A	Sugar Maple	*Acer saccharum*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Poor branch attachment; woody vine in crown.
270A	Sugar Maple	*Acer saccharum*	Native	2	19.1+18.4	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	2 trunks mostly fused below DBH; full large crown.
271A	Sugar Maple	*Acer saccharum*	Native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed by backthorn and grape; fair canopy.
272A	Sugar Maple	*Acer saccharum*	Native	1	67	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; some poor branch attachment; epicormic growth.
273A	Sugar Maple	*Acer saccharum*	Native	1	18	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
274A	Common Apple	*Malus pumila*	Non-native	2	15.3+13	3.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed towards north.
275A	Common Apple	*Malus pumila*	Non-native	2	19.9+19.2+17.1	4.0	Improbable	Fair	Subject	Remove	Grading	No	Suppressed towards south.
276A	Common Apple	*Malus pumila*	Non-native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed towards east, north.
277A	Common Pear	*Pyrus communis*	Non-native	2	43.8+12.2	4.0	Improbable	Fair	Subject	Remove	Grading	No	Evidence of branch failures; poor branch attachment.
278A	Common Apple	*Malus pumila*	Non-native	1	34	4.5	Improbable	Fair	Subject	Remove	Grading	No	Vine burden; large crown.
279A	Common Pear	*Pyrus communis*	Non-native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	No	Growing on lean; woody vine within canopy.
280A	Common Pear	*Pyrus communis*	Non-native	2	12.9+13.5	4.0	Improbable	Fair	Subject	Remove	Grading	No	Growing on lean; woody vine within canopy; dead branches; few patches of dead leaves.
281A	Black Cherry	*Prunus serotina*	Native	6	42.3+20.9+18	4.5	Improbable	Poor	Subject	Remove	Grading	No	Sparse crown; vine burden.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
282A	Black Cherry	*Prunus serotina*	Native	2	25.6+38	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Multiple dead branches; dieback on numerous branches; woody vine within canopy; large gap in canopy; poor foilage.
283A	Sugar Maple	*Acer saccharum*	Native	1	108	8.0	Possible	Poor	Subject	Prune-Top	Grading	No	Two main leaders, rot at attachment; third leader loss; scaffold branches; wounds on main branches; branch failures evident; cavities in one leader.
284A	White Ash	*Fraxinus americana*	Native	1	27	4.0	Improbable	Fair	Subject	Remove	Grading	No	EAB; declining
285A	Sugar Maple	*Acer saccharum*	Native	1	18	3.5	Improbable	Good	Subject	Transplant	Grading	No	Slightly suppressed.
286A	Sugar Maple	*Acer saccharum*	Native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some damage on surface root; slightly awkward branch attachment.
287A	Common Apple	*Malus pumila*	Non-native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed on north, east.
288A	Sugar Maple	*Acer saccharum*	Native	1	27	5.0	Improbable	Poor	Subject	Remove	Grading	No	Large basal canker with decay; healthy crown.
289A	American Elm	*Ulmus americana*	Native	1	64	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Poor branch attachment; few dead branches.
290A	American Elm	*Ulmus americana*	Native	1	14	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed, heavy lean east.
291A	White Spruce	*Picea glauca*	Native	1	31	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning; healthy top.
292A	White Spruce	*Picea glauca*	Native	1	29	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning; healthy top.
293A	White Spruce	*Picea glauca*	Native	1	38	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning; healthy top.
294A	Freeman's Maple	*Acer x freemanii*	Native	1	34	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback; slightly asymmetrical crown.
295A	Golden Weeping Willow	*Salix x sepulcralis*	Non-native	1	77	10.0	Improbable	Fair	Subject	Remove	Grading	Yes	Tall, relatively healthy crown; small dead branches.
296A	Golden Weeping Willow	*Salix x sepulcralis*	Non-native	1	107	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	Larger broken branches; water sprouts.
297A	Butternut hybrid	*Juglans cinerea hybrid*	Non-native	9	55.4+45+35.1	11.0	Improbable	Fair	Subject	Remove	Grading	Yes	Determined to be hybrid during field hybridity test. Very broad crown with wide branching leaders; a few conks on trunk; dead lower branches and minor deadwood throughout; no cankers observed.
298A	Norway Spruce	*Picea abies*	Non-native	1	55	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning.
299A	Norway Spruce	*Picea abies*	Non-native	1	55	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning; minor dieback.
300A	Norway Spruce	*Picea abies*	Non-native	1	55	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning; healthy crown.
301A	Amur Maple	*Acer ginnala*	Non-native	2	12.4+10.7	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	20% deadwood; trunk wounds; vines present.
302A	Amur Maple	*Acer ginnala*	Non-native	2	13.3+12.1	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Decay in old branch loss wounds; 25% deadwood including old leaders.
303A	Amur Maple	*Acer ginnala*	Non-native	4	15.5+15+14.7	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	20% deadwood; trunk wounds; vines present.
304A	Norway Maple	*Acer platanoides*	Non-native	1	93	10.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; reasonably good branch unions; minor dead branches.
305A	Norway Maple	*Acer platanoides*	Non-native	1	94	8.0	Possible	Poor	Subject	Remove	Grading	No	Crack at codominant branch union; large dead branches.
306A	Norway Maple	*Acer platanoides*	Non-native	1	59	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Moderate dieback.
307A	Norway Maple	*Acer platanoides*	Non-native	1	49	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dense crown.
308A	Norway Maple	*Acer platanoides*	Non-native	1	58	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dense crown; water sprouts.
309A	European Mountain-ash	*Sorbus aucuparia*	Non-native	3	17.4+16.4+14.5	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed; small dead branches.
310A	European Mountain-ash	*Sorbus aucuparia*	Non-native	2	13,4+11.1	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; open vertical seam; small dead branches.
311A	Manitoba Maple	*Acer negundo*	Native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed.
312A	Norway Spruce	*Picea abies*	Non-native	1	32	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
313A	Norway Spruce	*Picea abies*	Non-native	1	37	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
314A	Norway Spruce	*Picea abies*	Non-native	1	27	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
315A	Manitoba Maple	*Acer negundo*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed on north.
316A	Norway Spruce	*Picea abies*	Non-native	1	36	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large amount of self pruning.
317A	Norway Spruce	*Picea abies*	Non-native	1	23	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large amount of self pruning.
318A	Norway Spruce	*Picea abies*	Non-native	1	30	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning.
319A	Norway Spruce	*Picea abies*	Non-native	1	27	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning.
320A	Norway Spruce	*Picea abies*	Non-native	1	27	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning.
321A	Norway Spruce	*Picea abies*	Non-native	1	23	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Self pruning.
322A	Scots Pine	*Pinus sylvestris*	Non-native	1	28	2.5	Improbable	Poor	Subject	Remove	Grading	No	Lower crown dieback; 70% deadwood.
324A	Thornless Honey Locust	*Gleditsia triacanthos var. inermis*	Non-native	1	58	10.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; small dead branches; large hanger.
325A	Norway Spruce	*Picea abies*	Non-native	1	25	3.0	Probable	Dead	Subject	Remove	Grading	No	Tall; recently dead.
326A	Norway Spruce	*Picea abies*	Non-native	1	29	3.0	Possible	Very Poor	Subject	Remove	Grading	No	20% of crown remaining.
327A	Blue Spruce	*Picea pungens*	Non-native	1	50	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback.
328A	Norway Maple	*Acer platanoides*	Non-native	1	50	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Moderate dead branches; some variegated leaves.
329A	Norway Maple	*Acer platanoides*	Non-native	1	48	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Water sprouts; some heavy cuts near hydro line.
330A	Norway Maple	*Acer platanoides*	Non-native	1	53	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead internal branches; girthy lateral.
331A	Norway Maple	*Acer platanoides*	Non-native	1	58	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dense crown; minor dieback.
332A	Norway Maple	*Acer platanoides*	Non-native	1	34	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; minor deadwood.
333A	Sugar Maple	*Acer saccharum*	Native	1	60	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown; minor deadwood.
334A	Freeman's Maple	*Acer x freemanii*	Native	1	27	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.

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335A	Manitoba Maple	*Acer negundo*	Native	6	34+20+20+17+15+14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Clonal growth; dieback.
373A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small crown; minor necrotic foliage.
374A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; row planting.
375A	Scots Pine	*Pinus sylvestris*	Non-native	1	21	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; row planting.
376A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
379A	American Elm	*Ulmus americana*	Native	1	28	4.0	Probable	Dead	Subject	Remove	Grading	No	Crown partially lost.
380A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Early leaf drop; browning leaves; crown asymmetrical.
381A	American Elm	*Ulmus americana*	Native	1	17	2.0	Possible	Dead	Subject	Remove	Grading	No	Crown narrow, mostly intact.
382A	American Basswood	*Tilia americana*	Native	1	15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; crown asymmetrical; suppressed.
383A	American Elm	*Ulmus americana*	Native	1	19	2.0	Probable	Dead	Subject	Remove	Grading	No	Crown mostly lost.
384A	American Basswood	*Tilia americana*	Native	1	21	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; crown asymmetrical; suppressed.
385A	American Elm	*Ulmus americana*	Native	1	14	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Top of crown with phototrophic lean; sparse crown.
387A	American Basswood	*Tilia americana*	Native	1	13	1.5	Improbable	Poor	Subject	Remove	Grading	No	Trunk wound with response growth; small narrow crown; smaller stems dead.
388A	American Basswood	*Tilia americana*	Native	2	12.6+11.7	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; early leaf drop.
389A	American Elm	*Ulmus americana*	Native	1	29	2.5	Probable	Dead	Subject	Remove	Grading	No	Crown partially lost.
390A	Common Apple	*Malus pumila*	Non-native	2	15+14.2	2.0	Improbable	Poor	Subject	Remove	Grading	No	Vines in crown; epicormic growth; branch dieback; multiple smaller stems; poor form.
391A	American Basswood	*Tilia americana*	Native	1	22	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; branch dieback; poor form.
392A	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present; sparse lower crown.
393A	Eastern White Pine	*Pinus strobus*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine present.
394A	American Elm	*Ulmus americana*	Native	1	32	3.0	Probable	Dead	Subject	Remove	Grading	No	Crown partially lost.
395A	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; natural pruning.
396A	Scots Pine	*Pinus sylvestris*	Non-native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; natural pruning.
398A	American Elm	*Ulmus americana*	Native	1	31	1.0	Probable	Dead	Subject	Remove	Grading	No	
401A	Eastern White Pine	*Pinus strobus*	Native	1	17	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
402A	American Elm	*Ulmus americana*	Native	1	13	2.5	Possible	Dead	Subject	Remove	Grading	No	Crown narrow, mostly intact.
403A	American Elm	*Ulmus americana*	Native	1	13	2.5	Possible	Dead	Subject	Remove	Grading	No	Crown narrow, mostly intact.
405A	Scots Pine	*Pinus sylvestris*	Non-native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines overtaking crown; competing with buckthorn.
406A	American Elm	*Ulmus americana*	Native	1	26	1.0	Probable	Dead	Subject	Remove	Grading	No	
412A	Eastern White Pine	*Pinus strobus*	Native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; healthy foliage.
413A	American Elm	*Ulmus americana*	Native	1	14	2.0	Probable	Dead	Subject	Remove	Grading	No	Recently dead.
414A	Common Pear	*Pyrus communis*	Non-native	1	43	4.0	Possible	Fair	Subject	Remove	Grading	No	Vines; moderate dead branches; suspected sapwood rot.
447A	American Elm	*Ulmus americana*	Native	1	20	4.0	Probable	Dead	Subject	Remove	Grading	No	Branches remain; exfoliating bark.
450A	Scots Pine	*Pinus sylvestris*	Non-native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; top of crown healthy.
451A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; top of crown healthy.
452A	Scots Pine	*Pinus sylvestris*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; top of crown healthy.
453A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.5	Improbable	Poor	Subject	Remove	Grading	No	Major dieback.
454A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Moderate dieback; minor vines.
455A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Possible	Poor	Subject	Remove	Grading	No	Major dieback; vines
456A	Scots Pine	*Pinus sylvestris*	Non-native	1	20	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Moderate dieback.
457A	Common Pear	*Pyrus communis*	Non-native	1	11	2.0	Improbable	Poor	Subject	Remove	Grading	No	Open wound on trunk; moderate dieback.
463A	Common Apple	*Malus pumila*	Non-native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	No	Moderate dieback.
464A	Common Apple	*Malus pumila*	Non-native	2	16+15+14	6.0	Improbable	Fair	Subject	Remove	Grading	No	Epicormic shoots; codominant stems.
465A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor dieback.
466A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.5	Improbable	Poor	Subject	Remove	Grading	No	Major dieback.
471A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Some necrotic and small foliage; suppressed lower crown.
472A	Scots Pine	*Pinus sylvestris*	Non-native	1	12	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
473A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
474A	Scots Pine	*Pinus sylvestris*	Non-native	1	11	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
475A	Scots Pine	*Pinus sylvestris*	Non-native	1	13	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
476A	American Elm	*Ulmus americana*	Native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor twig dieback; forked crown.
479A	Scots Pine	*Pinus sylvestris*	Non-native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some necrotic and small foliage.
515A	Black Cherry	*Prunus serotina*	Native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Low live crown ratio; phototrophic growth towards east; generally suppressed.
516A	Black Cherry	*Prunus serotina*	Native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Low live crown ratio; generally suppressed.
517A	Black Cherry	*Prunus serotina*	Native	1	22	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown concentrated west; dead lower branches; minor leaf rust.
518A	Black Cherry	*Prunus serotina*	Native	1	15	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed crown; slight lean east.
519A	Black Cherry	*Prunus serotina*	Native	1	22	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; included bark; vine growth; healthy crown.
520A	Black Cherry	*Prunus serotina*	Native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	10% dieback; minor rusting and defoliation of leaves.

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521A	Eastern Cottonwood	*Populus deltoides*	Native	1	26	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	30% deadwood; slight lean east; narrow crown.
522A	Eastern Cottonwood	*Populus deltoides*	Native	1	19	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic shoots;25 degree lean east; narrow crown.
523A	White Spruce	*Picea glauca*	Native	1	12	2.5	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; 70% deadwood; generally suppressed.
524A	Black Cherry	*Prunus serotina*	Native	1	20	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Low live crown ratio; generally suppressed.
525A	Black Cherry	*Prunus serotina*	Native	1	20	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Healthy crown; suppressed on north; minor dead lower branches.
526A	American Basswood	*Tilia americana*	Native	1	19	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; heavy insect herbivory.
527A	American Basswood	*Tilia americana*	Native	1	16	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; suppressed on east; insect herbivory.
528A	American Basswood	*Tilia americana*	Native	1	18	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; generally suppressed; insect herbivory.
529A	American Basswood	*Tilia americana*	Native	1	11	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; generally suppressed; 20 degree corrected lean south; insect herbivory.
530A	Black Cherry	*Prunus serotina*	Native	1	18	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean south; suppressed.
531A	Black Cherry	*Prunus serotina*	Native	1	28	6.5	Improbable	Fair	Subject	Remove	Grading	Yes	Leans east; healthy crown; suppressed.
532A	American Basswood	*Tilia americana*	Native	1	20	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; suppressed on east; leans south; insect herbivory.
534A	American Basswood	*Tilia americana*	Native	1	16	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; generally suppressed.
535A	American Basswood	*Tilia americana*	Native	1	26	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
536A	American Basswood	*Tilia americana*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
537A	American Basswood	*Tilia americana*	Native	1	17	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; phototrophic growth towards south; insect herbivory; minor epicormic shoots; generally suppressed.
538A	American Basswood	*Tilia americana*	Native	1	16	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; generally suppressed.
539A	American Basswood	*Tilia americana*	Native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
540A	American Basswood	*Tilia americana*	Native	1	22	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; minor epicormic shoots; generally suppressed.
541A	American Basswood	*Tilia americana*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; 20% deadwood; generally suppressed.
542A	American Basswood	*Tilia americana*	Native	1	28	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
543A	American Basswood	*Tilia americana*	Native	1	19	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
544A	American Basswood	*Tilia americana*	Native	1	28	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; nectria canker; insect herbivory; generally suppressed.
545A	American Basswood	*Tilia americana*	Native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
546A	American Basswood	*Tilia americana*	Native	1	13	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
547A	American Basswood	*Tilia americana*	Native	1	20	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; heavy insect herbivory; sparse crown.
548A	Eastern Cottonwood	*Populus deltoides*	Native	1	50	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	25% deadwood, throughout crown; tall erect trunk; unsuppressed crown.
549A	Eastern Cottonwood	*Populus deltoides*	Native	1	26	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Tall narrow crown; epicormic shoots; 25% deadwood.
551A	American Basswood	*Tilia americana*	Native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
552A	American Basswood	*Tilia americana*	Native	1	18	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; herbivory; failed basal sprouts.
554A	American Basswood	*Tilia americana*	Native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; dead lower branches; failed basal stem.
555A	American Basswood	*Tilia americana*	Native	1	14	2.0	Possible	Dead	Subject	Remove	Grading	No	Woodpecker damage; frass at base.
556A	American Basswood	*Tilia americana*	Native	1	17	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown; diseased foliage; insect herbivory; generally suppressed.
557A	American Basswood	*Tilia americana*	Native	1	26	2.5	Possible	Poor	Subject	Remove	Grading	No	Reaction wood around stem fissure; diseased leaves; heavy herbivory; slight lean.
558A	American Basswood	*Tilia americana*	Native	1	14	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Upper stem leaning northeast; healthy crown.
559A	American Basswood	*Tilia americana*	Native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sealed basal wound; few diseased leaves; some herbivory.
560A	White Spruce	*Picea glauca*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small fungal growths on branches; small burls on stem.
561A	White Spruce	*Picea glauca*	Native	1	11	2.5	Improbable	Poor	Subject	Remove	Grading	No	Lower crown dieback; healthy trunk; heavily suppressed; sparse crown.
562A	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown; good form.

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563A	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sealed trunk wound; self-corrected stem; healthy crown.
564A	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	1.5	Possible	Good	Subject	Remove	Grading	Yes	Two partially sealed trunk wounds; asymmetrical crown.
566A	White Spruce	*Picea glauca*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower crown dieback; healthy trunk.
567A	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; suppressed.
568A	Eastern Red Cedar	*Juniperus virginiana*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower crown dieback; healthy trunk; suppressed on south.
569A	Eastern White Cedar	*Thuja occidentalis*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Vine burden at top of crown; Dead lower branches; suppressed.
570A	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	2.5	Improbable	Poor	Subject	Remove	Grading	No	Asymmetrical crown; generally suppressed.
571A	Eastern White Cedar	*Thuja occidentalis*	Native	1	11	2.5	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; dead lower branches; generally suppressed.
572A	Eastern White Cedar	*Thuja occidentalis*	Native	1	11	2.0	Improbable	Poor	Subject	Remove	Grading	No	Vine burden at top of crown; Dead lower branches; suppressed.
573A	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; generally suppressed.
574A	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; generally suppressed.
576A	American Basswood	*Tilia americana*	Native	1	24	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Small stem cavity from branch failure; dead small second stem; diseased leaves; 10% dieback.
577A	American Basswood	*Tilia americana*	Native	2	17.1+15.8	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; few diseased leaves.
578A	Manitoba Maple	*Acer negundo*	Native	1	31	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Leaning into field; dead lower branch; vigorous epicormic growth; brush debris at base.
579A	American Basswood	*Tilia americana*	Native	1	14	2.5	Improbable	Poor	Subject	Remove	Grading	No	Boring damage; diseased leaves; epicormic shoots.
580A	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor self correction of trunk; loss of second leader; diseased leaves; asymmetrical crown.
581A	American Basswood	*Tilia americana*	Native	2	12.8+7.2	2.0	Possible	Very Poor	Subject	Remove	Grading	No	80% dieback; diseased leaves; loss of structural branches.
582A	American Basswood	*Tilia americana*	Native	1	11	2.0	Possible	Very Poor	Subject	Remove	Grading	No	90% dieback; diseased leaves; leaning east; loss of second leader.
583A	Bitternut Hickory	*Carya cordiformis*	Native	1	14	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slight lean; asymmetrical crown concentrated east; few deformed leaves.
584A	Sugar Maple	*Acer saccharum*	Native	1	65	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; overextended second leader; scaffold branch failure; healthy crown.
585A	Sugar Maple	*Acer saccharum*	Native	1	36	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; trunk girdling from fence; phototrophic branch growth.
586A	Black Cherry	*Prunus serotina*	Native	1	59	1.0	Probable	Dead	Subject	Remove	Grading	No	4m high snag; sloughing bark.
587A	Sugar Maple	*Acer saccharum*	Native	1	29	6.5	Possible	Fair	Subject	Remove	Grading	Yes	Failed leader; overextended second leader leaning heavily east; phototrophic crown.
588A	Sugar Maple	*Acer saccharum*	Native	1	33	3.0	Probable	Fair	Subject	Remove	Grading	No	Stem girdling from fence; cavities from several lost structural branches; pressure from large snag caught in upper branch union.
589A	Sugar Maple	*Acer saccharum*	Native	1	67	5.0	Possible	Good	Subject	Remove	Grading	Yes	Large trunk cavity; spreading branch structure; healthy crown; trunk has grown around small portion of wire fence.
590A	Sugar Maple	*Acer saccharum*	Native	1	53	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Three codominant stems; included bark; pistol butt; large decaying stem cavity; healthy crown.
591A	Sugar Maple	*Acer saccharum*	Native	1	23	3.0	Probable	Poor	Subject	Remove	Grading	No	Large decaying basal wound; loss of leader and poor self correction, decaying wound on stem at former stem union; pistol butt; 5% dieback.
592A	Sugar Maple	*Acer saccharum*	Native	1	59	1.0	Probable	Dead	Subject	Remove	Grading	No	Pileated woodpecker damage; loss of all bark; large cavernous basal cavity; frass.
593A	Manitoba Maple	*Acer negundo*	Native	1	17	2.5	Possible	Poor	Subject	Remove	Grading	No	60 degree lean west; large sealed fissure on trunk; dead scaffold branch; vigorous epicormic shoots.
595A	Manitoba Maple	*Acer negundo*	Native	3	33.7+19.8+19.7	4.0	Possible	Poor	Subject	Remove	Grading	No	Open basal cavity from lost stem; epicormic shoots; spreading form.
596A	American Basswood	*Tilia americana*	Native	1	33	3.0	Probable	Poor	Subject	Remove	Grading	No	60 degree lean east; burl and decay from lost leader, with maturing watersprout; diseased leaves; weak branch attachment.
598A	Manitoba Maple	*Acer negundo*	Native	1	17	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Nearly dead; few epicormic shoots; fruiting bodies; trunk fusing to neighbouring shrub; 30 degree lean east.
599A	Manitoba Maple	*Acer negundo*	Native	1	26	5.0	Probable	Poor	Subject	Remove	Grading	No	45 degree lean east; epicormic growth at base and along trunk; failed lower structural branches.
601A	White Spruce	*Picea glauca*	Native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; suppressed.
602A	Eastern White Cedar	*Thuja occidentalis*	Native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed; trunk wound.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
603A	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightl suppressed.
604A	American Basswood	*Tilia americana*	Native	1	25	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; slightly suppressed on northeast.
605A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; insect herbivory; small crown; suppressed on northeast.
606A	American Basswood	*Tilia americana*	Native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; small crown; suppressed on north.
608A	Eastern White Cedar	*Thuja occidentalis*	Native	1	12	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; good form.
609A	American Basswood	*Tilia americana*	Native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; high crown; suppressed.
611A	American Basswood	*Tilia americana*	Native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; dying lower branches; suppressed.
618A	Manitoba Maple	*Acer negundo*	Native	1	17	2.0	Possible	Poor	Subject	Remove	Grading	No	Phototrophic growth west; epicormic shoots along stem.
619A	Manitoba Maple	*Acer negundo*	Native	2	36.7+25.7	4.0	Possible	Poor	Subject	Remove	Grading	No	Codominant stems; included bark; burl and decay at base; epicormic shoots.
622A	American Basswood	*Tilia americana*	Native	2	30.2+20.2	4.0	Probable	Poor	Subject	Remove	Grading	No	Failure and decay of leader; epicormic shoots; curved leaning stem; diseased leaves; 20% dieback.
623A	Sugar Maple	*Acer saccharum*	Native	1	48	3.5	Possible	Good	Subject	Remove	Grading	Yes	Failed lower branches; asymmetrical, healthy crown.
624A	American Basswood	*Tilia americana*	Native	2	52.7+39.5	4.0	Possible	Poor	Subject	Remove	Grading	No	Second stem is a decaying snag; pileated woodpecker holes; open cavity; live stem with diseased leaves.
625A	Manitoba Maple	*Acer negundo*	Native	1	12	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Dead scaffold branch; pressure from leaning shrub; healthy crown.
628A	Manitoba Maple	*Acer negundo*	Native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; epicormic shoots; healthy crown.
629A	Manitoba Maple	*Acer negundo*	Native	1	17	3.0	Possible	Poor	Subject	Remove	Grading	No	Vigorous epicormic shoots; lost leader with decay at union.
631A	Sugar Maple	*Acer saccharum*	Native	1	26	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Girdling from fence; self-corrected stem; dead lower branch; healthy crown.
633A	Manitoba Maple	*Acer negundo*	Native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slight lean; epicormic shoots; 10% dieback.
634A	Manitoba Maple	*Acer negundo*	Native	1	15	2.0	Possible	Poor	Subject	Remove	Grading	No	50% dieback; 30 degree lean east; self corrected stem.
637A	Manitoba Maple	*Acer negundo*	Native	1	25	3.0	Possible	Fair	Subject	Remove	Grading	Yes	45 degree lean east; sealed fissure; epicormic shoots; 10% dieback.
639A	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	15% dieback; phototrophic growth; few epicormic shoots.
640A	Manitoba Maple	*Acer negundo*	Native	1	15	2.0	Possible	Poor	Subject	Remove	Grading	No	Slight lean east; epicormic shoots; 20% dieback; open basal wound.
649A	Manitoba Maple	*Acer negundo*	Native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	epicormic growth, leader growing on 45 degree angle
650A	Manitoba Maple	*Acer negundo*	Native	1	13	2.0	Improbable	Poor	Subject	Remove	Grading	No	epicormic growth, considerable dieback, stem grows to 90 degree angle
701A	Eastern White Pine	*Pinus strobus*	Native	1	25	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; good form; seepage from branch unions.
702A	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; crook in stem.
703A	Eastern White Pine	*Pinus strobus*	Native	1	14	1.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; self corrected stem.
704A	Eastern White Pine	*Pinus strobus*	Native	2	23.1+21.5	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small wound from branch runing adjacent stem; natural pruning.
705A	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; heavy vine growth.
706A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Fully sealed basal wound; asymmetrical crown; heavy vine growth.
707A	Eastern White Pine	*Pinus strobus*	Native	1	22	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning; small crook in upper stem.
708A	Eastern White Pine	*Pinus strobus*	Native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; minor branch dieback.
709A	Eastern White Pine	*Pinus strobus*	Native	1	27	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; suppressed; minor dieback.
710A	Common Apple	*Malus pumila*	Non-native	2	13.2+12	2.0	Improbable	Poor	Subject	Remove	Grading	No	Fused codominant stems; dead third stem and structural branches; compartmentalized basal wound; epicormic growth.
711A	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning.
712A	Eastern White Pine	*Pinus strobus*	Native	1	26	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning.
713A	Common Apple	*Malus pumila*	Non-native	1	11	1.0	Possible	Very Poor	Subject	Remove	Grading	No	Large callous wound at base; slightly suppressed; branch dieback.
714A	Eastern White Pine	*Pinus strobus*	Native	1	21	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; suppressed; vine growth.
715A	Black Cherry	*Prunus serotina*	Native	1	19	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; healthy crown.
716A	Eastern White Pine	*Pinus strobus*	Native	1	20	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; limited live crown; vine growth.
717A	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; vine within canopy.
718A	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; grape vine within canopy.
719A	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to adjacent tree.

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721A	Eastern White Pine	*Pinus strobus*	Native	1	23	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning; small scar mid stem.
722A	Eastern White Pine	*Pinus strobus*	Native	1	29	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; extensive seepage; healthy crown.
723A	Eastern White Pine	*Pinus strobus*	Native	1	31	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Crowded crown; sealed bark seams; suppressed.
724A	Eastern White Pine	*Pinus strobus*	Native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to adjacent tree; vine within canopy.
725A	Eastern White Pine	*Pinus strobus*	Native	1	21	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to adjacent tree; vine within canopy.
726A	Eastern White Pine	*Pinus strobus*	Native	1	17	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; minor dieback.
727A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; phototrophic growth.
728A	Eastern White Pine	*Pinus strobus*	Native	1	23	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; limited live crown; minor seepage.
729A	Common Apple	*Malus pumila*	Non-native	3	13.1+11.5+11.1	4.0	Possible	Very Poor	Boundary	move-Grind stu	Grading	No	Multiple dead branches; epicormic growth; open wounds with decay at base.
730A	Eastern White Pine	*Pinus strobus*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly asymmetrical crown due to field edge; natural pruning.
731A	Eastern White Pine	*Pinus strobus*	Native	1	21	3.0	Improbable	Good	Off-property	move-Grind stu	Grading	Yes	Suppressed; healthy crown.
732A	Eastern White Pine	*Pinus strobus*	Native	2	24.8+22.6	4.0	Improbable	Fair	Off-property	Retain		No	Some included bark at fork; natural pruning.
733A	Eastern White Pine	*Pinus strobus*	Native	1	24	5.0	Improbable	Fair	Off-property	Retain		No	Slightly asymmetrical crown due to canopy opening near trail; natural pruning.
734A	Common Apple	*Malus pumila*	Non-native	1	17	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Multiple dead branches; epicormic growth; vine within canopy.
735A	Common Apple	*Malus pumila*	Non-native	3	15+12.3+11.9	2.0	Improbable	Good	Subject	Remove	Grading	No	Fused stems; included bark; failed epicormic shoots; phototrophic crown.
736A	Eastern White Pine	*Pinus strobus*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; phototrophic growth; suppressed.
737A	Common Apple	*Malus pumila*	Non-native	5	11+10.9+10.2	3.5	Improbable	Fair	Subject	Remove	Grading	No	Large basal wound; fused stems; epicormic shoots throughout; phototrophic growth.
738A	Eastern White Pine	*Pinus strobus*	Native	1	10	1.0	Improbable	Fair	Off-property	Retain		No	Slightly suppressed; good form.
739A	Eastern White Pine	*Pinus strobus*	Native	1	21	3.0	Improbable	Fair	Off-property	Retain		No	Natural pruning; vine within canopy.
740A	Common Apple	*Malus pumila*	Non-native	1	12	2.0	Possible	Very Poor	Off-property	Retain		No	Epicormic growth; cavity at base; multiple dead branches.
741A	Black Cherry	*Prunus serotina*	Native	1	31	4.0	Improbable	Good	Off-property	Retain		No	Slightly asymmetrical crown due to adjacent field and tree; forked crown.
742A	Eastern White Pine	*Pinus strobus*	Native	1	26	4.0	Improbable	Good	Boundary	Remove	Grading	Yes	Slightly asymmetrical crown due to adjacent field; natural pruning.
743A	Common Apple	*Malus pumila*	Non-native	1	18	2.0	Possible	Very Poor	Off-property	Retain		No	Epicormic growth; multiple dead branches; cross canopy branching; decay throughout.
744A	Eastern White Pine	*Pinus strobus*	Native	1	10	1.0	Improbable	Fair	Off-property	Retain		No	Slightly suppressed by adjacent cherry.
745A	Common Pear	*Pyrus communis*	Non-native	1	15	2.0	Improbable	Fair	Off-property	Retain		No	Self-corrected stem; suppressed; few epicormics.
746A	Common Apple	*Malus pumila*	Non-native	3	14.2+12.6+12	3.0	Improbable	Fair	Off-property	Retain		No	Suppressed, asymmetrical crown; dead lower branches and phototrophic growth.
747A	Eastern White Pine	*Pinus strobus*	Native	1	14	1.0	Improbable	Fair	Off-property	Retain		No	Natural pruning; minor branch dieback.
748A	Eastern White Pine	*Pinus strobus*	Native	2	26.4+23.5	4.0	Improbable	Good	Off-property	Retain		No	Natural pruning; good form despit being codiminant.
749A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.5	Improbable	Good	Off-property	Retain		No	Healthy crown; minor leaf rusting.
750A	Eastern White Pine	*Pinus strobus*	Native	1	31	3.5	Improbable	Good	Off-property	Retain		No	Suppressed; heavy vine growth.
751A	Eastern White Pine	*Pinus strobus*	Native	1	35	4.0	Improbable	Fair	Off-property	Retain		No	Vine within canopy; natural pruning; vine suppressing canopy.
752A	Black Cherry	*Prunus serotina*	Native	1	17	2.0	Possible	Very Poor	Off-property	Retain		No	Pistol butt; gummosis; branch dieback.
753A	Eastern White Pine	*Pinus strobus*	Native	1	22	3.0	Improbable	Good	Subject	move-Grind stu	Grading	Yes	Suppressed; limited live crown; minor dieback.
754A	Eastern White Pine	*Pinus strobus*	Native	1	34	4.0	Improbable	Fair	Boundary	move-Grind stu	Grading	Yes	Vine within canopy; natural pruning.
755A	Black Cherry	*Prunus serotina*	Native	1	25	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Forked above BH; included bark at fork; vine within canopy.
757A	Eastern White Pine	*Pinus strobus*	Native	1	27	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Healthy crown; self-corrected stem; minor seepage.
758A	Eastern White Pine	*Pinus strobus*	Native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning.
759A	Eastern White Pine	*Pinus strobus*	Native	1	19	2.0	Possible	Poor	Subject	Remove	Grading	No	Natural pruning; dieback; low vigor; thin crown.
760A	Eastern White Pine	*Pinus strobus*	Native	1	17	1.0	Possible	Poor	Subject	Remove	Grading	No	Natural pruning; branch dieback; low vigor; thin crown.
761A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Extensive seepage from former branch union; suppressed; healthy crown.
762A	Eastern White Pine	*Pinus strobus*	Native	1	36	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Sealed trunk wound; seepage; healthy crown.
763A	Eastern White Pine	*Pinus strobus*	Native	1	26	1.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
764A	Common Pear	*Pyrus communis*	Non-native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	No	Codominant upper leaders; dead mature basal shoot.
765A	Common Pear	*Pyrus communis*	Non-native	1	26	2.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; multiple dead dead branches; cavity mid stem.
766A	Eastern White Pine	*Pinus strobus*	Native	1	22	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; thin crown.
767A	Eastern White Pine	*Pinus strobus*	Native	1	29	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; healthy crown; extensive seepage.
768A	Eastern White Pine	*Pinus strobus*	Native	1	24	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; thin crown.

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769A	Eastern White Pine	*Pinus strobus*	Native	1	23	2.0	Possible	Poor	Off-property	Retain		No	Broken top; dead branches in upper stem; natural pruning.
771A	Eastern White Pine	*Pinus strobus*	Native	1	29	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Seepage from failed structural branch; suppressed; sealed trunk fissures.
772A	Eastern White Pine	*Pinus strobus*	Native	1	20	2.0	Improbable	Fair	Boundary	move-Grind stu	Grading	Yes	Crook at base; natural pruning.
773A	Eastern White Pine	*Pinus strobus*	Native	1	27	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; natural pruning; crook in stem.
774A	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; natural pruning.
775A	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; thin crown; natural pruning.
777A	Eastern White Pine	*Pinus strobus*	Native	1	22	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; thin crown; slight lean; natural pruning.
778A	Eastern White Pine	*Pinus strobus*	Native	1	18	2.5	Improbable	Fair	Boundary	move-Grind stu	Grading	Yes	Natural pruning; thin crown.
780A	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Possible	Good	Boundary	move-Grind stu	Grading	Yes	Extensive vine growth resulting in foliar loss; asymmetrical crown.
781A	Eastern White Pine	*Pinus strobus*	Native	1	11	1.0	Improbable	Poor	Subject	Remove	Grading	No	Vine within canopy; thin crown; slight lean due to adjacent tree.
782A	American Elm	*Ulmus americana*	Native	1	14	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed; forked crown.
783A	American Elm	*Ulmus americana*	Native	1	11	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Included bark; codominant leaders; phototrophic growth.
784A	Eastern White Pine	*Pinus strobus*	Native	1	20	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine within canopy; asymmetrical crown due to adjacent tree.
785A	Eastern White Pine	*Pinus strobus*	Native	1	16	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; vine within canopy; asymmetrical crown due to adjacent tree.
786A	Black Cherry	*Prunus serotina*	Native	1	22	1.0	Possible	Poor	Subject	Remove	Grading	No	Gummosis; forked crown; minor branch dieback.
787A	Eastern White Pine	*Pinus strobus*	Native	2	22.3+8	2.5	Possible	Good	Subject	Remove	Grading	Yes	Second leader emerging from base; stunted foliar growth on second leader; vine growth.
789A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth; healthy crown; vine growth.
790A	Common Apple	*Malus pumila*	Non-native	2	15.2+12.3	1.0	Possible	Poor	Subject	Remove	Grading	No	Multiple dead branches; previous failures; vine suppressing canopy.
791A	Common Apple	*Malus pumila*	Non-native	2	16.3+15.9	1.0	Possible	Poor	Subject	Remove	Grading	No	Multiple dead branches; previous failures; vine suppressing canopy.
792A	Eastern White Pine	*Pinus strobus*	Native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; vine within canopy; natural pruning.
793A	Eastern White Pine	*Pinus strobus*	Native	1	33	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; vine within canopy; natural pruning.
794A	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; asymmetrical crown; minor seepage from old wound.
795A	Eastern White Pine	*Pinus strobus*	Native	1	15	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; limited live crown.
796A	Eastern White Pine	*Pinus strobus*	Native	1	30	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small scar in upper stem; asymmetrical crown due to adjacent tree; vine within canopy; natural pruning.
797A	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Excessive seepage at former branch union; asymmetrical crown; suppressed; brush pile at base.
798A	Eastern White Pine	*Pinus strobus*	Native	1	26	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
799A	Eastern White Pine	*Pinus strobus*	Native	1	27	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
800A	Eastern White Pine	*Pinus strobus*	Native	1	14	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; vine growth limiting foliar growth; limited live crown.
802A	Bitternut Hickory	*Carya cordiformis*	Native	1	22	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Sapsucker damage, supercanopy tree, no other visible defects.
803A	American Basswood	*Tilia americana*	Native	1	74	4.0	Probable	Very Poor	Subject	Remove	Grading	No	Already 2 large limbs snapped; extensive crown dieback; some bark loss
804A	Sugar Maple	*Acer saccharum*	Native	1	30	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Growing around American Basswood; irregular growth form; canopy competition with adjacent trees
805A	Sugar Maple	*Acer saccharum*	Native	1	69	7.0	Improbable	Good	Subject	Remove	Grading	Yes	codominant leaders, minor branc loss, fully calloused stem wound
808A	Manitoba Maple	*Acer negundo*	Native	1	16	2.0	Possible	Poor	Subject	Remove	Grading	No	Growing almost parallel to ground; epicormic growth; some crown dieback
814A	American Basswood	*Tilia americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; suppressed.
815A	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; leaning south; suppressed.
816A	American Basswood	*Tilia americana*	Native	1	27	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; large crown; suppressed on southeast.
817A	Black Locust	*Robinia pseudoacacia*	Non-native	2	22.3+13.9	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy high crown.
818A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic lean north; high crown.
819A	American Basswood	*Tilia americana*	Native	1	12	3.5	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; sparse crown; insect herbivory; suppressed.

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820A	American Basswood	*Tilia americana*	Native	1	11	1.5	Improbable	Poor	Subject	Remove	Grading	No	Narrow crown; 60% deadwood; suppressed; trunk wounds lacking woundwood.
821A	American Basswood	*Tilia americana*	Native	1	20	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; lower branch dieback; insect herbivory; suppressed.
822A	American Basswood	*Tilia americana*	Native	1	16	4.5	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; branch dieback; insect herbivory; asymmetrical crown towards south; suppressed.
823A	Manitoba Maple	*Acer negundo*	Native	1	18	3.0	Possible	Poor	Subject	Remove	Grading	No	45 degree lean east; phototrophic growth; epicormic shoots.
824A	American Basswood	*Tilia americana*	Native	1	15	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; suppressed on northwest.
825A	American Basswood	*Tilia americana*	Native	1	16	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; high crown; slightly suppressed.
826A	American Basswood	*Tilia americana*	Native	1	10	2.5	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; narrow crown; epicormic shoots; suppressed.
827A	American Basswood	*Tilia americana*	Native	1	28	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; suppressed.
828A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; suppressed.
829A	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	1.0	Probable	Dead	Subject	Remove	Grading	No	Leaning into plantation.
834A	Black Locust	*Robinia pseudoacacia*	Non-native	1	21	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Generally suppressed.
835A	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.0	Possible	Dead	Subject	Remove	Grading	No	Heavy lean south; conks.
836A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic lean; high crown; dead lower branches.
837A	Black Locust	*Robinia pseudoacacia*	Non-native	1	26	6.5	Improbable	Good	Subject	Remove	Grading	Yes	Good health; generally suppressed.
839A	American Basswood	*Tilia americana*	Native	1	27	6.5	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; generally suppressed.
848A	Manitoba Maple	*Acer negundo*	Native	3	20.5+16.8+13	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Large crown; leaning codominant stems.
849A	American Basswood	*Tilia americana*	Native	2	54+19.3	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine present; slight early leaf drop.
850A	American Basswood	*Tilia americana*	Native	1	20	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; epicormic growth in upper stem.
851A	American Basswood	*Tilia americana*	Native	4	40.4+34.6+16.5+11.2	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Large previously failed branch; codominant tree with decay at base; poor crown structure.
853A	American Basswood	*Tilia americana*	Native	1	28	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; decay at former branch union.
854A	American Basswood	*Tilia americana*	Native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Branch dieback; small wound in stem; epicormic growth.
856A	American Basswood	*Tilia americana*	Native	2	19.1+17.9	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; small cavity forming in larger stem; minor dieback.
857A	American Basswood	*Tilia americana*	Native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; small canker.
858A	Common Pear	*Pyrus communis*	Non-native	3	33.5+17.4	4.0	Improbable	Fair	Subject	Remove	Grading	No	Codominant trunks; vine burden.
859A	Manitoba Maple	*Acer negundo*	Native	1	20	3.0	Possible	Poor	Subject	Remove	Grading	No	Second stem smaller than 10cm; vines in crown; decay at branch union.
860A	American Basswood	*Tilia americana*	Native	2	11.3+10.5	2.0	Improbable	Poor	Subject	Remove	Grading	No	Multiple smaller stems; decay throughout; epicormic growth.
863A	American Basswood	*Tilia americana*	Native	2	19.4+13.5	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic lean; minor insect herbivory; suppressed.
865A	Manitoba Maple	*Acer negundo*	Native	2	22.8+19.5	4.0	Possible	Poor	Subject	Remove	Grading	No	Codominant stems leaning heavily in opposite direction; epicormic growth; branch dieback.
866A	American Basswood	*Tilia americana*	Native	1	35	5.5	Improbable	Good	Subject	Remove	Grading	Yes	Good form; vine present.
867A	Manitoba Maple	*Acer negundo*	Native	1	32	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean south; minor deadwood.
868A	Manitoba Maple	*Acer negundo*	Native	3	19.1+16.2+15.2	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean south.
869A	Manitoba Maple	*Acer negundo*	Native	1	18	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean south.
870A	American Basswood	*Tilia americana*	Native	6	25.1+21.4+19.8+17.6	4.0	Possible	Poor	Subject	Remove	Grading	No	Multiple stems smaller than 10cm; decay throughout; small cavities.
872A	American Basswood	*Tilia americana*	Native	3	26.2+24.4+10.2	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some browning leaf edges; defoliation; crown otherwise relatively full
873A	Manitoba Maple	*Acer negundo*	Native	2	23.6+23.1	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	codominant stems with included bark, phototrophic growth
875A	Mountain Maple	*Acer spicatum*	Native	3	50.9+14.4+21.4	6.0	Possible	Poor	Subject	Remove	Grading	No	codominant stems with included bark, 2nd stem broken, 3rd stem dead, epicormic growth, decay at base
876A	Manitoba Maple	*Acer negundo*	Native	1	37	5.0	Possible	Fair	Subject	Remove	Grading	Yes	1 limb split off; wound compartmentalized; minor twig dieback; response growth in upper crown
877A	Manitoba Maple	*Acer negundo*	Native	2	32.7+22	7.0	Possible	Poor	Subject	Remove	Grading	No	Partially uprooted but fallen onto adjacent tree/ground; crown dieback.
878A	Manitoba Maple	*Acer negundo*	Native	2	29.5+24.2	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Large crown; fallen tree resting against it.
879A	Manitoba Maple	*Acer negundo*	Native	2	49.7+26.8	6.0	Possible	Poor	Subject	Remove	Grading	No	codominant stems with included bark, epicormic growth, manitoba maple beetle infested
880A	Manitoba Maple	*Acer negundo*	Native	2	15.3+13.5	3.0	Possible	Poor	Subject	Remove	Grading	No	codominant stems with included bark, epicormic growth, decay where 3rd stem was previously, manitoba maple beetle infested
881A	Manitoba Maple	*Acer negundo*	Native	3	36.9+20.0+18.5	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	codominant stems with included bark, 2nd and 3rd stems broken at 3m, remaining stem has good canopy, manitoba maple beetle

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
882A	Manitoba Maple	*Acer negundo*	Native	2	21.8+13.0	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; light pruning dieback; spongy moth egg sacs
883A	Manitoba Maple	*Acer negundo*	Native	2	19.9+19.1	5.0	Possible	Poor	Subject	Remove	Grading	No	Broken leader and branches.
884A	Manitoba Maple	*Acer negundo*	Native	3	32.2+27.5+13.6	7.5	Possible	Fair	Subject	Remove	Grading	Yes	Dead lower branches; one leader with fresh longitudinal split and crown dieback.
886A	Manitoba Maple	*Acer negundo*	Native	5	32.3+29.0+23.7+18+18	6.0	Possible	Fair	Subject	Remove	Grading	Yes	2 smaller stems fully on ground but still alive; evidence of minor decay on root flare; crown dieback
888A	Common Pear	*Pyrus communis*	Non-native	1	28	3.0	Improbable	Fair	Subject	Remove	Grading	No	20% dieback; loss and decay of second leader; leaf spots.
889A	Sugar Maple	*Acer saccharum*	Native	1	19	3.5	Improbable	Good	Subject	Retain		No	Suppressed towards south; leaning south; healthy crown.
890A	Sugar Maple	*Acer saccharum*	Native	1	24	4.0	Improbable	Good	Subject	Retain		No	Suppressed towards north; leaning south; healthy crown.
891A	Black Cherry	*Prunus serotina*	Native	1	28	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Large crown; leaning south; vine present.
892A	American Basswood	*Tilia americana*	Native	1	33	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; leaning south; vine present.
893A	Black Cherry	*Prunus serotina*	Native	1	23	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Basal wound; generally suppressed; sparse lower crown.
895A	Sugar Maple	*Acer saccharum*	Native	1	52	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Large trunk wound from torn structural branch, with reaction wood; brush covering base; asymmetrical crown; healthy foliage.
896A	Sugar Maple	*Acer saccharum*	Native	1	64	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on northeast; upright codominant leaders with cavity at union; minor deadwood.
905A	Bitternut Hickory	*Carya cordiformis*	Native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Good health; suppressed on east.
906A	Sugar Maple	*Acer saccharum*	Native	2	20.1+13.7	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant trunks with included bark.
908A	American Basswood	*Tilia americana*	Native	1	23	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; crown dieback; phototrophic growth
909A	Sugar Maple	*Acer saccharum*	Native	1	66	8.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form; fence growing through.
910A	Sugar Maple	*Acer saccharum*	Native	1	35	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards east; 20% deadwood throughout,
914A	Snag	*Unknown sp.*	**	1	15	3.0	Probable	Dead	Subject	Remove	Grading	No	Crown mostly intact.
915A	American Basswood	*Tilia americana*	Native	4	60+55.3+49.0+37.4	3.5	Possible	Fair	Subject	Remove	Grading	Yes	1 stem dead; cavity with staining and decay; some bark loss; crown dieback.
916A	Manitoba Maple	*Acer negundo*	Native	1	44	7.0	Improbable	Poor	Subject	Remove	Grading	No	35 degree lean northwest; large trunk wound from 1.5 to 3.5m; significant response growth; dead lower branches.
918A	Manitoba Maple	*Acer negundo*	Native	1	22	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	25 degree lean northwest; epicormic shoots; minor dead lower branches.
919A	Manitoba Maple	*Acer negundo*	Native	4	29.9+21.1+19.8+13.0	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Lower scaffold dieback; epicormic growth; some insect defoliation
920A	Manitoba Maple	*Acer negundo*	Native	1	27	9.0	Improbable	Fair	Subject	Remove	Grading	Yes	25 degree lean northwest; epicormic shoots; dead lower branches.
921A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Poor	Subject	Remove	Grading	No	Suppressed crown; crown defoliation and dieback
922A	American Basswood	*Tilia americana*	Native	1	37	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	some defoliation, insect herbivory, some shade pruning
923A	Manitoba Maple	*Acer negundo*	Native	1	30	5.5	Improbable	Good	Subject	Remove	Grading	Yes	Tall full crown; suppressed east to west.
924A	American Basswood	*Tilia americana*	Native	1	12	2.0	Possible	Very Poor	Subject	Remove	Grading	No	75% deadwood; small crown; epicormic shoots.
925A	Black Cherry	*Prunus serotina*	Native	1	28	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor dead lower branches.
926A	Black Cherry	*Prunus serotina*	Native	1	21	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor dead lower branches.
927A	Black Cherry	*Prunus serotina*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor dead lower branches.
928A	Manitoba Maple	*Acer negundo*	Native	1	23	3.0	Possible	Poor	Subject	Remove	Grading	No	Growing on 50 degree angle so crown closer to field edge; epicormic growth; relatively extensive crown dieback
929A	Black Cherry	*Prunus serotina*	Native	1	22	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to competition with adjacent trees; dieback in lower scaffold branches; self correcting root flare
930A	American Basswood	*Tilia americana*	Native	1	22	3.0	Improbable	Poor	Subject	Remove	Grading	No	Sparse crown; generally suppressed; browning leaves.
931A	American Basswood	*Tilia americana*	Native	2	16.6+13.4	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	early defoliation, codominant stems with included bark
932A	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Poor	Subject	Remove	Grading	No	Sparse crown; generally suppressed; browning leaves.
933A	American Basswood	*Tilia americana*	Native	3	16.11+11.0+9.0	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some crown dieback and defoliation; weak union between 2 stems
934A	American Basswood	*Tilia americana*	Native	2	17.6+10.3	2.0	Improbable	Good	Subject	Remove	Grading	Yes	codominant stems, some insect herbivory
936A	American Basswood	*Tilia americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Stem wound with compartmentalization; some crown dieback and defoliation; browning edges
937A	American Basswood	*Tilia americana*	Native	1	12	4.0	Improbable	Poor	Subject	Remove	Grading	No	35degree lean towards north; suppressed, sparse crown; insect herbivory.
938A	American Basswood	*Tilia americana*	Native	1	19	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; asymmetrical crown due to competition with adjacent trees; some defoliation
939A	American Basswood	*Tilia americana*	Native	1	24	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Early defoliation, insect herbivory.

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940A	American Basswood	*Tilia americana*	Native	2	30.8+11.9	4.0	Improbable	Good	Subject	Remove	Grading	Yes	minor included bark, minor shade pruning, even crown
941A	American Basswood	*Tilia americana*	Native	1	12	4.0	Improbable	Poor	Subject	Remove	Grading	No	Relatively extensive crown dieback and defoliation; one sided crown
942A	American Basswood	*Tilia americana*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	on verge of poor, one-sided crown due to phototrophic growth, leader growing on 75 degree angle
943A	American Basswood	*Tilia americana*	Native	2	23.1+11.3	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Early defoliation, codominant stems, 2nd stem leader grows on 90 degree angle but main stem has good form throughout.
944A	American Basswood	*Tilia americana*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	insect herbivory, phototrophic growth, early defoliation
945A	American Basswood	*Tilia americana*	Native	1	19	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor leaf browning and insect herbivory.
946A	American Basswood	*Tilia americana*	Native	1	12	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Evidence of decay at root flare; extensive crown dieback; small vertical cracks
947A	American Basswood	*Tilia americana*	Native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor leaf browning and insect herbivory.
948A	American Basswood	*Tilia americana*	Native	1	32	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor lower scaffold dieback; relatively full crown with some defoliation
949A	Manitoba Maple	*Acer negundo*	Native	1	15	4.5	Possible	Very Poor	Subject	Remove	Grading	No	Top broken; one living scaffold branch in poor condition; advanced trunk decay.
950A	Manitoba Maple	*Acer negundo*	Native	1	10	4.5	Probable	Dead	Subject	Remove	Grading	No	Top broken.
952A	Manitoba Maple	*Acer negundo*	Native	1	24	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Growing on 45 degree angle; epicormic growth; response growth in crown; lean towards field
953A	Manitoba Maple	*Acer negundo*	Native	1	33	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	On verge of poor; defoliation and dieback; epicormic growth; 10 degree lean towards field.
954A	Manitoba Maple	*Acer negundo*	Native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; minor epicormic growth; leaf edges browning
955A	American Basswood	*Tilia americana*	Native	5	43.3+40.5+36.7+25.2+21.8	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large, mature tree; some crown dieback; epicormic growth; minor sapsucker damage
956A	American Basswood	*Tilia americana*	Native	1	32		Possible	Dead	Subject	Remove	Grading	No	No crown; snag.
957A	Manitoba Maple	*Acer negundo*	Native	1	13	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed but full crown.
958A	American Basswood	*Tilia americana*	Native	3	35.7+29.6+21.2	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant trunks; included bark; one trunk with cankers at 4m; large crown; browning leaves with early drop.
959A	Manitoba Maple	*Acer negundo*	Native	3	27.7+22.3+18.8	10.0	Possible	Fair	Subject	Remove	Grading	Yes	Wide spreading crown; centrally suppressed by adjacent cherry; smallest trunk with longitudinal crack.
960A	Black Cherry	*Prunus serotina*	Native	2	69+54.5	7.0	Possible	Poor	Subject	Remove	Grading	No	Seam between stems with evidence of decay; 1 large leader dead; other main stems have relatively full crowns; some bark loss; gummosis
961A	American Basswood	*Tilia americana*	Native	2	27.8+17.4	4.5	Possible	Poor	Subject	Remove	Grading	No	Two trunks fused at 1.5m; included bark; old main leader lost
963A	American Basswood	*Tilia americana*	Native	3	47.3+31.0+13.0	6.0	Improbable	Good	Subject	Remove	Grading	Yes	codominant stems with included bark, 3rd stem dead, remaining stems have vigorous canopy
964A	Manitoba Maple	*Acer negundo*	Native	2	34.2+31.8	6.0	Possible	Fair	Subject	Remove	Grading	Yes	1 stem poor with snapped crown; cavity with decay between stem union; epicormic growth; 1 large scaffold snapped
965A	American Basswood	*Tilia americana*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	On verge of poor; Riverbank Grape growing through scaffold branches; crown dieback and defoliation
966A	American Basswood	*Tilia americana*	Native	2	15+10.5	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Centre suppressed; trunk wound; browning leaves; insect herbivory.
967A	American Basswood	*Tilia americana*	Native	1	38	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Broken branches; crown asymmetrical towards southwest; epicormic shoots.
968A	Manitoba Maple	*Acer negundo*	Native	1	15	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Growing parallel to ground; response growth in crown; epicormic growth
969A	American Basswood	*Tilia americana*	Native	1	19	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to competition with adjacent trees; some crown dieback and defoliation
970A	American Basswood	*Tilia americana*	Native	2	13.8+9.6	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly asymmetrical crown due to competition with adjacent trees; minor defoliation and browning of leaf edges
971A	Black Cherry	*Prunus serotina*	Native	1	43	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	cavity showing some decay where 2 previous stems lost, remaining stem has full crown, codominant leaders
972A	Manitoba Maple	*Acer negundo*	Native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	small cavity on stem shows hollow, epicormic growth, phototrophic growth
973A	American Basswood	*Tilia americana*	Native	3	23.0+19.3+15.6	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaf edges; some defoliation
974A	American Basswood	*Tilia americana*	Native	1	17	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Grapevine entering canopy, relatively full crown.
975A	American Basswood	*Tilia americana*	Native	3	18.8+3.5+3.5	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Minor shade pruning, 1 small branch previously lost.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
976A	American Basswood	*Tilia americana*	Native	4	15.0+8.1+4.5	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	early defoliation, insect herbivory, codominant stems with included bark
977A	Sugar Maple	*Acer saccharum*	Native	1	13	4.0	Improbable	Good	Subject	Transplant	Grading	No	Slightly uneven crown due to competition for sunlight, vigorous canopy.
978A	American Basswood	*Tilia americana*	Native	3	11.4+7.9+6.8	3.0	Improbable	Good	Subject	Remove	Grading	Yes	2nd and 3rd stems dead, main stem has good structure and full crown
979A	American Basswood	*Tilia americana*	Native	2	10.8+5.5	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	virginia creeper in crown of smaller stem, insect herbivory
980A	American Basswood	*Tilia americana*	Native	3	20.6+16.9+10.5	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems, phototrophic growth, full crown.
981A	American Basswood	*Tilia americana*	Native	2	19.0+10.4	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	insect herbivory, early defoliation, phototrophic growth
982A	American Basswood	*Tilia americana*	Native	1	24	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Leader on slight angle, minor shade pruning.
983A	American Basswood	*Tilia americana*	Native	1	17	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	insect herbivory, early defoliation, slightly reduced crown
984A	American Basswood	*Tilia americana*	Native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	early defoliation, insect herbivory, phototrophic growth
985A	American Basswood	*Tilia americana*	Native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	early defoliation, insect herbivory, good structure
986A	American Basswood	*Tilia americana*	Native	1	21	4.0	Improbable	Good	Subject	Transplant	Grading	No	Minor defoliation, supercanopy tree.
988A	Black Locust	*Robinia pseudoacacia*	Non-native	3	30.8+27.5+22	7.5	Possible	Fair	Subject	Remove	Grading	Yes	3 codominant trunks with deep central cavity in crotch; dead lower branches.
989A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	7.0	Possible	Poor	Subject	Remove	Grading	No	Dead lower branches; generally suppressed; epicormic shoots; heavy phototrophic lean north; small crown, north of rooted location; epicormic shoots.
990A	American Basswood	*Tilia americana*	Native	1	12	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Insect defoliation; some browning leaf edges; small gallery on main stem
991A	American Basswood	*Tilia americana*	Native	1	14	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	On verge of poor; crown defoliation and dieback; epicormic growth
992A	American Basswood	*Tilia americana*	Native	1	18	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Crown defoliation and dieback with some browning leaf edges
993A	American Basswood	*Tilia americana*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to competition with adjacent trees; on verge of poor; crown defoliation and dieback
994A	American Basswood	*Tilia americana*	Native	1	12	1.0	Improbable	Poor	Subject	Remove	Grading	No	significant dieback, one-sided crown, lean
995A	American Basswood	*Tilia americana*	Native	1	14	2.5	Possible	Poor	Subject	Remove	Grading	No	Relatively extensive crown and branch dieback; phototrophic growth
997A	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Good	Subject	Remove	Grading	Yes	phototrophic growth, uneven crown due to competition for sunlight, insect herbivory, wound wood
998A	American Basswood	*Tilia americana*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	One-sided crown due only to competition for sunlight, phototrophic growth.
999A	Manitoba Maple	*Acer negundo*	Native	1	18	4.0	Possible	Poor	Subject	Remove	Grading	No	History of branch failure; growing on 45 degree angle; some bark loss
1000A	American Basswood	*Tilia americana*	Native	2	20.6+14.7	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	codominant stems, insect herbivory, some defoliation
1001A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Branch dieback; minor lean; open wound in lower trunk.
1002A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14		Imminent	Dead	Subject	Remove	Grading	No	
1003A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Nectria canker; adjacent tree leaning onto stem.
1004A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	2.5	Possible	Poor	Subject	Remove	Grading	No	Heavy lean south; 70% deadwood.
1005A	Black Locust	*Robinia pseudoacacia*	Non-native	1	22	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Leaning north; 30% deadwood.
1006A	Black Walnut	*Juglans nigra*	Native	1	37	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; early signs of nectria canker.
1008A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; slight lean.
1009A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback.
1011A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback.
1012A	Black Locust	*Robinia pseudoacacia*	Non-native	1	30	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; small, suppressed crown.
1013A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13		Probable	Dead	Subject	Remove	Grading	No	
1014A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Lean >10%; decay throughout.
1015A	Black Locust	*Robinia pseudoacacia*	Non-native	2	18.2+18.0	2.0	Possible	Poor	Subject	Remove	Grading	No	Minor branch dieback; decay at base.
1016A	Black Walnut	*Juglans nigra*	Native	1	29	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present; suppressed crown.
1017A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.0	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; 40% deadwood.
1018A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; 40% deadwood.
1019A	Black Locust	*Robinia pseudoacacia*	Non-native	1	30	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present; suppressed on south; 25% deadwood.
1020A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present; suppressed on south; dead lower branches.
1021A	Black Walnut	*Juglans nigra*	Native	1	31	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small crown; dead lower branches.
1022A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.5	Possible	Poor	Subject	Remove	Grading	No	Leaning >10%; decay at base.
1023A	Black Walnut	*Juglans nigra*	Native	1	16	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Early signs of nectria canker; minor branch dieback.
1024A	Black Locust	*Robinia pseudoacacia*	Non-native	1	25	4.0	Possible	Poor	Subject	Remove	Grading	No	Dieback throughout; decay at base; minor lean.
1025A	Black Locust	*Robinia pseudoacacia*	Non-native	1	30	4.0	Possible	Very Poor	Subject	Remove	Grading	No	Forked crown splitting at crotch; decay visible.
1026A	Common Pear	*Pyrus communis*	Non-native	1	21	2.0	Possible	Poor	Subject	Remove	Grading	No	Dieback throughout; vines present.
1027A	Black Walnut	*Juglans nigra*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Early signs of nectria canker; asymmetrical crown.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
1028A	Black Locust	*Robinia pseudoacacia*	Non-native	1	25	4.0	Possible	Poor	Subject	Remove	Grading	No	Dieback throughout; decay at base; minor lean.
1029A	Black Walnut	*Juglans nigra*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Early signs of nectria canker.
1030A	Black Locust	*Robinia pseudoacacia*	Non-native	2	32.0+30.2	3.0	Possible	Poor	Subject	Remove	Grading	No	Branch dieback throughout; decay at base.
1031A	Black Walnut	*Juglans nigra*	Native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; minor branch dieback.
1032A	Black Locust	*Robinia pseudoacacia*	Non-native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; minor branch dieback.
1033A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; minor branch dieback.
1034A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; minor branch dieback.
1035A	Black Walnut	*Juglans nigra*	Native	1	24	4.0	Possible	Poor	Subject	Remove	Grading	No	Nectria canker throughout; minor branch dieback.
1036A	Sugar Maple	*Acer saccharum*	Native	1	24	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; suppressed on south east.
1038A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Poor	Subject	Remove	Grading	No	One leader dead, one leaning heavily.
1040A	Black Locust	*Robinia pseudoacacia*	Non-native	1	38	5.0	Possible	Poor	Subject	Remove	Grading	No	Branch dieback throughout; asymmetrical crown; decay at base.
1042A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Considerable lean; decay throughout.
1043A	Black Locust	*Robinia pseudoacacia*	Non-native	1	21	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; decay at branch unions.
1044A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Vines present; branch dieback; decay throughout.
1045A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; decay at branch unions.
1046A	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; decay at branch unions.
1049A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Tall; healthy crown.
1050A	Black Locust	*Robinia pseudoacacia*	Non-native	1	22	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Tall; healthy crown.
1051A	Black Locust	*Robinia pseudoacacia*	Non-native	1	28	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Tall; full crown.
1052A	White Ash	*Fraxinus americana*	Native	1	24	3.0	Probable	Dead	Subject	Remove	Grading	No	Crown partially intact.
1053A	Hawthorn species	*Crataegus sp.*	**	1	19	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	One leader leans heavily north.
1055A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Forked crown; minor branch dieback.
1056A	Black Locust	*Robinia pseudoacacia*	Non-native	1	31	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback.
1057A	Black Locust	*Robinia pseudoacacia*	Non-native	2	28.8+28.1	5.0	Possible	Very Poor	Subject	Remove	Grading	No	Multiple dead lower branches; decay at base; dieback throughout
1058A	Black Locust	*Robinia pseudoacacia*	Non-native	1	23	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Minor branch dieback.
1059A	Common Pear	*Pyrus communis*	Non-native	1	30	4.0	Improbable	Poor	Subject	Remove	Grading	No	Insect damage in lower trunk; minor lean; dieback.
1060A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	5.0	Possible	Poor	Subject	Remove	Grading	No	Vines present; asymmetrical crown; moderate branch dieback.
1066A	Black Locust	*Robinia pseudoacacia*	Non-native	1	30	4.0	Possible	Poor	Subject	Remove	Grading	No	Forked slightly above DBH; vines present.
1067A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	1.5	Possible	Dead	Subject	Remove	Grading	No	Crown mostly lost.
1068A	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	1.5	Possible	Dead	Subject	Remove	Grading	No	Crown mostly lost.
1069A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	2.0	Possible	Dead	Subject	Remove	Grading	No	Crown partially intact.
1070A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.5	Improbable	Poor	Subject	Remove	Grading	No	Leans north; 50% deadwood.
1072A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.0	Possible	Very Poor	Subject	Remove	Grading	No	80% deadwood; upper crown dead.
1073A	Black Cherry	*Prunus serotina*	Native	1	18	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; dead lower branches.
1074A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	30% deadwood; supressed crown.
1075A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; supressed crown.
1080A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.0	Probable	Poor	Subject	Remove	Grading	No	Decay at branch failure; moderate lean.
1081A	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	4.0	Probable	Poor	Subject	Remove	Grading	No	Forked crown; epicormic growth.
1082A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	2.0	Probable	Poor	Subject	Remove	Grading	No	Epicormic growth; decay throughout.
1084A	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Large full crown.
1085A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.0	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1086A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.0	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1087A	Black Walnut	*Juglans nigra*	Native	1	14	1.5	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1088A	Black Walnut	*Juglans nigra*	Native	1	15	2.0	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1089A	Black Walnut	*Juglans nigra*	Native	1	10	2.0	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1090A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	40% deadwood; crown dieback.
1091A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	1.5	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1092A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	2.0	Possible	Fair	Subject	Remove	Grading	Yes	Epicormic growth; minor lean.
1093A	Black Locust	*Robinia pseudoacacia*	Non-native	1	25	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; suppressed crown towards south.
1094A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Trunk wound; leaning south; suppressed crown.
1095A	Black Locust	*Robinia pseudoacacia*	Non-native	2	14.3+11.5	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	2 codominant trunks with included bark; suppressed crown.
1096A	Black Walnut	*Juglans nigra*	Native	1	37	7.0	Improbable	Good	Subject	Remove	Grading	Yes	One broken leader; full large crown.
1097A	Black Walnut	*Juglans nigra*	Native	1	31	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1101A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11		Probable	Dead	Subject	Remove	Grading	No	
1102A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11		Possible	Dead	Subject	Remove	Grading	No	
1103A	Black Locust	*Robinia pseudoacacia*	Non-native	1	23	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Moderate lean; vine throughout.
1104A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	5.0	Possible	Poor	Subject	Remove	Grading	No	Moderate lean; dead lower branches; vines present; epicormic growth.
1105A	Black Locust	*Robinia pseudoacacia*	Non-native	1	47	5.0	Probable	Very Poor	Subject	Remove	Grading	No	Forked above DBH; considerable decay throughtout; epicormic growth; vines present.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
1106A	Sweet Cherry	*Prunus avium*	Non-native	1	26	4.0	Possible	Poor	Subject	Remove	Grading	No	Defoliated 40%; multiple open wounds with rot; branch dieback.
1107A	Snag	*Unknown sp.*	**	1	80	2.0	Probable	Dead	Subject	Remove	Grading	No	6m tall stump; advanced decay; cavities throughout.
1108A	Black Walnut	*Juglans nigra*	Native	1	33	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1109A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	1.0	Possible	Very Poor	Subject	Remove	Grading	No	Extensive dieback.
1110A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19		Imminent	Very Poor	Subject	Remove	Grading	No	Large torsion wound; failing at 2m; dieback throughout.
1111A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	1.0	Possible	Poor	Subject	Remove	Grading	No	decay at base; dieback throughtout.
1112A	Black Locust	*Robinia pseudoacacia*	Non-native	2	12.6+11.2	2.0	Possible	Very Poor	Subject	Remove	Grading	No	decay at base; Stems fused at dbh; multiple failures.
1113A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown towards south.
1114A	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	1.0	Possible	Poor	Subject	Remove	Grading	No	Minor branch dieback; minor decay.
1115A	Black Locust	*Robinia pseudoacacia*	Non-native	1	27	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Two fused codominant trunks; suppressed towards south.
1116A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present; small crown; suppressed towards south.
1117A	Common Apple	*Malus pumila*	Non-native	1	11	2.0	Possible	Poor	Subject	Remove	Grading	No	Dieback throughtout; drey in crown; epicormic growth.
1118A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	1.0	Improbable	Very Poor	Subject	Remove	Grading	No	Dead/broken top; decay throughtout.
1119A	Black Locust	*Robinia pseudoacacia*	Non-native	2	14.8+12.2	2.0	Possible	Poor	Subject	Remove	Grading	No	Decay at base; dieback throughout.
1120A	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	7.0	Improbable	Poor	Subject	Remove	Grading	No	Heavy lean towards north; trunk wound from lean force; dead lower branches.
1121A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; dead lower branches.
1124A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	No major defects; dead lower branches; vines present.
1125A	Black Locust	*Robinia pseudoacacia*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on south; dead lower branches.
1126A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Large full crown.
1127A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	2.5	Possible	Fair	Subject	Remove	Grading	Yes	20% dieback; pressure on lower stem from neighbouring shrub.
1128A	Common Apple	*Malus pumila*	Non-native	1	27	4.0	Possible	Poor	Subject	Remove	Grading	No	Decay at base; forked above BH; dieback throughout.
1129A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor epicormic growth along trunk.
1130A	Manitoba Maple	*Acer negundo*	Native	1	56	6.0	Possible	Poor	Subject	Remove	Grading	No	Large burl at base with mature shoots; large decaying cavity in main leader; epicormic shoots; burls on trunk.
1132A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.5	Improbable	Poor	Subject	Remove	Grading	No	Main leader broken off.
1133A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1134A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean southeast.
1137A	Manitoba Maple	*Acer negundo*	Native	1	23	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Corrected lean at base; full crown.
1139A	Manitoba Maple	*Acer negundo*	Native	1	18	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean northeast; dead lower branches.
1140A	Manitoba Maple	*Acer negundo*	Native	1	25	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Vigorous crown; loose bark; hollow areas along trunk suggest decay.
1141A	Common Apple	*Malus pumila*	Non-native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	No	Sealed stem crack; 5% dieback.
1142A	Manitoba Maple	*Acer negundo*	Native	1	15	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Dead second leader; loose bark; crack in stem; heavy lean towards field; epicormic shoots.
1143A	Manitoba Maple	*Acer negundo*	Native	1	12	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Dead second leader; fruiting bodies; leaning towards field.
1144A	Manitoba Maple	*Acer negundo*	Native	1	57	5.0	Improbable	Poor	Subject	Remove	Grading	No	Old leader failures; knot cavities; living leader with missing bark.
1145A	Manitoba Maple	*Acer negundo*	Native	1	21	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Leaning southwest.
1146A	Manitoba Maple	*Acer negundo*	Native	2	20+19.3	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy lean northeast; dead lower branches; one trunk dead.
1147A	Eastern Cottonwood	*Populus deltoides*	Native	1	56	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1148A	Black Cherry	*Prunus serotina*	Native	3	22.9+18.5+17.5	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1149A	Black Cherry	*Prunus serotina*	Native	1	31	3.5	Improbable	Poor	Subject	Remove	Grading	No	50% dieback; included bark; epicormic shoots; growing on slope.
1150A	Manitoba Maple	*Acer negundo*	Native	1	23	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Phototrophic growth east; decay where second leader was lost; epicormic shoots.
1151A	Black Walnut	*Juglans nigra*	Native	2	37.9+28	6.5	Possible	Good	Subject	Remove	Grading	Yes	Overextended codominant stems; included bark.
1152A	Manitoba Maple	*Acer negundo*	Native	1	13	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Slight lean; phototrophic growth.
1153A	White Spruce	*Picea glauca*	Native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse suppressed crown; no major defects.
1154A	Black Pine	*Pinus nigra*	Non-native	1	25	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
1155A	Black Pine	*Pinus nigra*	Non-native	1	27	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown.
1156A	Common Pear	*Pyrus communis*	Non-native	1	24	3.0	Improbable	Good	Subject	Remove	Grading	No	Asymmetrical crown; included bark.
1157A	Common Pear	*Pyrus communis*	Non-native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	No	Dead lower branches; diseased foliage.
1158A	Eastern White Pine	*Pinus strobus*	Native	1	17	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; minor browning of needles.
1159A	Eastern White Pine	*Pinus strobus*	Native	1	11	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form
1160A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Several dead scaffold branches.
1161A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Minor dieback; dead scaffold branch.
1162A	Common Pear	*Pyrus communis*	Non-native	1	17	2.5	Improbable	Fair	Subject	Remove	Grading	No	10% dieback; healthy crown.
1164A	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present; dead lower branches.
1165A	Black Locust	*Robinia pseudoacacia*	Non-native	1	43	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; good form.

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1166A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large trunk wound from 2-5m.
1167A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Basal decay; leaning east with response growth.
1168A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	3.0	Imminent	Poor	Subject	Remove	Grading	No	Major basal decay; loose bark; partially sealed trunk wounds; 30% dieback.
1169A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small amount of loose bark; dead epicormic shoots.
1170A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	20% deadwood.
1171A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1172A	White Ash	*Fraxinus americana*	Native	1	30	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Epicormic shoots throughout; 80% dieback.
1173A	Common Pear	*Pyrus communis*	Non-native	1	19	2.5	Improbable	Good	Subject	Remove	Grading	No	Large full crown.
1174A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	2.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1175A	Black Locust	*Robinia pseudoacacia*	Non-native	1	37	5.0	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1176A	Black Locust	*Robinia pseudoacacia*	Non-native	1	26	4.0	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1177A	Black Locust	*Robinia pseudoacacia*	Non-native	1	28	4.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1178A	Common Pear	*Pyrus communis*	Non-native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	No	Large full crown.
1179A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; minor bark staining; woodpecker holes.
1180A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.0	Possible	Poor	Subject	Remove	Grading	No	Second leader cut; reaction wood and included bark; decay at stem union; loose bark.
1181A	Black Locust	*Robinia pseudoacacia*	Non-native	1	28	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; healthy crown.
1182A	Black Locust	*Robinia pseudoacacia*	Non-native	1	22	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1183A	Black Locust	*Robinia pseudoacacia*	Non-native	1	27	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant leaders with included bark. Dead lower branches.
1184A	Black Locust	*Robinia pseudoacacia*	Non-native	1	37	5.5	Improbable	Good	Subject	Remove	Grading	Yes	No major defects.
1185A	Common Pear	*Pyrus communis*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	No	Dead lower branches.
1186A	Common Pear	*Pyrus communis*	Non-native	1	23	3.5	Improbable	Good	Subject	Remove	Grading	No	Minor epicormic shoots; healthy crown.
1187A	Common Pear	*Pyrus communis*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	No	Crowded branching; epicormic shoots.
1188A	Black Locust	*Robinia pseudoacacia*	Non-native	2	22.5+20.5	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; sealed wounds from lost branches.
1189A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No major defects; vines present.
1301A	Eastern White Pine	*Pinus strobus*	Native	1	14	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed; vines in lower crown.
1311A	Eastern Cottonwood	*Populus deltoides*	Native	1	22	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1312A	Common Apple	*Malus pumila*	Non-native	2	12.5+11.8	3.0	Improbable	Fair	Subject	Remove	Grading	No	Vines present; suppressed on southwest.
1314A	Black Cherry	*Prunus serotina*	Native	1	17	3.5	Improbable	Good	Subject	Transplant	Grading	No	Large, healthy crown.
1315A	Black Cherry	*Prunus serotina*	Native	1	15	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth; minor dieback.
1317A	Black Cherry	*Prunus serotina*	Native	1	22	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Crown suppressed on east.
1318A	Common Apple	*Malus pumila*	Non-native	1	27	4.0	Improbable	Good	Subject	Remove	Grading	No	Dense crown; codominant stems; included bark.
1367A	American Elm	*Ulmus americana*	Native	1	27	3.0	Probable	Dead	Subject	Remove	Grading	No	Fungal fruiting bodies at base.
1368A	Black Cherry	*Prunus serotina*	Native	1	26	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Double leader; amongst old rock wal.
1369A	Black Cherry	*Prunus serotina*	Native	1	15	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure; growing amongst old rock wall.
1370A	Eastern White Pine	*Pinus strobus*	Native	1	26	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Thin canopy.
1371A	Black Cherry	*Prunus serotina*	Native	2	45.5+35.3	5.5	Probable	Dead	Subject	Remove	Grading	No	Dead crown intact.
1372A	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1373A	Common Pear	*Pyrus communis*	Non-native	2	15.6+17.6	2.5	Improbable	Fair	Subject	Remove	Grading	No	Suppressed lower canopy; grape vine within canopy.
1374A	Eastern White Pine	*Pinus strobus*	Native	1	20	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed canopy; buckthorn within crown.
1375A	Eastern White Cedar	*Thuja occidentalis*	Native	2	15.6+13.5+25.3	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Crowded stems; numerous shoots.
1376A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.0	Imminent	Dead	Subject	Remove	Grading	No	Leaning on plantation tree; main branches attached but no needles.
1377A	Black Cherry	*Prunus serotina*	Native	1	22	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Large healthy crown.
1378A	Eastern White Pine	*Pinus strobus*	Native	1	41	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; low hanging branches.
1379A	Eastern White Pine	*Pinus strobus*	Native	1	31	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; low hanging branches; sealed trunk wound.
1380A	Sugar Maple	*Acer saccharum*	Native	1	82	7.0	Possible	Fair	Subject	Retain		No	Suppressed on northeast; large cavity between 1-2m with significant response growth; healthy crown.
1381A	American Elm	*Ulmus americana*	Native	1	22	4.0	Possible	Poor	Subject	Remove	Grading	No	Advanced crown dieback throughout.
1382A	Common Pear	*Pyrus communis*	Non-native	1	34	5.0	Improbable	Good	Subject	Remove	Grading	No	Large crown; minor lower deadwood.
1384A	Common Apple	*Malus pumila*	Non-native	2	14.6+11.2	3.5	Improbable	Fair	Subject	Remove	Grading	No	Generally suppressed; healthy foliage.
1385A	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown; dead lower branches
1386A	Scots Pine	*Pinus sylvestris*	Non-native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown; dead lower branches
1387A	Scots Pine	*Pinus sylvestris*	Non-native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown; dead lower branches
1388A	Sugar Maple	*Acer saccharum*	Native	1	101	9.0	Possible	Good	Subject	Retain		No	Suppressed on southwest; small basal wound with response growth; low branching crown; one old leader broken, decayed; 5% deadwood.
1389A	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown; low hanging branches; vine growth.
1390A	Common Apple	*Malus pumila*	Non-native	4	21.5+20.4+19.2+17.9	4.5	Possible	Fair	Subject	Remove	Grading	No	One dead trunk; one trunk with decay; suppressed on northwest.
1391A	Manitoba Maple	*Acer negundo*	Native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on north.

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1392A	Manitoba Maple	*Acer negundo*	Native	1	27	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; leaning north; epicormic shoots.
1393A	Manitoba Maple	*Acer negundo*	Native	1	35	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; 20 degree towards west; epicormic shoots.
1394A	American Basswood	*Tilia americana*	Native	2	49.9+22.4	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; browning leaves; insect herbivory.
1395A	Sugar Maple	*Acer saccharum*	Native	1	10	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed from above; vine present; sealed lower trunk wound.
1396A	Sugar Maple	*Acer saccharum*	Native	1	19	3.5	Improbable	Good	Subject	Transplant	Grading	No	Tall erect form; full crown; slightly suppressed.
1397A	Manitoba Maple	*Acer negundo*	Native	2	29.5+12.6	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Both stems leaning; partiallly sealed wound from previous branch failure; vine present.
1398A	American Basswood	*Tilia americana*	Native	2	52.8+37.7	7.0	Probable	Fair	Subject	Remove	Grading	No	One trunk with advanced decay and leader failure; one trunk healthy; vine present; insect herbivory; prune for improbable
1399A	Black Cherry	*Prunus serotina*	Native	1	47	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present, girdling trunk; minor trunk wounds with response growth; 20% chlorotic foilage; drought stress.
1400A	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavily suppressed on east; dead lower branches.
1401A	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Thin canopy.
1402A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavily suppressed on north.
1403A	Common Pear	*Pyrus communis*	Non-native	3	26.8+18.7+11	3.5	Improbable	Fair	Subject	Remove	Grading	No	Dead lower branches; vines present; vine present; generally suppressed.
1404A	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Little to no foliage; grape vine within canopy.
1405A	Scots Pine	*Pinus sylvestris*	Non-native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Crown dieback; vines present throughout.
1406A	Scots Pine	*Pinus sylvestris*	Non-native	1	29	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Fair crown structure; crowded by buckthorn.
1407A	Common Pear	*Pyrus communis*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	No	Full healthy crown; minor trunk wounds.
1408A	Common Pear	*Pyrus communis*	Non-native	1	10	3.5	Improbable	Fair	Subject	Remove	Grading	No	Dead lower branches; vines present; vine present throughout.
1409A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches.
1410A	Common Pear	*Pyrus communis*	Non-native	1	15	2.0	Improbable	Poor	Subject	Remove	Grading	No	Small crown with dieback; chlorotic foliage.
1411A	White Ash	*Fraxinus americana*	Native	1	20	5.0	Possible	Dead	Subject	Remove	Grading	No	Peeling bark; signs of EAB; branches attached but no leaves.
1412A	Black Locust	*Robinia pseudoacacia*	Non-native	1	25	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some dead lower branches; good crown structur.
1413A	Common Apple	*Malus pumila*	Non-native	1	11	4.0	Improbable	Fair	Subject	Remove	Grading	No	Generally suppressed; low branching crown.
1414A	Common Apple	*Malus pumila*	Non-native	2	20.5+21.0	5.0	Improbable	Fair	Subject	Remove	Grading	No	Some defoliated branches; dead branches in lower canopy.
1415A	Common Apple	*Malus pumila*	Non-native	1	18	5.0	Improbable	Fair	Subject	Remove	Grading	No	Some defoliated branches.
1416A	Sugar Maple	*Acer saccharum*	Native	2	26.5+23.3	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Several sealed trunk wounds; codominant stems; included bark; excessive vine growth; rusting of leaves.
1417A	Black Cherry	*Prunus serotina*	Native	1	26	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Some decay around trunk wound; roughly 1.5m of brush and soil around base; asymmetrical crown; vine growth.
1418A	Black Cherry	*Prunus serotina*	Native	1	16	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown towards north; suppressed.
1420A	Black Cherry	*Prunus serotina*	Native	2	34.7+29.2	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; healthy crown; vine growth; visible decay at broken branch union.
1422A	Silver Maple	*Acer saccharinum*	Native	2	96.3+57.9	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Old broken leader with decay; codominant trunks with included bark; 10% deadwood throughout; tall crown.
1423A	Silver Maple	*Acer saccharinum*	Native	1	131	6.5	Possible	Good	Subject	Remove	Grading	Yes	Several codominant stems; included bark; bulging at base of fused stem; some decay at broken branch unions; healthy crown.
1424A	Silver Maple	*Acer saccharinum*	Native	1	121	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant upright trunks; large full crown; weak attachments.
1425A	Black Cherry	*Prunus serotina*	Native	2	22.7+14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; excessive vine growth; 10% dieback; phototrophic growth.
1426A	Common Pear	*Pyrus communis*	Non-native	3	19+18.9+11	4.5	Improbable	Fair	Subject	Remove	Grading	No	Low branching crown; vines present.
1428A	Common Apple	*Malus pumila*	Non-native	3	25.2+22.9+18.3	3.0	Possible	Fair	Subject	Remove	Grading	No	Fused twisted stems; included bark; epicormic shoots.
1429A	Black Cherry	*Prunus serotina*	Native	1	56	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	2 upright codominant trunks with included bark; decay in branch failure wound; large full crown.
1430A	Sugar Maple	*Acer saccharum*	Native	1	87	4.5	Improbable	Good	Subject	Remove	Grading	Yes	5% dieback; minor leaf rust; few dead branches.
1431A	American Basswood	*Tilia americana*	Native	5	32.4+29+16	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; vines present; 15% dieback.
1432A	American Basswood	*Tilia americana*	Native	3	38.2+17.5+12.2	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; vines present; dead lower branches.
1433A	American Basswood	*Tilia americana*	Native	2	20.5+15.2	3.0	Possible	Poor	Subject	Remove	Grading	No	Browning and warping of leaves; epicormic shoots; 20% dieback.
1434A	White Ash	*Fraxinus americana*	Native	1	20	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; minor dieback; partial crown suppression.

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1435A	American Basswood	*Tilia americana*	Native	2	34.5+14.5	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; some defoliation; maturation of epicormic shoot resulting in second leader.
1436A	American Basswood	*Tilia americana*	Native	2	16.2+10	2.0	Possible	Fair	Subject	Remove	Grading	Yes	Smaller stems bent from aggressive vine growth; defoliation.
1437A	American Basswood	*Tilia americana*	Native	5	19+17.9+15.9	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; suppressed on north.
1438A	American Basswood	*Tilia americana*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; suppressed on east.
1439A	Black Cherry	*Prunus serotina*	Native	1	59	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Included bark; minor root girdling; 10% dieback.
1440A	Sugar Maple	*Acer saccharum*	Native	1	72	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant upright leaders; large old deadwood; full large crown.
1442A	Black Locust	*Robinia pseudoacacia*	Non-native	1	29	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Broken small structural branch; included bark.
1443A	Black Cherry	*Prunus serotina*	Native	1	14	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Included bark; minor defoliation.
1444A	Black Cherry	*Prunus serotina*	Native	1	23	3.0	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; dead leader.
1446A	American Basswood	*Tilia americana*	Native	1	15	3.0	Improbable	Poor	Subject	Remove	Grading	No	Necrotic/diseased foliage; 35% dieback.
1447A	American Basswood	*Tilia americana*	Native	1	31	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; 30% dieback.
1448A	American Basswood	*Tilia americana*	Native	5	19.3+18.3+15.7+13.2+12	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Diseased, warped leaves; included bark.
1449A	American Basswood	*Tilia americana*	Native	3	32.5+27.8+16	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; minor deadwood.
1451A	American Basswood	*Tilia americana*	Native	1	14	2.5	Improbable	Poor	Subject	Remove	Grading	No	Necrotic/diseased foliage; suppressed crown.
1452A	American Basswood	*Tilia americana*	Native	1	14	1.5	Improbable	Poor	Subject	Remove	Grading	No	Necrotic/diseased foliage; highly suppressed crown.
1453A	American Basswood	*Tilia americana*	Native	1	14	2.5	Improbable	Poor	Subject	Remove	Grading	No	Necrotic/diseased foliage; suppressed crown.
1454A	American Basswood	*Tilia americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; partially suppressed crown.
1455A	American Basswood	*Tilia americana*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; sealed minor upper trunk wound.
1456A	American Basswood	*Tilia americana*	Native	1	20	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; minor branch dieback.
1457A	American Basswood	*Tilia americana*	Native	5	14.5+11.5+11.3+10.7+10	3.0	Improbable	Poor	Subject	Remove	Grading	No	Failure and extensive decay of both leaders; remaining stems with good form; diseased leaves; vigorous epicormic shoots.
1458A	American Basswood	*Tilia americana*	Native	1	16	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; partially suppressed crown.
1460A	Manitoba Maple	*Acer negundo*	Native	3	27.4+12.2+12	3.5	Probable	Poor	Subject	Remove	Grading	No	Vigorous epicormic shoots throughout; dead structural branch; dead neighbouring tree leaning on second leader; 20% dieback.
1461A	Common Pear	*Pyrus communis*	Non-native	2	35.1+19.6	4.0	Improbable	Good	Subject	Remove	Grading	No	Suppressed on east.
1462A	Hawthorn species	*Crataegus sp.*	**	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Trunk wounds; stripped bark.
1463A	American Basswood	*Tilia americana*	Native	1	18	2.0	Possible	Poor	Subject	Remove	Grading	No	Diseased leaves; 20% dieback; pileated woodpecker holes.
1464A	American Basswood	*Tilia americana*	Native	2	14.6+5	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Fused bark at base; included bark; diseased leaves; 10% dieback.
1465A	Manitoba Maple	*Acer negundo*	Native	1	25	4.0	Possible	Poor	Subject	Remove	Grading	No	Decay at broken branch union; vigorous epicormic shoots; 15% dieback.
1466A	Black Cherry	*Prunus serotina*	Native	1	25	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Minor leaf rust; included bark.
1467A	American Basswood	*Tilia americana*	Native	1	15	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Leaf galls; epicormic shoots; upper branches under heavy vine growth.
1468A	American Basswood	*Tilia americana*	Native	1	15	2.5	Possible	Poor	Subject	Remove	Grading	No	40% dieback; diseased leaves; heavy defoliation.
1469A	Manitoba Maple	*Acer negundo*	Native	1	17	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Dead structural branch; deep cavity from branch loss and decay; heavy vine growth.
1470A	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; suppressed on north.
1471A	American Basswood	*Tilia americana*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage.
1472A	Black Cherry	*Prunus serotina*	Native	1	25	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1473A	Manitoba Maple	*Acer negundo*	Native	2	28.5+25.3	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant trunks with central cavity; minor deadwood; suppressed on north.
1474A	American Basswood	*Tilia americana*	Native	1	21	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage.
1475A	American Basswood	*Tilia americana*	Native	1	15	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; suppressed on north.
1477A	American Basswood	*Tilia americana*	Native	4	25.6+22+21.5	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; suppressed on north.
1478A	American Basswood	*Tilia americana*	Native	1	15	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage; partially suppressed.
1479A	American Basswood	*Tilia americana*	Native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic/diseased foliage.
1480A	American Basswood	*Tilia americana*	Native	1	14	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead broken second leader; diseased leaves.
1481A	American Basswood	*Tilia americana*	Native	2	12+10	2.0	Possible	Fair	Subject	Remove	Grading	Yes	Included bark; dead lower branches.
1482A	Black Cherry	*Prunus serotina*	Native	5	30+24.4+23.4+18.4	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Included bark; healthy crown.
1483A	Common Pear	*Pyrus communis*	Non-native	1	31	4.5	Improbable	Good	Subject	Remove	Grading	No	Leans east; full large crown.
1485A	Common Apple	*Malus pumila*	Non-native	1	27	3.0	Improbable	Fair	Subject	#REF!	#REF!	No	Epicormic growth; spreading asymmetrical crown.
1487A	Common Apple	*Malus pumila*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	No	Phototrophic growth; basal sprouts; suppressed.
1492A	Black Cherry	*Prunus serotina*	Native	2	29.8+34.1	6.0	Possible	Poor	Subject	Remove	Grading	No	Multiple dead branches; grape vine within canopy; included bark in fork at 5m.
1493A	American Elm	*Ulmus americana*	Native	1	49	6.5	Improbable	Fair	Subject	Remove	Grading	Yes	Minor defoilation; sparse crown; multiple dead branches; grape vine within canopy.

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1498A	American Elm	*Ulmus americana*	Native	1	40	5.5	Possible	Good	Subject	Remove	Grading	Yes	Codominant leaders; included bark; vine growth throughout canopy; buttressed root; healthy crown; few dead hanging branches.
1501A	American Basswood	*Tilia americana*	Native	1	30	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly asymmetrical crown due to competition with adjacent trees; minor defoliation and dieback with some browning leaf edges
1502A	American Basswood	*Tilia americana*	Native	1	19	5.0	Improbable	Poor	Subject	Remove	Grading	No	Browning leaves; sparse crown; dead lower branches; suppressed towards south.
1503A	American Basswood	*Tilia americana*	Native	1	24	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; sparse crown; dead lower branches; suppressed towards south.
1504A	American Basswood	*Tilia americana*	Native	1	15	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Some crown defoliation and dieback; browning edges; bark rub from adjacent Honeysuckle
1505A	American Basswood	*Tilia americana*	Native	1	11		Possible	Dead	Subject	Remove	Grading	No	Surrounded by trees so unlikely to fall far if fails; bark loss
1506A	American Basswood	*Tilia americana*	Native	1	26	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some crown defoliation and dieback; browning edges of leaves
1507A	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Poor	Subject	Remove	Grading	No	uneven and reduced crown, insect herbivory, some dieback
1508A	American Basswood	*Tilia americana*	Native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	insect herbivory, some dieback
1509A	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	phototrophic growth, s-bends in stem, uneven crown, minor defoliation
1510A	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Good	Subject	Remove	Grading	Yes	uneven crown due to competition for sunlight, insect herbivory
1511A	American Basswood	*Tilia americana*	Native	2	22.0+10.5	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	insect herbivory, some defoliation, included bark, small bends in secondary stem
1513A	American Basswood	*Tilia americana*	Native	1	11		Possible	Dead	Subject	Remove	Grading	No	dead, bark loss, some branch loss
1514A	American Basswood	*Tilia americana*	Native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Small vertical crack on root flare; some defoliation and dieback with browning edges
1516A	White Spruce	*Picea glauca*	Native	1	12	2.3	Improbable	Fair	Subject	Remove	Grading	Yes	Somewhere sparse with minor needle chlorosis; well balanced root flare
1517A	American Basswood	*Tilia americana*	Native	1	11		Possible	Dead	Subject	Remove	Grading	No	Main stem snapped off at base; leaning against adjacent tree; unlikely to fall further
1518A	American Basswood	*Tilia americana*	Native	1	12		Possible	Dead	Subject	Remove	Grading	No	snag, broken off at 3.5m
1519A	Black Cherry	*Prunus serotina*	Native	1	36	6.0	Improbable	Good	Subject	Remove	Grading	Yes	secondary vertical branch, but leader self corrects, full crown
1520A	Black Cherry	*Prunus serotina*	Native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slight phototrophic growth; minor insect feeding on foliage
1521A	Black Cherry	*Prunus serotina*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Growing on slight angle; lower scaffold dieback; upper crown relatively full
1522A	Black Cherry	*Prunus serotina*	Native	1	21	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Light shade pruning, minor bends in stem, full crown.
1523A	Black Cherry	*Prunus serotina*	Native	1	27	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	wound at base is callousing, lean, phototrophic growth
1524A	Black Cherry	*Prunus serotina*	Native	1	10	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth, slight lean, uneven crown due to competition for sunlight.
1525A	Bitternut Hickory	*Carya cordiformis*	Native	1	15	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Slight lean, uneven crown due to competition for sunlight, vigorous crown.
1526A	Black Locust	*Robinia pseudoacacia*	Non-native	1	69	8.0	Probable	Fair	Subject	Remove	Grading	No	Codominant leaders with crotch split; large crown; dead lower branches.
1527A	Black Walnut	*Juglans nigra*	Native	1	26	6.5	Improbable	Fair	Subject	Remove	Grading	Yes	Large crown; trunk wound with decay between.5-1.5m; significant response growth.
1529A	Black Locust	*Robinia pseudoacacia*	Non-native	1	46	6.5	Possible	Fair	Subject	Remove	Grading	Yes	Two codominant leaders with included bark; splitting at seam; 10% deadwood.
1530A	American Basswood	*Tilia americana*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Crown defoliation and dieback with some leaf edges browning; solid main stem
1531A	Manitoba Maple	*Acer negundo*	Native	1	45	6.0	Possible	Poor	Subject	Remove	Grading	No	major epicormic growth, stem and codominant leaders on 45 and 90 degree angles, some defoliation
1532A	Manitoba Maple	*Acer negundo*	Native	1	37	2.0	Probable	Very Poor	Subject	Remove	Grading	No	1 low branch alive, numerous epicormic growth, stem broken at 4m and hangs to ground, bark loss from stem, deadwood throughout stem
1534A	Manitoba Maple	*Acer negundo*	Native	1	33	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	epicormic growth, s-bends in codominant leaders, shade pruning
1535A	American Basswood	*Tilia americana*	Native	2	12.7+7.6	1.0	Possible	Very Poor	Subject	Remove	Grading	No	other tree fell on this tree, codominant stems, 2 live branches remaining, scaffold branches dead
1536A	American Basswood	*Tilia americana*	Native	1	14	2.0	Possible	Very Poor	Subject	Remove	Grading	No	other tree fell on this tree, leaning, grapevine in canopy, defoliation and dieback
1537A	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	leader out of line with stem, shade pruning, minor defoliation, competition for sunlight

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1538A	Bitternut Hickory	*Carya cordiformis*	Native	1	28	5.5	Improbable	Good	Subject	Remove	Grading	Yes	Brush and rock pile around base; grape present.
1541A	American Basswood	*Tilia americana*	Native	1	21	3.0	Improbable	Poor	Subject	Remove	Grading	No	grapevine in canopy, reduced crown, epicormic growth, history of moderate branch failure
1545A	Bitternut Hickory	*Carya cordiformis*	Native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Top of crown with early leaf drop.
1548A	Bitternut Hickory	*Carya cordiformis*	Native	1	17	3.0	Improbable	Good	Subject	Transplant	Grading	No	Slightly unbalanced crown due to competition with adjacent trees; crown otherwise full and vigorous; solid main stem
1549A	Sugar Maple	*Acer saccharum*	Native	1	15	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly asymmetrical crown due to competition with adjacent trees; root flare partially joined with American Basswood; healthy crown
1550A	American Basswood	*Tilia americana*	Native	1	35.6+30.9+33.6	8.0	Improbable	Fair	Subject	Remove	Grading	Yes	codominant stems, slight lean apart, minor defoliation
1551A	American Basswood	*Tilia americana*	Native	1	10	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage.
1552A	American Basswood	*Tilia americana*	Native	2	33.3+27.2	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage.
1553A	Sugar Maple	*Acer saccharum*	Native	1	23	4.5	Improbable	Good	Subject	Transplant	Grading	No	Good form.
1554A	American Basswood	*Tilia americana*	Native	2	51.9+16.7	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; 8cm cavity at 2m; leaf cluster at 10m
1555A	American Basswood	*Tilia americana*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1556A	American Basswood	*Tilia americana*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1557A	American Basswood	*Tilia americana*	Native	1	16	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1558A	American Basswood	*Tilia americana*	Native	1	12	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1559A	American Basswood	*Tilia americana*	Native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1560A	American Basswood	*Tilia americana*	Native	1	15	2.5	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1561A	American Basswood	*Tilia americana*	Native	1	16	2.5	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1562A	American Basswood	*Tilia americana*	Native	1	16	2.5	Improbable	Poor	Subject	Remove	Grading	No	Epicormic growth; insect damage; minor defoliation.
1565A	American Basswood	*Tilia americana*	Native	1	16	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Narrow crown due to competition with adjacent trees; crown defoliation and dieback; browning edges
1566A	American Basswood	*Tilia americana*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to competition with adjacent trees; defoliation and dieback
1567A	American Basswood	*Tilia americana*	Native	1	22	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Drought stress; insect herbivory; generally suppressed
1568A	American Basswood	*Tilia americana*	Native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	previous leader lost, secondary leader correcting, minor defoliation
1569A	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some crown defoliation and dieback; asymmetrical crown due to crown competition with adjacent trees
1570A	American Basswood	*Tilia americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to competition with adjacent trees; some crown defoliation and dieback
1571A	American Basswood	*Tilia americana*	Native	1	11	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Some crown dieback and defoliation; browning edges of leaves.
1572A	Sugar Maple	*Acer saccharum*	Native	1	22	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1573A	Sugar Maple	*Acer saccharum*	Native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on south.
1574A	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed.
1575A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth towards north; suppressed.
1577A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on south, west; vine present.
1578A	Bitternut Hickory	*Carya cordiformis*	Native	1	27	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1579A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on south; healthy crown.
1580A	Black Locust	*Robinia pseudoacacia*	Non-native	1	47	6.0	Possible	Poor	Subject	Remove	Grading	No	Decay at base; minor branch dieback throughout; open wound with decay.
1581A	American Basswood	*Tilia americana*	Native	1	14	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Considerable lean; very poor form.
1582A	Black Locust	*Robinia pseudoacacia*	Non-native	1	30	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on east and west.
1583A	Black Locust	*Robinia pseudoacacia*	Non-native	1	28	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; suppressed on west; basal wound from old trunk failure.
1584A	American Basswood	*Tilia americana*	Native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; diseased foliage.
1585A	Black Locust	*Robinia pseudoacacia*	Non-native	2	24+17.5	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; healthy crown.
1586A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; low branching.
1587A	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback throughout.
1588A	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Large wound with decay at base; minor branch dieback.
1589A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15		Probable	Dead	Subject	Remove	Grading	No	
1590A	Black Locust	*Robinia pseudoacacia*	Non-native	1	49	7.0	Probable	Very Poor	Subject	Remove	Grading	No	Stem split with halves leaning opposite one another; decay throughout; multiple failures.
1591A	Sugar Maple	*Acer saccharum*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Decay at branch unions; minor branch dieback.
1592A	Sugar Maple	*Acer saccharum*	Native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Decay at branch unions; minor branch dieback.
1594A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	1.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; epicormic growth; minor lean.
1595A	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	1.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; epicormic growth; minor lean.
1596A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	1.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; minor lean.
1597A	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	1.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; minor lean.
1598A	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	2.0	Possible	Poor	Subject	Remove	Grading	No	Decay throughout; minor lean.

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1600A	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.0	Probable	Very Poor	Subject	Remove	Grading	No	90% failured; debarked; epicormic growth only.
1771A	Freeman's Maple	*Acer x freemanii*	Native	3	41.1+35.5+26.7	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Several dead leaders; fungal fruiting bodies; small overextended branches.
1772A	Black Cherry	*Prunus serotina*	Native	1	33	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Included bark; 10% dieback; broken and sealed roots visible.
1773A	Black Cherry	*Prunus serotina*	Native	1	12	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Slight lean; minor defoliation.
1774A	Black Cherry	*Prunus serotina*	Native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; dead lower branches.
1775A	Common Pear	*Pyrus communis*	Non-native	1	52	4.0	Possible	Good	Subject	Remove	Grading	No	Fused stems with signs of potential internal decay; healthy crown.
1776A	Common Pear	*Pyrus communis*	Non-native	1	19	3.0	Possible	Poor	Subject	Remove	Grading	No	Loose bark; exposed sapwood and decay in upper stem.
1777A	Manitoba Maple	*Acer negundo*	Native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic shoots; decay at branch union.
1778A	Black Walnut	*Juglans nigra*	Native	1	15	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Vibe growth; minor watersprouting
1779A	Manitoba Maple	*Acer negundo*	Native	1	12	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Maturing epicormic shoots; minor dieback.
1780A	Manitoba Maple	*Acer negundo*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vigorous epicormic shoots; heavy vine growth; leans toward field.
1781A	American Elm	*Ulmus americana*	Native	1	44	1.0	Imminent	Dead	Subject	Remove	Grading	No	Evidence of dutch elm disease; fruiting bodies at base, in sapwood.
1782A	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; healthy crown.
1783A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; healthy crown.
1784A	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Root girdling from competing shrub; healthy crown.
1785A	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Slight lean; included bark; healthy crown.
1786A	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Twisting second leader; included bark; healthy crown.
1787A	Common Pear	*Pyrus communis*	Non-native	1	45	4.0	Improbable	Fair	Subject	Remove	Grading	No	Crown dieback.
1788A	Eastern White Pine	*Pinus strobus*	Native	1	12	1.5	Improbable	Good	Subject	Remove	Grading	Yes	Grape vine in lower canopy; good crown structure.
1789A	Sugar Maple	*Acer saccharum*	Native	1	23	4.0	Possible	Poor	Subject	Remove	Grading	No	Trunk wound; small knot cavity; girdled by adjacent tree; asymmetrical crown.
1790A	Sugar Maple	*Acer saccharum*	Native	1	40	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Full, large crown.
1791A	Eastern White Cedar	*Thuja occidentalis*	Native	1	46	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Double leader; wounds on trunk; evidence branch failures.
1792A	Eastern White Cedar	*Thuja occidentalis*	Native	1	41	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; some dieback.
1793A	Manitoba Maple	*Acer negundo*	Native	3	37.8+31.5+26.7	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic growth; dead lower branches; suppressed towards south; overextended branches.
1794A	Eastern White Cedar	*Thuja occidentalis*	Native	3	48.8+35.9	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; large wound on second stem.
1795A	Sugar Maple	*Acer saccharum*	Native	1	52	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.
1796A	Sugar Maple	*Acer saccharum*	Native	3	36.2+32.9+57.8	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Largest stem has large wound at joining; some branches rubbing and growing into one another.
1797A	Common Hackberry	*Celtis occidentalis*	Native	1	10	1.5	Improbable	Poor	Subject	Remove	Grading	No	Drought stress, early leaf drop.
1798A	Common Hackberry	*Celtis occidentalis*	Native	1	11	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Defoilation and dieback due to insects.
1799A	Common Hackberry	*Celtis occidentalis*	Native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lacking upright central leader; drought stress.
1800A	Common Hackberry	*Celtis occidentalis*	Native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lacking upright central leader; drought stress.
1801A	White Ash	*Fraxinus americana*	Native	1	18	2.0	Possible	Poor	Subject	Retain		No	Very little foilage left in crown; epicormic growth; woody vine within canopy.
1802A	White Ash	*Fraxinus americana*	Native	1	24	2.0	Probable	Dead	Subject	Retain		No	Standing snag; branches present but no foilage.
1803A	White Ash	*Fraxinus americana*	Native	1	17	2.0	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Most of crown intact; one branch alive.
1804A	White Ash	*Fraxinus americana*	Native	1	18	2.5	Possible	Poor	Subject	Prune-Top	Grading	No	70% deadwood; aggressive basal shoots; EAB.
1805A	Black Cherry	*Prunus serotina*	Native	1	17	3.5	Improbable	Good	Subject	Retain		No	Good form.
1806A	White Ash	*Fraxinus americana*	Native	1	20	2.0	Probable	Very Poor	Subject	Retain		No	One branch with thin foilage; aggressive basalshoots; branch failures.
1807A	White Ash	*Fraxinus americana*	Native	1	11	1.0	Possible	Poor	Subject	Retain		No	Twined with sugar maple; thin upper canopy; epicormic growth.
1808A	Black Cherry	*Prunus serotina*	Native	1	22	2.5	Probable	Dead	Subject	Prune-Top	Hazard	No	Half of crown lost.
1809A	White Ash	*Fraxinus americana*	Native	1	14	1.0	Probable	Dead	Subject	Retain		No	Branches intact but no leaves.
1810A	White Ash	*Fraxinus americana*	Native	1	17	3.5	Improbable	Fair	Subject	Retain		No	Vines present; minor crown dieback; insect damage.
1811A	White Ash	*Fraxinus americana*	Native	1	19	3.0	Probable	Dead	Subject	Retain		No	Branches intact but no leaves; signs of EAB exit holes.
1812A	White Ash	*Fraxinus americana*	Native	1	18	3.5	Possible	Very Poor	Subject	Prune-Top	Grading	No	Crown dead; basal shoots.
1813A	White Ash	*Fraxinus americana*	Native	1	16	2.5	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Crown dead; vines present; basal shoots.
1814A	White Ash	*Fraxinus americana*	Native	1	20	3.0	Possible	Poor	Subject	Retain		No	Aggressive basal shoots; peeling bark; thin canopy; signs of eab exit holes.
1815A	Bitternut Hickory	*Carya cordiformis*	Native	1	11	3.0	Improbable	Fair	Subject	Retain		No	Good crown structure.
1816A	American Basswood	*Tilia americana*	Native	4	41.2+36.4+29.4	6.5	Improbable	Fair	Subject	Retain		No	Diseased/necrotic foliage; cavity at 2m.
1817A	White Ash	*Fraxinus americana*	Native	1	26	4.0	Improbable	Poor	Subject	Retain		No	Most of canopy defoliated; few branches with some leaves; evidence of EAB.
1818A	White Ash	*Fraxinus americana*	Native	1	19	4.0	Improbable	Very Poor	Subject	Retain		No	EAB exit holes; dead epicormic growth; canopy branches intact; no foilage.

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1819A	White Ash	*Fraxinus americana*	Native	1	18	3.0	Improbable	Fair	Subject	Retain		No	Minor dieback.
1820A	Black Cherry	*Prunus serotina*	Native	1	27	4.0	Improbable	Fair	Subject	Retain		No	Good crown structure; some defoilation.
1821A	White Ash	*Fraxinus americana*	Native	1	20	3.0	Probable	Dead	Subject	Prune-Top	Hazard	No	Dead crown intact; basal shoots.
1822A	White Ash	*Fraxinus americana*	Native	1	12	2.0	Improbable	Fair	Subject	Retain		No	Minor dieback; EAB.
1823A	White Ash	*Fraxinus americana*	Native	1	17	3.0	Improbable	Fair	Subject	Retain		No	Basal shoot; epicormic growth; strong canopy.
1824A	White Ash	*Fraxinus americana*	Native	1	13	3.0	Improbable	Poor	Subject	Retain		No	50% deadwood; EAB.
1825A	White Ash	*Fraxinus americana*	Native	1	24	4.0	Improbable	Good	Subject	Retain		No	Full crown.
1826A	White Ash	*Fraxinus americana*	Native	1	10	4.0	Possible	Poor	Subject	Retain		No	Peeling bark; evidence of EAB exit holes; grape within canopy; defoliated branches.
1827A	White Ash	*Fraxinus americana*	Native	1	16	4.0	Improbable	Fair	Subject	Retain		No	EAB exit holes; thin canopy; few defoliated branches.
1828A	White Ash	*Fraxinus americana*	Native	1	22	4.0	Possible	Poor	Subject	Retain		No	Aggressive basal shoots; majority of crown defoliated; eab exit holes.
1829A	White Ash	*Fraxinus americana*	Native	1	16	3.0	Improbable	Fair	Subject	Retain		No	Full crown; trunk wounds.
1830A	Black Cherry	*Prunus serotina*	Native	1	17	5.0	Improbable	Fair	Subject	Retain		No	Slight lean in trunk; asymmetrical crown; some dead branches.
1831A	American Basswood	*Tilia americana*	Native	3	53.5+23.8+19.1	6.0	Improbable	Fair	Subject	Retain		No	Diseased/necrotic leaves.
1832A	White Ash	*Fraxinus americana*	Native	1	14	3.0	Possible	Poor	Subject	Retain		No	Foilage primarily from epicormic growth; very few leaves on main branches.
1833A	White Ash	*Fraxinus americana*	Native	1	11	3.0	Possible	Fair	Subject	Retain		No	Some full branches; few dead branches.
1834A	American Basswood	*Tilia americana*	Native	1	18	3.0	Improbable	Fair	Subject	Retain		No	40% deadwood; EAB.
1835A	American Basswood	*Tilia americana*	Native	1	14	2.5	Improbable	Fair	Subject	Retain		No	Epicormic shoots; EAB.
1836A	Bitternut Hickory	*Carya cordiformis*	Native	1	10	3.0	Improbable	Fair	Subject	Retain		No	Good crown structure.
1837A	American Basswood	*Tilia americana*	Native	1	57	5.0	Improbable	Fair	Subject	Retain		No	Leaning west; small deep cavity at 1m; diseased leaves; small basal cavity.
1838A	White Ash	*Fraxinus americana*	Native	1	10	3.0	Improbable	Fair	Subject	Retain		No	Peeling bark; majority of branches defoliated.
1839A	White Ash	*Fraxinus americana*	Native	1	11	2.0	Improbable	Fair	Subject	Retain		No	Curved trunk; some defoilation; evidence of EAB.
1840A	White Ash	*Fraxinus americana*	Native	1	10	2.0	Possible	Poor	Subject	Retain		No	Dead epicormic growth; peeling bark; EAB exit holes; minimal foilage.
1841A	Common Pear	*Pyrus communis*	Non-native	1	32	3.5	Improbable	Fair	Subject	Retain		No	Crown dieback; 35% deadwood.
1842A	Black Cherry	*Prunus serotina*	Native	2	10.2+10.8	2.5	Improbable	Good	Subject	Retain		No	Good codominant union.
1843A	White Ash	*Fraxinus americana*	Native	1	12	3.0	Possible	Fair	Subject	Retain		No	Double leader; multiple dead branches; asymmetrical crown.
1844A	White Ash	*Fraxinus americana*	Native	1	10	2.0	Probable	Very Poor	Subject	Retain		No	Vines present; dead crown intact.
1845A	Bitternut Hickory	*Carya cordiformis*	Native	1	18	3.0	Improbable	Fair	Subject	Retain		No	Good crown structure.
1846A	White Ash	*Fraxinus americana*	Native	1	19	3.0	Improbable	Fair	Subject	Retain		No	Peeling bark; signs of EAB; few dead and defoliated branches.
1847A	Sugar Maple	*Acer saccharum*	Native	1	11	3.0	Improbable	Good	Subject	Retain		No	Partially suppressed.
1848A	White Ash	*Fraxinus americana*	Native	1	17	3.0	Improbable	Good	Subject	Retain		No	Good form.
1849A	White Ash	*Fraxinus americana*	Native	1	12	3.5	Possible	Poor	Subject	Retain		No	Heavy lean to south; longitudinal trunk wound with decay; top dead.
1850A	Black Cherry	*Prunus serotina*	Native	1	29	5.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; overall good full canopy; some twists in trunk.
1851A	White Ash	*Fraxinus americana*	Native	1	15	2.0	Possible	Poor	Subject	Retain		No	Topped leader; signs of EAB exit holes; basal shoots; peeling bark; dead branches; few branches with leaves.
1852A	White Ash	*Fraxinus americana*	Native	2	20.2+11	4.5	Improbable	Good	Subject	Retain		No	Codominant at base; full crown.
1853A	Black Cherry	*Prunus serotina*	Native	1	20	2.0	Possible	Dead	Subject	Retain		No	Large wound at trunk base showing rotted core; branches attached but no foilage.
1854A	White Ash	*Fraxinus americana*	Native	1	11	2.0	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Loose bark; EAB; vigorous epicormic shoots; slight lean.
1855A	White Ash	*Fraxinus americana*	Native	1	13	2.0	Possible	Very Poor	Subject	Retain		No	Loose bark; EAB; vigorous epicormic shoots; deformed leaves.
1856A	American Elm	*Ulmus americana*	Native	1	27	4.0	Possible	Fair	Subject	Retain		No	Upper stem bent to northeast; epicormic shoots along trunk.
1857A	White Ash	*Fraxinus americana*	Native	1	13	2.0	Possible	Very Poor	Subject	Retain		No	Loose bark; EAB; epicormic shoots; woodpecker holes.
1858A	Black Cherry	*Prunus serotina*	Native	1	32	4.0	Improbable	Fair	Subject	Retain		No	Double stem just above DBH; few defoliated branches; evidence of branch failures.
1859A	White Ash	*Fraxinus americana*	Native	1	11	2.0	Possible	Very Poor	Subject	Retain		No	Canopy taken over by grape; evidence of EAB; some epicormic growth.
1860A	White Ash	*Fraxinus americana*	Native	1	11	2.5	Possible	Poor	Subject	Retain		No	Trunk curve at base due to fallen tree; base has large wound and peeling bark; few dead branchee; mainly full crown.
1861A	White Ash	*Fraxinus americana*	Native	1	10	1.0	Possible	Dead	Subject	Retain		No	EAB; partially sealed trunk wound; hanging branch.
1862A	White Ash	*Fraxinus americana*	Native	1	16	2.0	Possible	Dead	Subject	Retain		No	Loose, sloughing bark; EAB; slight lean northeast.
1863A	White Ash	*Fraxinus americana*	Native	1	12	2.0	Improbable	Fair	Subject	Retain		No	Thin crown with few dead branches.

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1864A	Common Pear	*Pyrus communis*	Non-native	1	14	2.0	Possible	Fair	Subject	Retain		No	Base of trunk fused to nearby ash; 15% dieback; asymmetrical crown.
1865A	American Elm	*Ulmus americana*	Native	1	11	2.5	Improbable	Fair	Subject	Retain		No	Curved trunk; some poor branch attachment; evidence of branch failures; few dead branches.
1866A	White Ash	*Fraxinus americana*	Native	1	10	2.0	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Several trunk wounds; EAB; woodpecker holes; epicormic shoots along trunk.
1867A	White Ash	*Fraxinus americana*	Native	1	10	1.5	Possible	Very Poor	Subject	Retain		No	Nearly dead; few declining epicormic shoots; small trunk wound with decay.
1868A	Sugar Maple	*Acer saccharum*	Native	2	39.0+25.7	5.0	Probable	Fair	Subject	Retain		No	Second stem dead, no bark and topped; larger stem has some poor branch attachment and evidence of branch failures; scaffold branch; full canopy.
1869A	White Ash	*Fraxinus americana*	Native	1	12	2.0	Possible	Very Poor	Subject	Retain		No	Included bark; EAB; little live foliage remaining.
1870A	White Ash	*Fraxinus americana*	Native	1	30	0.5	Probable	Dead	Subject	Retain		No	Fruiting bodies; topped; standing dead/snag; EAB exit holes.
1871A	White Ash	*Fraxinus americana*	Native	1	15	2.0	Possible	Very Poor	Subject	Retain		No	Cracks abd loose bark; EAB; epicormic shoots; dead second leader; wounds along trunk.
1872A	Sugar Maple	*Acer saccharum*	Native	2	41.2+13.1	5.5	Improbable	Fair	Subject	Retain		No	Smaller stem has poor branch attachment; ma9n stem has scaffold branch; full canopy.
1873A	Black Cherry	*Prunus serotina*	Native	1	13	3.0	Possible	Fair	Subject	Retain		No	Hanging scaffold branch; minor rusting on leaves.
1874A	Sugar Maple	*Acer saccharum*	Native	1	35	5.0	Improbable	Good	Subject	Retain		No	Good crown structure; few broken branches.
1875A	Sugar Maple	*Acer saccharum*	Native	1	12	2.0	Improbable	Fair	Subject	Retain		No	Phototrophic growth; included bark at dead branch union; dead lower branches.
1876A	White Ash	*Fraxinus americana*	Native	1	16	2.5	Possible	Poor	Subject	Retain		No	EAB galleries; cracks in bark; little live foliar growth remaining.
1877A	Sugar Maple	*Acer saccharum*	Native	1	81	9.0	Probable	Fair	Subject	Retain		No	Signs of large branch failures; one main leader broken off; scaffold branches; some wounds on main branches.
1878A	American Basswood	*Tilia americana*	Native	1	19	2.0	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Mostly dead with some declining epicormic shoots at base; unstable; woodpecker holes.
1879A	Bitternut Hickory	*Carya cordiformis*	Native	1	12	3.0	Improbable	Good	Subject	Retain		No	Asymmetrical crown; minor warping of leaves.
1880A	Common Pear	*Pyrus communis*	Non-native	1	38	4.5	Improbable	Fair	Subject	Retain		No	Numerous dead lower branches; few healed wounds.
1881A	White Ash	*Fraxinus americana*	Native	1	12	2.0	Improbable	Poor	Subject	Retain		No	Peeling bark; numerous dead branches; some foilage in upper canopy.
1882A	Sugar Maple	*Acer saccharum*	Native	1	14	3.0	Improbable	Good	Subject	Retain		No	Fully compartmentalized trunk wound; healthy crown.
1883A	Sugar Maple	*Acer saccharum*	Native	1	12	2.5	Improbable	Good	Subject	Retain		No	Sealed crack and scraped bark in lower stem; minor dieback.
1884A	White Ash	*Fraxinus americana*	Native	1	15	2.5	Improbable	Fair	Subject	Retain		No	Few dead branches; foilage in upper canopy.
1885A	Sugar Maple	*Acer saccharum*	Native	1	18	3.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; minor root girdling; fully compartmentalized trunk wound.
1886A	White Ash	*Fraxinus americana*	Native	1	16	3.0	Improbable	Very Poor	Subject	Retain		No	Upper canopy primarily taken over by grape; numerous basal shoots; peeling bark.
1887A	Sugar Maple	*Acer saccharum*	Native	1	11	3.0	Improbable	Good	Subject	Retain		No	Small sealed cracks in stem; healthy crown.
1888A	Sugar Maple	*Acer saccharum*	Native	1	88	8.0	Possible	Fair	Subject	Retain		No	Scaffold branches; evidence of large branch failures.
1889A	White Ash	*Fraxinus americana*	Native	1	13	2.0	Possible	Very Poor	Subject	Retain		No	EAB; cracks in bark; 80% dieback; epicormic shoots.
1890A	White Ash	*Fraxinus americana*	Native	1	12	2.0	Probable	Dead	Subject	Prune-Top	Hazard	No	Dead standing ash; peeling bark; branches but no leaves.
1891A	White Ash	*Fraxinus americana*	Native	1	20	2.5	Possible	Very Poor	Subject	Retain		No	EAB; little remaining live foliar growth; large cracks in bark.
1892A	White Ash	*Fraxinus americana*	Native	1	11	2.0	Possible	Dead	Subject	Retain		No	Dead branches and epicormic growth; no foilage.
1893A	White Ash	*Fraxinus americana*	Native	1	14	3.0	Possible	Dead	Subject	Retain		No	Standing dead ash; no foilage.
1894A	White Ash	*Fraxinus americana*	Native	1	16	3.0	Possible	Dead	Subject	Retain		No	Grape taken over the canopy; peeling bark.
1895A	Manitoba Maple	*Acer negundo*	Native	2	13.2+9	2.5	Improbable	Fair	Subject	Retain		No	Codominant stems; leaning northeast; heavy vine growth.
1896A	Common Pear	*Pyrus communis*	Non-native	1	23	2.5	Improbable	Fair	Subject	Retain		No	Healthy crown; brush dumped against trunk; heavy vine growth.
1897A	Black Cherry	*Prunus serotina*	Native	1	16	3.0	Improbable	Fair	Subject	Retain		No	Leaves somewhat rusted and defoliated; good form.
1898A	White Ash	*Fraxinus americana*	Native	1	22	3.0	Improbable	Poor	Subject	Retain		No	Epicormic growth; branches in tact but little to no leaves.
1899A	Black Cherry	*Prunus serotina*	Native	1	37	6.0	Improbable	Fair	Subject	Retain		No	Good crown structure; evidence of branch failures; few broken branches.
1900A	White Ash	*Fraxinus americana*	Native	1	11	1.0	Possible	Dead	Subject	Retain		No	EAB; self corrected phototrophic growth.
1901A	Manitoba Maple	*Acer negundo*	Native	1	14	6.0	Improbable	Fair	Subject	Retain		No	Phototrophic 40 degree lean west; epicormic shoots; dead lower branches.
1902A	American Basswood	*Tilia americana*	Native	2	39.2+23.0	7.0	Improbable	Fair	Subject	Retain		No	Codominant stems with included bark; vines; minor dieback of lower branches.

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1903A	Black Cherry	*Prunus serotina*	Native	1	54	6.5	Improbable	Fair	Subject	Retain		No	Dbh taken below; tall upright trunk with codominant leaders; basal wound; vine present in lower crown.
1904A	Black Cherry	*Prunus serotina*	Native	1	69	7.0	Improbable	Poor	Subject	Retain		No	Large wound at base with minimal reaction wood; decay at base; large dead branches; 50% crown dieback.
1905A	American Basswood	*Tilia americana*	Native	1	27	3.5	Improbable	Fair	Subject	Retain		No	Necrotic foliage; insect herbivory.
1906A	Blue-beech	*Carpinus caroliniana ssp. virginiana*	Native	1	24	3.0	Improbable	Fair	Subject	Retain		No	Some dieback in crown; small lower branches broken off.
1907A	American Basswood	*Tilia americana*	Native	1	17	3.5	Improbable	Fair	Subject	Retain		No	Necrotic foliage.
1908A	American Basswood	*Tilia americana*	Native	1	74	3.0	Probable	Dead	Subject	Prune-Top	Hazard	No	Old leader failure; half broken leader
1909A	American Basswood	*Tilia americana*	Native	2	68.6+39.6	8.0	Improbable	Fair	Subject	Retain		No	Large crown; necrotic foliage; codominant trunks with included bark.
1910A	Common Pear	*Pyrus communis*	Non-native	1	25	1.5	Improbable	Poor	Subject	Retain		No	Asymmetrical crown; suppressed; vines; decay at base.
1911A	White Birch	*Betula papyrifera*	Native	1	20	5.0	Improbable	Good	Subject	Retain		No	Large healthy crown; compartmentalized trunk wound.
1912A	American Basswood	*Tilia americana*	Native	1	20	2.0	Improbable	Fair	Subject	Retain		No	Tall crown; minor dieback; insect herbivory.
1913A	American Basswood	*Tilia americana*	Native	1	20	4.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; insect herbivory.
1914A	American Basswood	*Tilia americana*	Native	1	16	2.0	Improbable	Fair	Subject	Retain		No	Tall small crown; insect herbivory.
1915A	American Basswood	*Tilia americana*	Native	1	15	3.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; insect herbivory.
1916A	Black Cherry	*Prunus serotina*	Native	1	29	5.0	Improbable	Good	Subject	Retain		No	Suppressed on north; Full healthy crown.
1917A	American Basswood	*Tilia americana*	Native	3	22.1+19.5+13.9	5.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; vines; insect herbivory.
1918A	White Ash	*Fraxinus americana*	Native	1	22	4.0	Improbable	Good	Subject	Retain		No	Suppressed on east; full healthy crown.
1919A	American Basswood	*Tilia americana*	Native	1	20	2.0	Improbable	Fair	Subject	Retain		No	Insect herbivory; minor dieback of lower branches.
1920A	American Basswood	*Tilia americana*	Native	1	32	4.0	Improbable	Fair	Subject	Retain		No	Insect herbivory; vines; minor dieback of lower branches.
1921A	American Basswood	*Tilia americana*	Native	4	40.6+19.2+12.9	6.0	Improbable	Fair	Subject	Retain		No	Large crown; vine burden.
1922A	Common Pear	*Pyrus communis*	Non-native	1	13	1.0	Improbable	Poor	Subject	Retain		No	Suppressed; epicormic growth; vines; dieback of lower branches.
1923A	American Basswood	*Tilia americana*	Native	1	25	3.0	Improbable	Fair	Subject	Retain		No	Minor deadwood; vine burden.
1924A	Common Apple	*Malus pumila*	Non-native	1	22	3.5	Improbable	Poor	Subject	Retain		No	Deadwood and broken branches; heavy vine burden.
1925A	Common Pear	*Pyrus communis*	Non-native	1	18	1.0	Improbable	Fair	Subject	Retain		No	Tall crown; dieback of lower branches.
1926A	Common Pear	*Pyrus communis*	Non-native	1	22	2.5	Improbable	Poor	Subject	Remove	Trail	No	70% deadwood; heavy vine burden.
1927A	White Ash	*Fraxinus americana*	Native	1	11	2.5	Improbable	Good	Subject	Retain		No	Healthy crown.
1928A	Black Cherry	*Prunus serotina*	Native	1	10	3.0	Improbable	Fair	Subject	Retain		No	Healthy crown; vine burden.
1929A	Sweet Cherry	*Prunus avium*	Non-native	1	22	2.5	Improbable	Fair	Subject	Retain		No	Crown concentrated at top, heavy vines at bottom; small wounds and exuding sap throughout base; slight lean south.
1930A	Common Pear	*Pyrus communis*	Non-native	3	27.3+27.3+15.4	5.0	Improbable	Fair	Subject	Retain		No	Partially fused trunks; vine burden; old branch failures.
1931A	Sugar Maple	*Acer saccharum*	Native	1	122	7.0	Probable	Poor	Subject	Retain		No	Crotch split between codominant leaders; upright leader and lower trunk dead with decay; remaining live crown approximately 9m tall.
1932A	Manitoba Maple	*Acer negundo*	Native	1	84	8.0	Possible	Fair	Subject	Retain		No	Branch failures at crotch; large full crown; 10% deadwood.
1933A	Common Pear	*Pyrus communis*	Non-native	1	21	1.5	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; suppressed; epicormic growth.
1934A	Common Pear	*Pyrus communis*	Non-native	3	15.6+15.6+15.1	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on west; asymmetrical crown; dead lower branches.
1935A	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; high crown; healthy foliage.
1936A	Manitoba Maple	*Acer negundo*	Native	1	31	4.0	Improbable	Fair	Subject	Retain		No	Heavy lean north; dieback of lower branches.
1937A	Manitoba Maple	*Acer negundo*	Native	1	27	5.0	Possible	Poor	Subject	Retain		No	Generally suppressed; high crown; major basal wound with decay; epicormic shoots; 30% deadwood.
1938A	Manitoba Maple	*Acer negundo*	Native	3	45.4+33.5+24.3	8.0	Improbable	Fair	Subject	Retain		No	Stems leaning north and south; one stem broken but attached; epicormic growth.
1939A	Common Pear	*Pyrus communis*	Non-native	2	16.3+13.6	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on east; major vine burden.
1940A	Common Pear	*Pyrus communis*	Non-native	2	12.6+12.5	3.0	Improbable	Poor	Subject	Retain		No	40% deadwood; major vine burden.
1941A	Common Pear	*Pyrus communis*	Non-native	1	26	1.5	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; heavy vines; codominant leaders with included bark.
1942A	White Ash	*Fraxinus americana*	Native	1	16	2.0	Possible	Very Poor	Subject	Retain		No	85% deadwood; epicormic shoots.
1943A	Common Pear	*Pyrus communis*	Non-native	1	23	1.5	Improbable	Fair	Subject	Retain		No	Minor dieback of lower branches; vines.
1944A	Common Pear	*Pyrus communis*	Non-native	1	22	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on east; healthy crown.
1945A	Common Pear	*Pyrus communis*	Non-native	1	10	3.5	Improbable	Fair	Subject	Retain		No	Generally suppressed; dead lower branches.
1946A	Common Pear	*Pyrus communis*	Non-native	1	20	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on north; vine burden.
1947A	American Basswood	*Tilia americana*	Native	1	12	1.5	Improbable	Fair	Subject	Retain		No	Several small stems less than 10cm; insect herbivory.
1948A	Common Pear	*Pyrus communis*	Non-native	2	26.7+19.7	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on north; vine burden.
1949A	American Elm	*Ulmus americana*	Native	1	23	6.0	Improbable	Fair	Subject	Retain		No	Minor dieback of lower branches; vines; insect herbivory.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
1950A	American Elm	*Ulmus americana*	Native	1	16	2.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; stem fused with branch of nearby Black Cherry; chloratic foliage.
1951A	Black Cherry	*Prunus serotina*	Native	1	57	6.0	Possible	Poor	Subject	Retain		No	Large trunk wound with minimal response growth; main leader dead; low widespreading crown.
1952A	Manitoba Maple	*Acer negundo*	Native	1	25	5.5	Improbable	Fair	Subject	Retain		No	Phototrophic lean north; epicormic shoots.
1953A	Common Pear	*Pyrus communis*	Non-native	2	14.8+11.2	1.5	Improbable	Fair	Subject	Retain		No	Vines; crown concentrated at top; dieback of lower branches.
1954A	White Ash	*Fraxinus americana*	Native	1	24	2.0	Possible	Very Poor	Subject	Retain		No	Epicormic shoots; dead crown partially intact.
1955A	Snag	*Unknown sp.*	**	1	32	0.5	Possible	Dead	Subject	Retain		No	Dead standing tree with minimal branches remaining; covered in vines.
1956A	Common Pear	*Pyrus communis*	Non-native	1	24	3.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; leaning north; dieback of lower branches.
1957A	Common Pear	*Pyrus communis*	Non-native	1	29	3.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; heavy lean north in upper stem; dieback of lower branches.
1958A	Manitoba Maple	*Acer negundo*	Native	3	58.5+38.5+33.1	10.0	Improbable	Fair	Subject	Retain		No	Large crown; epicormic shoots; base growing against rock.
1959A	American Elm	*Ulmus americana*	Native	1	59	0.5	Possible	Dead	Subject	Prune-Top	Hazard	No	Dead snag; no lateral branches remaining.
1960A	Manitoba Maple	*Acer negundo*	Native	1	33	5.0	Improbable	Fair	Subject	Retain		No	Leaning southwest; asymmetrical crown; epicormic growth; minor dieback of lower branches.
1961A	Manitoba Maple	*Acer negundo*	Native	1	13	0.5	Probable	Very Poor	Subject	Retain		No	Stem broken off and hanging at 2m; epicormic growth.
1962A	Manitoba Maple	*Acer negundo*	Native	2	38.2+11	6.0	Improbable	Fair	Subject	Retain		No	Large crown; leans south; dead lower branches; epicormic shoots; base growing against rock.
1963A	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead structural branch; phototrophic growth; healthy crown.
1964A	Black Cherry	*Prunus serotina*	Native	1	16	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Pressure from neighbouring tree lean; brush piled at base; vine growth; seepage.
1965A	Bitternut Hickory	*Carya cordiformis*	Native	1	10	3.0	Possible	Poor	Subject	Remove	Grading	No	Decaying log against base; necrotic foliage, warped; 20% dieback.
1966A	Common Apple	*Malus pumila*	Non-native	1	10	2.5	Improbable	Fair	Subject	Remove	Grading	No	Generally suppressed; trunk wound; one dead branch.
1967A	Sugar Maple	*Acer saccharum*	Native	1	18	3.0	Possible	Fair	Subject	Retain		No	Few rusting leaves; girdling roots; shrub growing out of base.
1968A	Black Cherry	*Prunus serotina*	Native	1	10	2.0	Improbable	Fair	Subject	Retain		No	Winding trunk; phototrophic growth; seepage; small basal wound.
1969A	American Basswood	*Tilia americana*	Native	1	13	2.0	Possible	Good	Subject	Retain		No	Phototrophic growth; defoliation; necrotic foliage.
1970A	American Basswood	*Tilia americana*	Native	3	35.5+17.7+14.5	4.0	Possible	Poor	Subject	Retain		No	15% dieback; necrotic foliage; defoliation; included bark; loss and decay of leader.
1971A	American Basswood	*Tilia americana*	Native	1	10	2.0	Improbable	Fair	Subject	Retain		No	Suppressed towards south; leaning south; insect herbivory.
1972A	White Ash	*Fraxinus americana*	Native	1	11	1.0	Improbable	Very Poor	Subject	Retain		No	Dead crown; epicormic shoots; EAB.
1973A	Black Cherry	*Prunus serotina*	Native	1	15	2.5	Possible	Dead	Subject	Retain		No	Dead crown.
1974A	Bitternut Hickory	*Carya cordiformis*	Native	1	62	1.0	Improbable	Good	Subject	Retain		No	Large full crown.
1975A	Sugar Maple	*Acer saccharum*	Native	1	14	3.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; rusting; sealed basal wound.
1976A	Black Cherry	*Prunus serotina*	Native	1	17	3.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; minor dieback; minor epicormic shoots.
1977A	Manitoba Maple	*Acer negundo*	Native	1	16	2.5	Possible	Poor	Subject	Retain		No	Decaying stem wound; heavy lean towards field; epicormic shoots.
1978A	Slippery Elm	*Ulmus rubra*	Native	1	12	2.5	Improbable	Poor	Subject	Retain		No	Necrotic foliage; phototrophic growth; 20% dieback; failed epicormic shoots; ants.
1979A	Black Cherry	*Prunus serotina*	Native	1	13	4.0	Improbable	Fair	Subject	Retain		No	Heavily suppressed on north.
1980A	Black Cherry	*Prunus serotina*	Native	1	15	4.5	Improbable	Fair	Subject	Retain		No	Heavily suppressed on north; crooked phototrophic trunk.
1981A	American Basswood	*Tilia americana*	Native	1	14	2.5	Improbable	Fair	Subject	Retain		No	Suppressed on north; vine present; insect herbivory.
1982A	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Retain		No	Necrotic foliage; defoliation; included bark.
1983A	American Basswood	*Tilia americana*	Native	1	19	2.5	Improbable	Poor	Subject	Retain		No	20% dieback; necrotic foliage; defoliation; decay at lost branch union.
1984A	Black Cherry	*Prunus serotina*	Native	1	18	3.0	Improbable	Good	Subject	Retain		No	Self pruning; phototrophic growth; healthy crown.
1985A	Sugar Maple	*Acer saccharum*	Native	1	20	3.0	Improbable	Good	Subject	Retain		No	Minor leaf rusting; good form.
1986A	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Improbable	Fair	Subject	Retain		No	Dead lower branches; some defoliation.
1987A	American Basswood	*Tilia americana*	Native	2	11.5+10.1	2.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; necrotic foliage; vine present; insect herbivory.
1988A	American Basswood	*Tilia americana*	Native	1	14	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on northeast; necrotic foliage; insect herbivory.
1989A	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Retain		No	Generally suppressed; necrotic foliage; insect herbivory.
1990A	American Basswood	*Tilia americana*	Native	1	16	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on northeast; necrotic foliage; insect herbivory.

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1991A	American Basswood	*Tilia americana*	Native	1	11	3.0	Improbable	Fair	Subject	Retain		No	Suppressed on northeast; necrotic foliage; insect herbivory.
1992A	American Basswood	*Tilia americana*	Native	1	44	5.0	Improbable	Poor	Subject	Retain		No	Heavily suppressed on northeast; one dead leader; 30% deadwood throughout.
1993A	Sugar Maple	*Acer saccharum*	Native	3	35.8+35.5+31.2	7.0	Improbable	Fair	Subject	Retain		No	Suppressed on northeast; upright codominant trunks; included bark; healthy foliage.
1994A	White Ash	*Fraxinus americana*	Native	3	37.6+34.4+28.7	2.0	Possible	Very Poor	Subject	Retain		No	No remaining live crown; declining basal sprouts; sloughing bark; large basal cavity.
1995A	Sugar Maple	*Acer saccharum*	Native	2	47.3+14	3.5	Possible	Fair	Subject	Retain		No	Decay at base where mature sprouts emerge; fused base; healthy crown.
1996A	Sugar Maple	*Acer saccharum*	Native	2	34.7+16.7	5.0	Possible	Good	Subject	Retain		No	Fused, codominant stems; included bark; twisted self corrected structural branch; healthy crown.
1997A	Sugar Maple	*Acer saccharum*	Native	1	52	4.5	Possible	Good	Subject	Retain		No	Codominant stems; included bark; mature basal sprout; twisted stem; sealed trunk wound.
1998A	Sugar Maple	*Acer saccharum*	Native	1	20	4.0	Improbable	Good	Subject	Retain		No	Asymmetrical crown; suppressed; healthy foliage.
1999A	American Basswood	*Tilia americana*	Native	2	13.2+20.4	4.0	Improbable	Fair	Subject	Retain		No	Necrotic foliage; insect herbivory; lower crown dieback.
2000A	American Basswood	*Tilia americana*	Native	1	20	4.0	Improbable	Fair	Subject	Retain		No	Necrotic foliage; insect herbivory; lower crown dieback.
68B	Eastern White Pine	*Pinus strobus*	Native	2	21.6+21.1	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown; codominant trunks.
69B	Eastern White Pine	*Pinus strobus*	Native	1	33	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown.
70B	Eastern White Pine	*Pinus strobus*	Native	1	33	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown.
71B	Eastern White Pine	*Pinus strobus*	Native	1	29	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown.
72B	Eastern White Pine	*Pinus strobus*	Native	1	33	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed crown.
73B	Eastern White Pine	*Pinus strobus*	Native	1	21	1.0	Improbable	Poor	Subject	Remove	Grading	Yes	Generally suppressed, small crown; dead lower branches.
74B	Eastern White Pine	*Pinus strobus*	Native	1	25	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed, small crown.
75B	Eastern White Pine	*Pinus strobus*	Native	2	21.6+15.8	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed crown; codominant trunks.
76B	Eastern White Pine	*Pinus strobus*	Native	1	14	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown.
77B	Eastern White Pine	*Pinus strobus*	Native	1	25	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed crown; dead lower branches.
78B	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown; dead lower branches.
79B	Eastern White Pine	*Pinus strobus*	Native	1	30	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Partially suppressed crown; crooks in upper trunk.
80B	Eastern White Pine	*Pinus strobus*	Native	1	25	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed crown.
81B	Eastern White Pine	*Pinus strobus*	Native	1	37	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed crown.
82B	Eastern White Pine	*Pinus strobus*	Native	1	32	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed crown.
83B	Eastern White Pine	*Pinus strobus*	Native	1	38	5.0	Improbable	Good	Subject	Remove	Grading	Yes	One upright branch fused to trunk.
84B	Eastern White Pine	*Pinus strobus*	Native	2	22.2+19.8	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant trunks.
85B	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No notable defects.
86B	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Full crown.
87B	White Birch	*Betula papyrifera*	Native	1	36	5.0	Possible	Poor	Subject	Retain	Grading	Yes	20% crown dieback; 6 cavity holes between 1-7m
88B	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Improbable	Fair	Subject	Retain	Grading	Yes	Dead lower branches.
89B	Black Cherry	*Prunus serotina*	Native	1	19	3.0	Improbable	Fair	Subject	Retain	Grading	Yes	Dead lower branches; wild grape present.
90B	Black Cherry	*Prunus serotina*	Native	1	15	3.0	Improbable	Fair	Subject	Retain	Grading	Yes	Suppressed towards woodland.
91B	Black Cherry	*Prunus serotina*	Native	1	24	3.5	Improbable	Good	Subject	Retain	Grading	Yes	Full crown.
92B	American Basswood	*Tilia americana*	Native	1	32	5.0	Improbable	Good	Subject	Retain	Grading	Yes	Full crown.
93B	Black Cherry	*Prunus serotina*	Native	1	13	2.5	Improbable	Good	Subject	Retain	Grading	Yes	Full crown.
94B	Common Apple	*Malus pumila*	Non-native	1	15	4.0	Improbable	Fair	Subject	Retain	Grading	No	Leaning into woodland; vine present.
95B	Eastern Cottonwood	*Populus deltoides*	Native	1	28	4.0	Possible	Poor	Subject	Retain	Grading	No	Trunk heavily cankered; half of crown dead or lost.
96B	Eastern Cottonwood	*Populus deltoides*	Native	1	20	3.0	Probable	Very Poor	Subject	Retain	Grading	No	Trunk heavily cankered; 90% of crown dead or lost.
97B	Common Apple	*Malus pumila*	Non-native	2	28+19	5.0	Improbable	Fair	Subject	Remove	Grading	No	Leans heavily to field; vine burden.
204B	American Elm	*Ulmus americana*	Native	1	27	2.5	Improbable	Dead	Subject	Remove	Grading	No	Main branches attached but no leaves; peeling bark.
207B	American Elm	*Ulmus americana*	Native	1	21	2.5	Probable	Dead	Subject	Remove	Grading	No	Some large branches intact.
209B	Common Apple	*Malus pumila*	Non-native	1	11	4.5	Improbable	Fair	Subject	Remove	Grading	No	Twisted branches growing into one another; few dead branches.
210B	Common Apple	*Malus pumila*	Non-native	3	15.6+15.9+12.1	4.5	Improbable	Fair	Subject	Remove	Grading	No	Twisted branches growing into one another; few dead branches.
211B	Common Apple	*Malus pumila*	Non-native	3	18+14+13	4.0	Improbable	Fair	Subject	Remove	Grading	No	Dieback.
242B	Eastern White Pine	*Pinus strobus*	Native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure.
243B	Eastern White Pine	*Pinus strobus*	Native	1	23	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Partially suppressed towards Crawley.
244B	Eastern White Pine	*Pinus strobus*	Native	1	20	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower crown suppressed; vine present.
245B	Common Pear	*Pyrus communis*	Non-native	2	24.1+16.4	4.0	Improbable	Fair	Subject	Remove	Grading	No	Suppressed; dead lower branches; vines present; weak unions between leaders.
246B	Scots Pine	*Pinus sylvestris*	Non-native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; vines present.
247B	Scots Pine	*Pinus sylvestris*	Non-native	1	29	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; vines present.
248B	Scots Pine	*Pinus sylvestris*	Non-native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; vines present.
249B	Scots Pine	*Pinus sylvestris*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches.
250B	Scots Pine	*Pinus sylvestris*	Non-native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; vines present.
251B	Scots Pine	*Pinus sylvestris*	Non-native	1	33	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed; dead lower branches.

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252B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards northwest; dead lower branches.
253B	Scots Pine	*Pinus sylvestris*	Non-native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards northeast; vine present.
254B	Common Pear	*Pyrus communis*	Non-native	2	18.8+14.1	4.0	Improbable	Fair	Subject	Remove	Grading	No	Suppressed towards north; asymmetrical crown; vine present.
255B	Common Apple	*Malus pumila*	Non-native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	No	Woodbine up trunk; some defoliated branches in lower canopy.
256B	Scots Pine	*Pinus sylvestris*	Non-native	1	26	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; woodbine up trunk; thin canopy.
257B	Scots Pine	*Pinus sylvestris*	Non-native	1	25	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; woodbine up trunk; thin canopy.
258B	Scots Pine	*Pinus sylvestris*	Non-native	1	26	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; woodbine up trunk; thin canopy.
259B	Scots Pine	*Pinus sylvestris*	Non-native	1	26	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; woodbine up trunk; thin canopy.
260B	Scots Pine	*Pinus sylvestris*	Non-native	1	19	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; woodbine up trunk; thin canopy.
261B	Scots Pine	*Pinus sylvestris*	Non-native	1	23	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; grape up trunk; thin canopy.
262B	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning needles; peeling bark; grape up trunk; thin canopy.
263B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	1.0	Possible	Dead	Subject	Remove	Grading	No	Dead with small crown.
264B	Scots Pine	*Pinus sylvestris*	Non-native	1	14	1.0	Improbable	Poor	Subject	Remove	Grading	No	Suppressed, small crown; vine present.
266B	Black Locust	*Robinia pseudoacacia*	Non-native	2	27.7+25	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant trunks with long, sealed seam; one previous leader failure at union; large healthy crown.
267B	Common Apple	*Malus pumila*	Non-native	3	16.2+15.9+17.4	6.0	Improbable	Fair	Subject	Remove	Grading	No	Some defoliated branches; dead branches in lower canopy; epicormic growth.
268B	Black Locust	*Robinia pseudoacacia*	Non-native	1	26	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure.
269B	White Ash	*Fraxinus americana*	Native	1	23	5.0	Improbable	Dead	Subject	Remove	Grading	No	Peeling bark; main branches attached but no leaves.
270B	Eastern White Pine	*Pinus strobus*	Native	1	20	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; some dead lower branches.
271B	Eastern White Pine	*Pinus strobus*	Native	1	18	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed lower crown.
272B	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed mid and lower crown.
273B	Eastern White Pine	*Pinus strobus*	Native	1	18	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Crown dieback; lower branches sparse; chlorotic foliage.
274B	Eastern White Pine	*Pinus strobus*	Native	1	15	3.5	Possible	Dead	Subject	Remove	Grading	No	Crown intact.
275B	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches; suppressed canopy.
276B	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches; suppressed canopy.
277B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches; thin canopy.
278B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches; thin canopy.
279B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; numerous dead branches; thin canopy.
280B	Eastern White Pine	*Pinus strobus*	Native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Excessive pine tar oozing from branch attachments; suppressed canopy.
281B	Scots Pine	*Pinus sylvestris*	Non-native	1	16	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; grape vine within canopy; several dead branches in lower canopy.
282B	Scots Pine	*Pinus sylvestris*	Non-native	1	16	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; grape vine within canopy; several dead branches in lower canopy.
283B	Scots Pine	*Pinus sylvestris*	Non-native	1	23	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; suppressed lower canopy; buckthorn and grape vine within canopy.
284B	Scots Pine	*Pinus sylvestris*	Non-native	1	23	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Peeling bark; suppressed lower canopy; buckthorn and grape vine within canopy.
285B	White Spruce	*Picea glauca*	Native	1	31	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on west; slightly sparse crown.
286B	White Spruce	*Picea glauca*	Native	1	27	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; slightly sparse crown.
287B	White Spruce	*Picea glauca*	Native	1	27	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on north; slightly sparse crown.
288B	White Spruce	*Picea glauca*	Native	1	24	3.0	Improbable	Poor	Subject	Remove	Grading	No	Generally suppressed; crown dieback.
289B	White Spruce	*Picea glauca*	Native	1	29	3.0	Improbable	Poor	Subject	Remove	Grading	No	Generally suppressed; crown dieback.
290B	White Spruce	*Picea glauca*	Native	1	31	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on south; slightly sparse crown.
291B	American Elm	*Ulmus americana*	Native	1	50	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
292B	Sugar Maple	*Acer saccharum*	Native	1	39	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Trunk growing around branch of other tree; asymmetrical crown; some healing wounds on trunk.
293B	American Basswood	*Tilia americana*	Native	1	37	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	20% deadwood; suppressed on east.
294B	Sugar Maple	*Acer saccharum*	Native	2	34.0+12.0	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Branch growing into another tree; asymmetrical crown; wounds on branches; poor branch attachment.
295B	Sugar Maple	*Acer saccharum*	Native	1	46	5.0	Improbable	Fair	Subject	Retain		No	Some woodbine up trunk; few scaffold branches; signs of branch failures.
296B	American Elm	*Ulmus americana*	Native	1	14	5.0	Improbable	Poor	Subject	Retain		No	Very thin canopy; numerous dead branches.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
297B	Sugar Maple	*Acer saccharum*	Native	1	92	7.0	Probable	Dead	Subject	Prune-Top	Hazard	No	Most of crown lost; one long branch to east remains.
298B	White Ash	*Fraxinus americana*	Native	1	14	3.0	Probable	Dead	Subject	Prune-Top	Hazard	No	Most of crown intact; epicormic growth.
299B	White Ash	*Fraxinus americana*	Native	1	15	2.0	Probable	Very Poor	Subject	Retain		No	No live crown; aggressive basal; peeled bark.
300B	White Ash	*Fraxinus americana*	Native	1	12	2.0	Probable	Very Poor	Subject	Retain		No	No live crown; aggressive basal; peeled bark.
337B	Scots Pine	*Pinus sylvestris*	Non-native	1	33	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed on east.
338B	White Spruce	*Picea glauca*	Native	1	50	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
339B	Manitoba Maple	*Acer negundo*	Native	2	58+83	7.5	Imminent	Fair	Subject	Remove	Grading	No	Multiple failed and hanging stems; large burls; codominant stems with frass at union; internal decay.
340B	Manitoba Maple	*Acer negundo*	Native	1	28	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Good health.
343B	Manitoba Maple	*Acer negundo*	Native	2	21.5+20	3.5	Improbable	Fair	Boundary	Remove	Grading	Yes	Codominant stems; included bark; aphid infestation.
346B	Common Pear	*Pyrus communis*	Non-native	2	19.8+12	3.0	Improbable	Fair	Subject	Remove	Grading	No	15% upper crown dieback; sapsucker holes; codominant stems.
353B	Black Cherry	*Prunus serotina*	Native	1	36	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on northeast; asymmetrical crown; large trunk wound from old failure
354B	Black Cherry	*Prunus serotina*	Native	1	34	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; healthy crown.
355B	Black Cherry	*Prunus serotina*	Native	2	23.5+20.0	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; healthy crown.
356B	Black Cherry	*Prunus serotina*	Native	1	47	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Leaf rust; broken lower branches; codominant stems; included bark; basal bark fissure with no visible decay.
358B	Black Cherry	*Prunus serotina*	Native	2	25.2+23.8	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Fruiting bodies on bark; vine growth; peeling bark.
359B	Black Cherry	*Prunus serotina*	Native	4	39.8+32.9+18	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Large, low branching crown.
360B	Common Pear	*Pyrus communis*	Non-native	1	16	2.5	Improbable	Fair	Subject	Remove	Grading	No	Vine burden throughout crown.
361B	Manitoba Maple	*Acer negundo*	Native	3	81.5+79+35.2	6.0	Possible	Poor	Subject	Remove	Grading	No	Several split structural branches; codominant stems; spreading form; epicormic shoots; fused and split stems; large open cavity.
362B	Black Cherry	*Prunus serotina*	Native	2	31.6+14.8	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Two fused trunks with included bark; full crowm
363B	Black Cherry	*Prunus serotina*	Native	1	19	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; 10% dieback.
364B	Black Cherry	*Prunus serotina*	Native	2	17.5+14.9+13.2	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems; vine growth; minor leaf rust.
365B	Black Cherry	*Prunus serotina*	Native	1	16	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form; slightly sparse crown.
366B	Black Cherry	*Prunus serotina*	Native	1	31	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sealed lower trunk wound; suppressed crown, asymmetrical to northeast.
462B	Common Pear	*Pyrus communis*	Non-native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	No	Tall narrow crown; suppressed on west.
467B	Scots Pine	*Pinus sylvestris*	Non-native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Crowded by buckthorn; few dead branches.
469B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed, small crown.
470B	Common Apple	*Malus pumila*	Non-native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	No	Few dead branches; surrounded by buckthorn.
477B	American Elm	*Ulmus americana*	Native	1	17	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Crowded by buckthorn; epicormic growth; thin canopy; dead branches.
478B	American Elm	*Ulmus americana*	Native	1	25	2.5	Improbable	Dead	Subject	Remove	Grading	No	Crowded by buckthorn; main branches attached but no leaves; peeling bark.
501B	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Significant sap exudation; minor leaf rusting.
502B	Eastern White Pine	*Pinus strobus*	Native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
503B	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning.
504B	Eastern White Pine	*Pinus strobus*	Native	1	28	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning.
505B	Eastern White Pine	*Pinus strobus*	Native	1	31	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Sap exudation; self corrected upper stem.
506B	Eastern White Pine	*Pinus strobus*	Native	1	13	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; narrow columnar growth; vine growth.
507B	Eastern White Pine	*Pinus strobus*	Native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning.
508B	Eastern White Pine	*Pinus strobus*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; some leaf rusting.
509B	Eastern White Pine	*Pinus strobus*	Native	2	15.2+13.0	3.0	Improbable	Poor	Subject	Remove	Grading	No	Grape vine within canopy; minor dieback; asymmetrical crown.
510B	Eastern White Pine	*Pinus strobus*	Native	1	14		Possible	Dead	Subject	Remove	Grading	No	Approx 12m height
511B	Eastern White Pine	*Pinus strobus*	Native	1	18	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; vine growth.
512B	Eastern White Pine	*Pinus strobus*	Native	1	19	2.0	Possible	Good	Subject	Remove	Grading	Yes	Suppressed; extensive vine growth; several hanging branches.
513B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems in upper trunk; vine growth throughout canopy.
514B	Eastern White Pine	*Pinus strobus*	Native	1	12	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; vine growth throughout canopy.
515B	Eastern White Pine	*Pinus strobus*	Native	1	26	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; minor leaf rusting.
516B	Eastern White Pine	*Pinus strobus*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
517B	Eastern White Pine	*Pinus strobus*	Native	1	17	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Seepage around failed structural branches; vine growth.
518B	Eastern White Pine	*Pinus strobus*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
519B	Eastern White Pine	*Pinus strobus*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
520B	Eastern White Pine	*Pinus strobus*	Native	1	22	4.0	Improbable	Poor	Subject	Remove	Grading	No	Crown dieback; natural pruning.
521B	Common Apple	*Malus pumila*	Non-native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	No	Codominant stems; twisted branches; vine growth.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
522B	Eastern White Pine	*Pinus strobus*	Native	1	25	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor crook in stem; natural pruning.
523B	Eastern White Pine	*Pinus strobus*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; limited live crown; vine growth.
525B	Eastern White Pine	*Pinus strobus*	Native	1	22	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; natural pruning.
526B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; natural pruning.
527B	Eastern White Pine	*Pinus strobus*	Native	1	12	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; 5% dieback.
528B	Eastern White Pine	*Pinus strobus*	Native	2	15.2+<10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Stems fused in multiple areas.
529B	Eastern White Pine	*Pinus strobus*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
530B	Eastern White Pine	*Pinus strobus*	Native	1	26	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor leaf rusting; main stem curving but self-corrected.
531B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to adjacent tree.
532B	Eastern White Pine	*Pinus strobus*	Native	1	20	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form; healthy crown.
533B	Eastern White Pine	*Pinus strobus*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to adjacent tree.
534B	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; small sugar maple growing underneath.
535B	Eastern White Pine	*Pinus strobus*	Native	1	27	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; vine growth; small seeping trunk wound.
536B	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning.
537B	Common Apple	*Malus pumila*	Non-native	5	16.4+15.1+14.3+14+11	4.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; previously pruned beside farm trail; multiple dead branches; open wounds.
538B	Eastern White Pine	*Pinus strobus*	Native	1	23	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth; healthy crown.
539B	Eastern White Pine	*Pinus strobus*	Native	1	25	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Grape vine within canopy; asymmetrical crown due to adjacent tree.
540B	Eastern White Pine	*Pinus strobus*	Native	1	30	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth; asymmetrical crown; vine growth.
541B	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; suppressed crown.
542B	Eastern White Pine	*Pinus strobus*	Native	1	17	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Excessive seepage in upper stem; dead upper branch.
543B	Eastern White Pine	*Pinus strobus*	Native	1	31	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical growth; epicormic growth; 5% dieback.
544B	White Mulberry	*Morus alba*	Non-native	1	22	3.5	Possible	Very Poor	Subject	Remove	Grading	No	Forked above BH; considerable dieback; decay and black bark at fork.
545B	Common Apple	*Malus pumila*	Non-native	1	13	3.0	Possible	Poor	Subject	Remove	Grading	No	Branch dieback; multiple failures.
546B	Eastern White Pine	*Pinus strobus*	Native	1	29	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree and field edge; natural pruning.
547B	Eastern White Pine	*Pinus strobus*	Native	1	18	1.5	Possible	Fair	Subject	Remove	Grading	Yes	Partially compartmentalized trunk wound with some decay; suppressed.
548B	Black Cherry	*Prunus serotina*	Native	1	34	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	minor defoliation, codominant leaders
549B	Eastern White Pine	*Pinus strobus*	Native	1	19	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Codominant stems in upper canopy; vine growth; healthy crown.
550B	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Seepage at branch union; vine growth; winding phototrophic branches.
551B	Eastern White Pine	*Pinus strobus*	Native	1	14	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Smaller stem growing at base; mechanical wound.
552B	Eastern White Pine	*Pinus strobus*	Native	1	22	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; grape vine within canopy.
553B	Eastern White Pine	*Pinus strobus*	Native	1	25	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine growth; suppressed; limited live crown.
554B	Eastern White Pine	*Pinus strobus*	Native	1	30	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; grape vine within canopy.
555B	Eastern White Pine	*Pinus strobus*	Native	1	32	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; asymmetrical crown due to field edge/light availability.
556B	Eastern White Pine	*Pinus strobus*	Native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; vine growth; small seeping trunk fissures.
557B	Eastern White Pine	*Pinus strobus*	Native	1	15	2.0	Possible	Poor	Subject	Remove	Grading	No	Natural pruning; grape vine within canopy; branch dieback.
558B	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Phototrophic growth; healthy crown; vine growth.
559B	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Vine growth may cause girdling around base; phototrophic growth.
560B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Natural pruning; grape vine within canopy; minor branch dieback.
561B	Eastern White Pine	*Pinus strobus*	Native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; minor crook; grape vine within canopy; minor branch dieback.
562B	Eastern White Pine	*Pinus strobus*	Native	1	15	1.5	Improbable	Good	Subject	Remove	Grading	Yes	Seepage at branch union; good form.
563B	Eastern White Pine	*Pinus strobus*	Native	1	26	4.0	Improbable	Poor	Subject	Remove	Grading	No	Grape vine suppressing canopy.
565B	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; healthy crown; seepage from branch unions.
566B	Eastern White Pine	*Pinus strobus*	Native	1	33	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree.
567B	Eastern White Pine	*Pinus strobus*	Native	1	13	1.0	Improbable	Poor	Subject	Remove	Grading	No	Minor crook; thin canopy.
568B	Eastern White Pine	*Pinus strobus*	Native	2	29.9+12.4	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Second leader emerging from base, curving around main stem; included bark; seepage from branch loss.
569B	Common Apple	*Malus pumila*	Non-native	3	14.5+14.4+11.5	2.0	Possible	Poor	Subject	Remove	Grading	No	Multiple dead branches; branch dieback; decay at branch unions.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
570B	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; minor dieback.
571B	Eastern White Pine	*Pinus strobus*	Native	1	29	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; grape vine within canopy.
572B	Eastern White Pine	*Pinus strobus*	Native	1	21	1.0	Probable	Dead	Subject	Remove	Grading	No	Sloughing bark; mostly bare.
573B	Black Cherry	*Prunus serotina*	Native	1	32	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; slight lean towards field.
574B	Eastern White Pine	*Pinus strobus*	Native	1	23	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; 10% dieback.
575B	Eastern White Pine	*Pinus strobus*	Native	1	36	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning in lower canopy.
576B	Eastern White Pine	*Pinus strobus*	Native	1	28	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Emerging second leader in upper stem; asymmetrical crown.
577B	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning in lower canopy; vine within canopy.
578B	Common Pear	*Pyrus communis*	Non-native	1	14	1.0	Improbable	Fair	Subject	Remove	Grading	No	Asymmetrical crown; epicormic growth along stem; minor branch dieback.
579B	Common Apple	*Malus pumila*	Non-native	1	16	2.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; minor branch dieback; vine within canopy.
580B	Eastern White Pine	*Pinus strobus*	Native	1	16	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; limited live crown; minor leaf rusting.
581B	Eastern White Pine	*Pinus strobus*	Native	2	12.1+10.3	2.0	Improbable	Poor	Subject	Remove	Grading	No	Stem fused at base; slightly suppressed.
582B	Eastern White Pine	*Pinus strobus*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Scar in upper stem; natural pruning.
583B	Eastern White Pine	*Pinus strobus*	Native	1	13	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; limited live crown; small trunk fissure.
584B	Eastern White Pine	*Pinus strobus*	Native	1	14	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; limited live crown; phototrophic upper branches.
585B	Eastern White Pine	*Pinus strobus*	Native	1	19	3.0	Improbable	Poor	Subject	Remove	Grading	No	Natural pruning; thin canopy; branch dieback.
586B	Eastern White Pine	*Pinus strobus*	Native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; slightly asymmetrical crown.
587B	Common Pear	*Pyrus communis*	Non-native	3	17.6+14.4+14	3.0	Possible	Fair	Subject	Remove	Grading	No	Epicormic growth; asymmetrical crown southwest; girdling root.
588B	Eastern White Pine	*Pinus strobus*	Native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; slightly asymmetrical crown.
589B	Eastern White Pine	*Pinus strobus*	Native	1	19	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; phototrophic growth.
590B	Common Apple	*Malus pumila*	Non-native	5	21.3+18.7+15.5	3.5	Improbable	Fair	Subject	Remove	Grading	No	Fused stems; epicormic growth; one dead leader.
591B	Eastern White Pine	*Pinus strobus*	Native	1	25	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
592B	Common Apple	*Malus pumila*	Non-native	3	13.1+12.0+10.5	2.0	Possible	Poor	Subject	Remove	Grading	No	Decay at branch unions; multiple dead branches; stems fused in multiple areas.
593B	Eastern White Pine	*Pinus strobus*	Native	1	12	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown from competing shrubs; limited live crown; broken leader, self-corrected.
594B	Eastern White Pine	*Pinus strobus*	Native	1	16	1.0	Possible	Poor	Subject	Remove	Grading	No	Poor form; low vigor; thin crown.
595B	Common Apple	*Malus pumila*	Non-native	1	15	1.0	Possible	Very Poor	Subject	Remove	Grading	No	Extensive dieback; epicormic growth; multiple dead branches.
596B	Eastern White Pine	*Pinus strobus*	Native	1	21	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; asymmetrical crown; minor dieback.
597B	Eastern White Pine	*Pinus strobus*	Native	1	20	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Limited live crown; shading from competing tree; minor sealed trunk wound.
598B	Eastern White Pine	*Pinus strobus*	Native	1	30	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
599B	Common Apple	*Malus pumila*	Non-native	2	18.2+16.3	3.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; decay at branch unions.
601B	Common Pear	*Pyrus communis*	Non-native	2	12.4+11.5	1.0	Possible	Very Poor	Subject	Remove	Grading	No	Multiple dead branches; cavity at base; branch dieback.
602B	Eastern White Pine	*Pinus strobus*	Native	1	13	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; vine within canopy.
603B	Eastern White Pine	*Pinus strobus*	Native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; natural pruning; vine within canopy.
604B	Eastern White Pine	*Pinus strobus*	Native	1	26	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Extensive vine growth limiting foliar growth; little visible live crown.
605B	Eastern White Pine	*Pinus strobus*	Native	1	23	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Vine growth; suppressed; asymmetrical crown.
606B	Eastern White Pine	*Pinus strobus*	Native	1	22	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; few hanging branches; vine growth.
607B	Eastern White Pine	*Pinus strobus*	Native	1	34	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Natural pruning.
608B	Eastern White Pine	*Pinus strobus*	Native	1	27	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Natural pruning; snag leaning into stem.
609B	Eastern White Pine	*Pinus strobus*	Native	1	24	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown due to adjacent tree; vine within canopy; natural pruning.
610B	Eastern White Pine	*Pinus strobus*	Native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Scar in upper stem; natural pruning; vine within canopy.
611B	Eastern White Pine	*Pinus strobus*	Native	2	15.8+8	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; crowded, limited live crown; suppressed.
613B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Possible	Poor	Off-property	Retain		No	Extensive dieback; vine within canopy; dead tissue at base.
614B	Eastern White Pine	*Pinus strobus*	Native	1	14	2.0	Improbable	Good	Off-property	Retain		No	Codominant leaders; included bark; suppressed; vine growth.
615B	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Fair	Off-property	Retain		No	Forked crown; natural pruning; vine within canopy.
616B	Eastern White Pine	*Pinus strobus*	Native	2	16.5+12.4	3.0	Improbable	Fair	Off-property	Retain		No	Vine within canopy; natural pruning; good form despite being codiminant.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
617B	Sugar Maple	*Acer saccharum*	Native	1	103	9.0	Possible	Poor	Off-property	Remove	Grading	No	Open growth characteristics; decay likely within bole where moisture captures; few dead or failed branches; included bark; open cavity at former branch union with black bark; full, vigorous crown.
619B	Manitoba Maple	*Acer negundo*	Native	2	30+21.8	3.0	Probable	Very Poor	Subject	Remove	Grading	No	Failed, uprooted tree with three codominant stems; one live stem parallel to ground; maturing epicormic shoots; fruiting bodies.
641B	American Basswood	*Tilia americana*	Native	1	32	3.0	Possible	Poor	Subject	Remove	Grading	No	reduced crown, lean, bend in leader, epicormic growth
642B	Manitoba Maple	*Acer negundo*	Native	1	25	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Narrow crown due to competition with adjacent trees; epicormic growth; history of branch failure
643B	Manitoba Maple	*Acer negundo*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; stem growing on 5 degree angle; epicormic growth
645B	Manitoba Maple	*Acer negundo*	Native	1	18	3.0	Probable	Dead	Subject	Remove	Grading	No	Crown mostly intact.
647B	Manitoba Maple	*Acer negundo*	Native	1	25	3.0	Possible	Fair	Subject	Remove	Grading	Yes	2 codominant leaders; generally suppressed.
649B	Manitoba Maple	*Acer negundo*	Native	1	14	3.0	Possible	Poor	Subject	Remove	Grading	No	epicormic growth numerous, phototrophic growth, some dieback
669B	Manitoba Maple	*Acer negundo*	Native	1	20	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Nearly dead with few epicormic shoots; stem leaning at 20 degree angle west.
676B	American Basswood	*Tilia americana*	Native	1	10	1.0	Improbable	Good	Subject	Remove	Grading	Yes	s-bend in leader, shade pruning
677B	White Spruce	*Picea glauca*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	30% deadwood; generally suppressed.
679B	Black Cherry	*Prunus serotina*	Native	1	15	3.5	Improbable	Good	Subject	Transplant	Grading	No	Healthy crown; suppressed from above.
680B	American Basswood	*Tilia americana*	Native	1	10	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
681B	American Basswood	*Tilia americana*	Native	1	10	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; generally suppressed.
682B	American Basswood	*Tilia americana*	Native	1	11	3.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; insect herbivory; generally suppressed; 40% deadwood; asymmetrical crown.
683B	Sugar Maple	*Acer saccharum*	Native	2	77.2+55+47.3	9.0	Probable	Poor	Subject	Remove	Grading	No	Overextended leader; loss and decay of structural branches; large open cavity at stem union; large cavities from poorly sealed branch failure; 5% dieback.
684B	Sugar Maple	*Acer saccharum*	Native	2	22.9+22.7	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; dead lower branch; 5% dieback.
685B	Black Cherry	*Prunus serotina*	Native	1	10	6.5	Improbable	Fair	Subject	Remove	Grading	Yes	Leans southeast; 20% necrotic foliage; generally suppressed.
686B	American Basswood	*Tilia americana*	Native	1	22	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; slightly suppressed.
687B	American Basswood	*Tilia americana*	Native	1	10	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; dead upper branch; insect herbivory; generally suppressed.
688B	American Basswood	*Tilia americana*	Native	1	11	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; 25% deadwood; generally suppressed.
689B	American Basswood	*Tilia americana*	Native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; heavy insect herbivory; 35% deadwood; generally suppressed.
690B	American Basswood	*Tilia americana*	Native	1	13	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown; diseased foliage; generally suppressed.
691B	American Basswood	*Tilia americana*	Native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic growth; diseased leaves; sparse crown.
692B	Manitoba Maple	*Acer negundo*	Native	1	19	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy 70 degree lean eadtward; dead lower branches; longitudinal cracks with decay.
693B	American Basswood	*Tilia americana*	Native	1	17	2.5	Possible	Poor	Subject	Remove	Grading	No	50% dieback; leaning east; fungal growth on branches; diseased leaves.
694B	American Basswood	*Tilia americana*	Native	2	24.2+16.3	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; diseased leaves; 10% dieback.
695B	Manitoba Maple	*Acer negundo*	Native	1	27	4.0	Probable	Poor	Subject	Remove	Grading	No	45 degree lean east; upper stem oriented north; epicormic growth along trunk; 20% dieback.
696B	American Basswood	*Tilia americana*	Native	1	12	2.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; insect herbivory; small crown; suppressed on northeast.
697B	Eastern White Cedar	*Thuja occidentalis*	Native	1	10	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed.
698B	Sugar Maple	*Acer saccharum*	Native	1	30	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Few dead lower branches; healthy crown; good form.
700B	American Basswood	*Tilia americana*	Native	1	53	5.0	Probable	Poor	Subject	Remove	Grading	No	Large, open cavity along main stem; diseased leaves; frass; hollow sounding stem suggests internal decay; complete loss and decay of second leader.
701B	Manitoba Maple	*Acer negundo*	Native	1	26	2.0	Imminent	Very Poor	Subject	Remove	Grading	No	Main stem partially snapped; fruiting bodies; dead second leader; 30 degree lean east; epicormic shoots.
702B	Manitoba Maple	*Acer negundo*	Native	1	27	2.5	Possible	Fair	Subject	Remove	Grading	Yes	45 degree lean east; epicormic shoots; healthy crown.
703B	Manitoba Maple	*Acer negundo*	Native	1	19	2.0	Possible	Poor	Subject	Remove	Grading	No	30 degree lean east; epicormic shoots; dead structural branches; 20% dieback.
704B	Manitoba Maple	*Acer negundo*	Native	1	31	3.0	Possible	Poor	Subject	Remove	Grading	No	Decaying trunk cavity; codominant stems; included bark; declining second leader.
705B	Black Walnut	*Juglans nigra*	Native	1	21	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; dead lower branches.

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706B	American Basswood	*Tilia americana*	Native	1	31	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; dead lower branches; large crown.
707B	Eastern White Cedar	*Thuja occidentalis*	Native	1	10	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Good form; suppressed.
708B	Eastern White Cedar	*Thuja occidentalis*	Native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Good form; suppressed.
709B	American Basswood	*Tilia americana*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; small high crown; suppressed.
710B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; small crown; dying lower branches; suppressed.
711B	American Basswood	*Tilia americana*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; dying lower branches; suppressed.
712B	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; weak leader; small crown; dying lower branches; suppressed.
713B	American Basswood	*Tilia americana*	Native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; dying lower branches; suppressed.
714B	American Basswood	*Tilia americana*	Native	1	17	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; sparse crown.
715B	American Basswood	*Tilia americana*	Native	1	11	3.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased foliage; 35% deadwood; suppressed.
716B	American Basswood	*Tilia americana*	Native	1	18	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; dying lower branches; suppressed.
717B	American Basswood	*Tilia americana*	Native	1	13	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; insect herbivory; suppressed.
718B	American Basswood	*Tilia americana*	Native	1	22	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased foliage; codominant leaders; insect herbivory; suppressed.
720B	Manitoba Maple	*Acer negundo*	Native	1	27	3.0	Probable	Fair	Subject	Remove	Grading	No	40% dieback; lower branches likely to fail; vigorous epicormic shoots.
721B	Manitoba Maple	*Acer negundo*	Native	1	26	2.0	Possible	Poor	Subject	Remove	Grading	No	45 degree lean east; epicormic shoots; 40% dieback.
722B	Sugar Maple	*Acer saccharum*	Native	1	85	6.0	Probable	Poor	Subject	Remove	Grading	No	Codominant stems; included bark; fused branches and stems with reaction wood; sloughing bark; large stem burl; trunk fissure; healthy crown.
723B	Manitoba Maple	*Acer negundo*	Native	1	20	2.5	Probable	Fair	Subject	Remove	Grading	No	Failure of structural branch, hanging; large unsealed trunk wound; healthy crown.
725B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Phototrophic lean northwest; epicormic shoots.
733B	White Mulberry	*Morus alba*	Non-native	2	13.1+12.7	3.0	Improbable	Good	Subject	Remove	Grading	No	Highly multistem; no major defects.
734B	White Mulberry	*Morus alba*	Non-native	3	13.3+12.7+11.8	3.0	Improbable	Fair	Subject	Remove	Grading	No	Codominant trunks with included bark; suppressed on north.
735B	Manitoba Maple	*Acer negundo*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Leaning south; suppressed; partially compartmentalized trunk wounds.
736B	White Mulberry	*Morus alba*	Non-native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	No	Slightly suppressed.
737B	White Mulberry	*Morus alba*	Non-native	1	10	3.0	Improbable	Fair	Subject	Remove	Grading	No	Dense basal shoots.
738B	White Mulberry	*Morus alba*	Non-native	1	11	3.0	Improbable	Good	Subject	Remove	Grading	No	Weak leader attachments.
739B	White Mulberry	*Morus alba*	Non-native	4	15+14+12	3.5	Improbable	Fair	Subject	Remove	Grading	No	Weak leader attachments; fused stems; broken crown branches.
740B	Manitoba Maple	*Acer negundo*	Native	5	18+18+16	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems from base; water sprouts; dieback.
741B	Common Apple	*Malus pumila*	Non-native	2	25+23.1	5.0	Improbable	Fair	Subject	Remove	Grading	No	Dieback; water sprouts.
742B	American Elm	*Ulmus americana*	Native	1	38	3.0	Probable	Dead	Subject	Remove	Grading	No	Large dead snag with small branches.
743B	Eastern White Pine	*Pinus strobus*	Native	1	31	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor self pruning.
744B	Eastern White Pine	*Pinus strobus*	Native	1	26	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor self pruning.
745B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	2.0	Possible	Poor	Subject	Remove	Grading	No	Major dieback.
746B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Insect herbivory; dead lower branches.
756B	Eastern White Pine	*Pinus strobus*	Native	1	22	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed; extensive vine growth; limited live crown.
800B	Eastern White Pine	*Pinus strobus*	Native	1	11	3.5	Improbable	Excellent	Subject	Remove	Grading	Yes	No apparent problems.
801B	Scots Pine	*Pinus sylvestris*	Non-native	1	21	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; suppressed on north.
802B	Eastern White Pine	*Pinus strobus*	Native	1	14	3.0	Improbable	Good	Subject	Transplant	Grading	No	No apparent problems.
803B	Eastern White Pine	*Pinus strobus*	Native	1	11	2.0	Improbable	Excellent	Subject	Remove	Grading	Yes	No apparent problems.
804B	Common Pear	*Pyrus communis*	Non-native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	No	Dead water sprouts; dense upper canopy.
805B	American Elm	*Ulmus americana*	Native	1	13	1.0	Probable	Dead	Subject	Remove	Grading	No	Snag
806B	American Elm	*Ulmus americana*	Native	1	32	3.0	Probable	Dead	Subject	Remove	Grading	No	Loose bark throughout.
807B	Eastern White Pine	*Pinus strobus*	Native	1	13	3.0	Improbable	Good	Subject	Transplant	Grading	No	Full crown.
808B	Eastern White Pine	*Pinus strobus*	Native	1	11	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Full crown.
809B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower branch dieback; vines present; suppressed on east.
810B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
811B	American Elm	*Ulmus americana*	Native	1	30	4.0	Probable	Dead	Subject	Remove	Grading	No	Large branches intact.
812B	Eastern White Pine	*Pinus strobus*	Native	1	10	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No apparent problems.
813B	Eastern White Pine	*Pinus strobus*	Native	1	13	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No apparent problems.
814B	Eastern White Pine	*Pinus strobus*	Native	1	13	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No apparent problems.
815B	Eastern White Pine	*Pinus strobus*	Native	1	13	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No apparent problems.
816B	Eastern White Pine	*Pinus strobus*	Native	1	10	3.0	Improbable	Good	Subject	Remove	Grading	Yes	No apparent problems.
817B	Common Apple	*Malus pumila*	Non-native	2	14.3+10	4.0	Improbable	Fair	Subject	Remove	Grading	No	Minor crown dieback; 15% deadwood.
818B	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Slightly sparse crown.
819B	Snag	*Unknown sp.*	**	1	43	0.5	Possible	Dead	Subject	Prune-Top	Hazard	No	Dead snag; minimal branches remaining.
820B	Trembling Aspen	*Populus tremuloides*	Native	1	28	4.0	Possible	Fair	Subject	Retain		No	Heavy lean north; vines present.

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821B	Trembling Aspen	*Populus tremuloides*	Native	1	13	1.0	Improbable	Fair	Subject	Retain		No	Slight lean north; vines in lower crown, dieback of lower branches.
822B	Trembling Aspen	*Populus tremuloides*	Native	1	20	3.0	Improbable	Fair	Subject	Retain		No	Trunk wound with spongy moth; vine present.
823B	Trembling Aspen	*Populus tremuloides*	Native	1	32	4.5	Improbable	Fair	Subject	Retain		No	Slight lean north; minor dieback.
824B	Trembling Aspen	*Populus tremuloides*	Native	1	31	4.5	Improbable	Fair	Subject	Retain		No	Dead lower branches; phototrophic lean northeast; woodpecker holes between 1-3m.
825B	Trembling Aspen	*Populus tremuloides*	Native	1	30	4.0	Improbable	Fair	Subject	Retain		No	Slight lean west in midstem; canker in stem; LDD egg sacs; dieback of lower branches.
826B	Trembling Aspen	*Populus tremuloides*	Native	1	32	5.0	Improbable	Fair	Subject	Retain		No	Leans northeast; healthy crown.
827B	Black Cherry	*Prunus serotina*	Native	1	19	1.0	Possible	Poor	Subject	Retain		No	Bark peeling at base; decay at base; seam wound with some compartmentalization; previous leader broken off; vines.
828B	Black Cherry	*Prunus serotina*	Native	1	19	4.0	Improbable	Fair	Subject	Retain		No	Heavy lean east; asymmetrical crown; healthy foliage.
829B	White Mulberry	*Morus alba*	Non-native	1	20	3.0	Improbable	Very Poor	Subject	Retain		No	Crown functionally dead; epicormic shoots; vine burden; bark peeling.
830B	American Basswood	*Tilia americana*	Native	2	81.2+74.8	12.0	Improbable	Good	Subject	Retain		No	Healthy full crown; seam wound compartmentalized; minor dieback of lower branches.
831B	Black Cherry	*Prunus serotina*	Native	1	60	6.0	Improbable	Fair	Subject	Retain		No	Leaning northwest; suppressee on south; one dead trunk
832B	American Basswood	*Tilia americana*	Native	2	28.5+25.9	4.0	Improbable	Fair	Subject	Retain		No	Codominant trunks with included bark; insect herbivory.
833B	Sugar Maple	*Acer saccharum*	Native	1	41	5.0	Improbable	Fair	Subject	Retain		No	Seam wound with some compartmentalization; hollow branch; asymmetrical crown towards south; necrosis in leaves.
834B	Common Pear	*Pyrus communis*	Non-native	3	29.5+27.5+26.9	4.0	Improbable	Fair	Subject	Retain		No	15% deadwood, throughout crown; codominant trunks.
835B	Common Pear	*Pyrus communis*	Non-native	2	14.6+13.3	2.5	Improbable	Good	Subject	Retain		No	No major defects.
836B	Sugar Maple	*Acer saccharum*	Native	1	50	6.0	Improbable	Good	Subject	Retain		No	Healthy full crown; minor dieback of lower branches.
837B	American Basswood	*Tilia americana*	Native	2	16.8+10.2	4.0	Improbable	Fair	Subject	Retain		No	Heavily suppressed on north.
838B	Sugar Maple	*Acer saccharum*	Native	1	48	6.0	Improbable	Good	Subject	Retain		No	Healthy full crown; minor dieback of lower branches.
839B	Sugar Maple	*Acer saccharum*	Native	1	41	6.0	Possible	Poor	Subject	Retain		No	Large longitudinal trunk wound with decay; one leader with advanced dieback; suppressed on south
840B	Black Cherry	*Prunus serotina*	Native	1	21	2.5	Improbable	Fair	Subject	Retain		No	Asymmetrical crown towards west; tall crown; minor dieback of lower branches.
841B	American Basswood	*Tilia americana*	Native	1	16	3.0	Improbable	Fair	Subject	Retain		No	Large rock causing basal damage; necrotic foliage; dieback.
842B	American Basswood	*Tilia americana*	Native	1	19	2.0	Improbable	Fair	Boundary	Retain		No	Growing on slope; dieback of lower branches; two small leaders less than 10cm dbh.
843B	American Basswood	*Tilia americana*	Native	1	54	6.5	Improbable	Good	Subject	Retain		No	Large healthy crown.
844B	Sugar Maple	*Acer saccharum*	Native	1	60	7.0	Improbable	Good	Subject	Retain		No	Large healthy crown.
845B	Black Cherry	*Prunus serotina*	Native	1	45	5.0	Improbable	Fair	Subject	Retain		No	Growing at top of slope; lower branches broken; asymmetrical crown towards north; minor dieback
846B	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Retain		No	Small suppressed crown; necrotic foliage.
847B	American Basswood	*Tilia americana*	Native	1	59	5.5	Improbable	Fair	Subject	Retain		No	Two upright codominant partially fused trunks; large healthy crown.
848B	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Fair	Subject	Retain		No	Small crown; trunk wound with response growth; necrotic foliage.
849B	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Fair	Subject	Retain		No	Small crown; necrotic foliage.
850B	American Basswood	*Tilia americana*	Native	1	19	2.5	Improbable	Fair	Subject	Retain		No	Necrosis; dieback of lower branches.
851B	Sugar Maple	*Acer saccharum*	Native	1	55	6.5	Improbable	Good	Subject	Retain		No	Response growth at base; large healthy crown with minor deadwood.
852B	American Basswood	*Tilia americana*	Native	1	69	9.0	Improbable	Fair	Subject	Retain		No	Lower branches broken off; some necrosis.
853B	American Basswood	*Tilia americana*	Native	2	24.1+13	3.0	Improbable	Fair	Subject	Retain		No	Suppressed on west; necrotic foliage.
854B	Hop Hornbeam	*Ostrya virginiana*	Native	1	11	1.5	Improbable	Fair	Subject	Retain		No	Peeling bark midstem; small hollow at base; vines.
855B	Sugar Maple	*Acer saccharum*	Native	1	62	6.0	Improbable	Good	Subject	Retain		No	Buckthorn fused to trunk; tall healthy crown.
856B	Sugar Maple	*Acer saccharum*	Native	1	62	5.0	Probable	Very Poor	Subject	Prune-Top	Hazard	No	Advanced decay with half of trunk rotted out; main trunk 4m snag; one 30cm branch with minor dieback.
857B	Snag	*Unknown sp.*	**	1	18	0.5	Possible	Dead	Subject	Retain		No	Snag; minimal branches remaining.
858B	Black Cherry	*Prunus serotina*	Native	1	72	10.0	Probable	Fair	Subject	Retain		No	Broken hanging branches; canker midstem; large hollow at base; vines.
859B	Trembling Aspen	*Populus tremuloides*	Native	1	26	4.0	Possible	Fair	Subject	Retain		No	Leaning east; vine burden; dead lower branches.
860B	Trembling Aspen	*Populus tremuloides*	Native	1	24	3.0	Possible	Fair	Subject	Retain		No	Lean north; vines; some dieback.
861B	Trembling Aspen	*Populus tremuloides*	Native	1	31	3.5	Improbable	Fair	Subject	Retain		No	Minor dieback; vine burden; dead lower branches.
862B	Trembling Aspen	*Populus tremuloides*	Native	1	24	3.5	Improbable	Poor	Subject	Retain		No	Minor dieback; heavy vine burden; dead lower branches.
863B	Manitoba Maple	*Acer negundo*	Native	2	15.3+11.3	3.0	Improbable	Fair	Subject	Retain		No	Lean north; codominant stems with included bark; epicormic growth.

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864B	Hop Hornbeam	*Ostrya virginiana*	Native	1	44	6.0	Improbable	Fair	Subject	Retain		No	Very mature; vines burden; 25% deadwood; wide spreading crown
865B	Manitoba Maple	*Acer negundo*	Native	1	57	6.0	Improbable	Fair	Subject	Retain		No	Lean north; codominant leaders with included bark; epicormic growth; small hollow in base.
866B	Hop Hornbeam	*Ostrya virginiana*	Native	1	35	5.0	Improbable	Fair	Subject	Retain		No	Large healthy crown; fence along base; leans east.
867B	Black Cherry	*Prunus serotina*	Native	2	56.8+33.2	6.0	Probable	Poor	Subject	Retain		No	Smaller stem dead; larger stem partially broken away from other stem, leaning north; some decay at base; dieback of lower branches.
868B	Hop Hornbeam	*Ostrya virginiana*	Native	2	30.6+27.9	6.0	Improbable	Fair	Subject	Retain		No	Large healthy crown; suppressed on south; 2 partially fused trunks.
869B	Hop Hornbeam	*Ostrya virginiana*	Native	1	43	6.0	Improbable	Fair	Subject	Retain		No	Large crown, asymmetrical towards east; suppressed crown; 1m long cavity to trunk centre.
870B	Black Cherry	*Prunus serotina*	Native	1	36	7.0	Improbable	Fair	Subject	Retain		No	Some decay/ hollow area at base; minor dieback of lower branches.
871B	Hop Hornbeam	*Ostrya virginiana*	Native	1	29	3.5	Improbable	Good	Subject	Retain		No	Generally suppressed; asymmetrical crown towards north.
872B	Hop Hornbeam	*Ostrya virginiana*	Native	1	20	4.0	Improbable	Fair	Subject	Retain		No	Asymmetrical crown towards north; minor dieback of lower branches.
873B	Hop Hornbeam	*Ostrya virginiana*	Native	1	25	4.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; asymmetrical crown towards east
874B	Hop Hornbeam	*Ostrya virginiana*	Native	2	26.5+20.5	5.0	Improbable	Fair	Subject	Retain		No	Codominant stems with included bark; minor dieback of lower branches.
875B	Hop Hornbeam	*Ostrya virginiana*	Native	1	18	4.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; base growing through rock wall; high healthy crown.
876B	Hop Hornbeam	*Ostrya virginiana*	Native	1	13	1.5	Improbable	Fair	Subject	Retain		No	Suppressed; minor dieback of lower branches.
877B	Hop Hornbeam	*Ostrya virginiana*	Native	1	12	4.5	Improbable	Good	Subject	Retain		No	Generally suppressed; healthy crown.
878B	Hop Hornbeam	*Ostrya virginiana*	Native	1	18	1.5	Improbable	Fair	Subject	Retain		No	Suppressed; minor dieback of lower branches.
879B	American Basswood	*Tilia americana*	Native	1	86	12.0	Improbable	Good	Subject	Retain		No	Second smaller leader broken off; minor dieback of lower branches.
880B	Hop Hornbeam	*Ostrya virginiana*	Native	1	33	6.0	Improbable	Fair	Subject	Retain		No	Heavily suppressed on south; phototrophic lean; healthy crown.
881B	Sugar Maple	*Acer saccharum*	Native	1	66	8.0	Improbable	Good	Subject	Retain		No	Large healthy crown; minor deadwood.
882B	Hop Hornbeam	*Ostrya virginiana*	Native	1	17	2.5	Improbable	Fair	Subject	Retain		No	Suppressed; minor dieback of lower branches.
883B	Black Cherry	*Prunus serotina*	Native	1	30	6.0	Improbable	Fair	Subject	Retain		No	Heavy phototrophic lean east; healthy crown; vines present.
884B	Black Cherry	*Prunus serotina*	Native	1	25	6.0	Improbable	Fair	Subject	Retain		No	Phototrophic lean east; healthy crown; tall trunk; vines present.
885B	Hop Hornbeam	*Ostrya virginiana*	Native	2	23.3+19.0	6.0	Improbable	Fair	Subject	Retain		No	Codominant stems with included bark; minor dieback of lower branches.
886B	Hop Hornbeam	*Ostrya virginiana*	Native	1	27	5.0	Improbable	Fair	Subject	Retain		No	Slight lean west; vines; minor dieback of lower branches.
887B	Black Cherry	*Prunus serotina*	Native	1	11	4.5	Improbable	Fair	Subject	Retain		No	Heavy phototrophic lean east; healthy crown.
888B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Retain		No	Necrotic foliage; suppressed on east.
889B	American Basswood	*Tilia americana*	Native	1	18	2.5	Improbable	Fair	Subject	Retain		No	Slight lean north in midstem; asymmetrical crown.
890B	American Basswood	*Tilia americana*	Native	1	25	4.5	Improbable	Fair	Subject	Retain		No	Necrotic foliage; insect herbivory; suppressed on east; heavy lean.
891B	American Basswood	*Tilia americana*	Native	1	36	2.5	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; necrosis; minor dieback of lower branches.
892B	Hop Hornbeam	*Ostrya virginiana*	Native	1	30	5.5	Improbable	Fair	Subject	Retain		No	Suppressed on southeast; vine burden; large crown.
893B	Hop Hornbeam	*Ostrya virginiana*	Native	1	14	3.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; healthy foliage.
894B	American Basswood	*Tilia americana*	Native	1	16	1.5	Improbable	Fair	Subject	Retain		No	Asymmetrical crown; necrosis; insect herbivory.
895B	American Beech	*Fagus grandifolia*	Native	1	24	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on south; beech bark disease; full crown but necrotic foliage.
896B	American Beech	*Fagus grandifolia*	Native	1	51	5.0	Improbable	Very Poor	Subject	Retain		No	90% dieback in crown; BBD; large dead branches; fungal fruiting body.
897B	American Basswood	*Tilia americana*	Native	1	10	3.0	Improbable	Fair	Subject	Retain		No	Suppressed on west; vines present; lean.
898B	American Beech	*Fagus grandifolia*	Native	1	38	5.0	Improbable	Poor	Subject	Retain		No	Peeling bark; decay at base; BBD; lower branches broken off.
899B	Hop Hornbeam	*Ostrya virginiana*	Native	1	20	3.0	Improbable	Fair	Subject	Retain		No	Generally suppressed; vines present; leans east.
900B	American Beech	*Fagus grandifolia*	Native	1	27	4.0	Improbable	Poor	Subject	Retain		No	Peeling bark and decay at base; BBD; asymmetrical crown; minor dieback of lower branches.
901B	American Basswood	*Tilia americana*	Native	1	15	3.5	Improbable	Fair	Subject	Retain		No	Necrotic foliage; insect herbivory; generally suppressed.
902B	Common Pear	*Pyrus communis*	Non-native	2	27.8+11	5.0	Improbable	Fair	Subject	Retain		No	Suppressed on east; dead lower branches.
903B	American Basswood	*Tilia americana*	Native	3	24.1+20.6+16.5	4.0	Improbable	Fair	Subject	Retain		No	Suppressed on east; dead lower branches.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
904B	Sugar Maple	*Acer saccharum*	Native	1	22	4.0	Improbable	Poor	Subject	Retain		No	Suppressed on east; large trunk wound; dieback; 40% deadwood.
905B	Sugar Maple	*Acer saccharum*	Native	1	21	4.5	Improbable	Good	Subject	Retain		No	Partially suppressed.
906B	Manitoba Maple	*Acer negundo*	Native	3	27.9+27+24.5	6.5	Improbable	Fair	Subject	Prune-Top	Grading	Yes	Wide spreading crown; asymmetrical towards southeast; dead lower branches.
907B	Common Apple	*Malus pumila*	Non-native	5	16.2+15+13.1	6.0	Improbable	Fair	Subject	Remove	Grading	No	Wide spreading crown; asymmetrical towards southeast; dead lower branches.
908B	Common Apple	*Malus pumila*	Non-native	2	20.9+12.6+11	5.0	Improbable	Fair	Subject	Remove	Grading	No	Wide, low spreading crown; dead lower branches.
909B	Common Pear	*Pyrus communis*	Non-native	1	18	4.5	Improbable	Poor	Subject	Remove	Grading	No	Tops of leaders dead; 40% deadwood.
910B	Common Pear	*Pyrus communis*	Non-native	2	22.5+16.5	3.0	Improbable	Good	Subject	Retain		No	Included bark around basal stem; healthy crown.
911B	American Basswood	*Tilia americana*	Native	1	17	3.0	Improbable	Fair	Subject	Retain		No	Some rusting of leaves; phototrophic growth; vine growth.
912B	American Basswood	*Tilia americana*	Native	1	14	3.0	Possible	Fair	Subject	Retain		No	Epicormic shoots; suppressed; necrotic foliage; dead second leader.
913B	American Basswood	*Tilia americana*	Native	1	11	2.0	Possible	Fair	Subject	Retain		No	Heavy lean west; defoliation; decaying trunk wound.
914B	American Basswood	*Tilia americana*	Native	2	14.4+14.2	2.5	Possible	Fair	Subject	Retain		No	Codominant stems; included bark; defoliation; necrotic foliage.
915B	Common Pear	*Pyrus communis*	Non-native	2	15.8+14.2	3.0	Improbable	Fair	Subject	Retain		No	Leaf spots; asymmetrical crown.
916B	Common Apple	*Malus pumila*	Non-native	3	21.5+13+12.2	4.0	Improbable	Fair	Subject	Retain		No	Fused stems; epicormic shoots; healthy crown.
917B	Manitoba Maple	*Acer negundo*	Native	2	25.3+10	3.5	Possible	Poor	Subject	Remove	Grading	No	Epicormic shoots; leans west; broken second leader.
919B	Common Pear	*Pyrus communis*	Non-native	2	19.5+18.4	4.5	Improbable	Fair	Subject	Remove	Grading	No	Epicormic shoots; phototrophic growth; dead lower branches.
920B	Manitoba Maple	*Acer negundo*	Native	2	42+19.8	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; spreading form.
921B	Common Apple	*Malus pumila*	Non-native	2	28.9+21	3.5	Improbable	Good	Subject	Remove	Grading	No	Dead lower branches; spreading form; healthy crown.
922B	Common Apple	*Malus pumila*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	No	Epicormic shoots; leaf rusting; sediment piled at base.
923B	Sugar Maple	*Acer saccharum*	Native	1	101	9.0	Improbable	Good	Subject	Retain		No	Large, tall crown; upright codominant trunks; 10% deadwood crown; small canopy gaps.
924B	American Basswood	*Tilia americana*	Native	2	15.5+15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Necrotic foliage; insect herbivory.
925B	Sugar Maple	*Acer saccharum*	Native	1	17	4.5	Improbable	Good	Subject	Transplant	Grading	No	Slightly suppressed on south.
926B	Manitoba Maple	*Acer negundo*	Native	4	40.6+35.6+31	7.5	Improbable	Fair	Subject	Remove	Grading	Yes	Wide branching crown; dead lower branches.
927B	White Ash	*Fraxinus americana*	Native	1	18	2.5	Possible	Poor	Subject	Remove	Grading	No	Vine present; advanced crown dieback; epicormic shoots.
928B	American Elm	*Ulmus americana*	Native	1	27	3.0	Probable	Dead	Subject	Remove	Grading	No	Vine present.
929B	Manitoba Maple	*Acer negundo*	Native	1	58	6.0	Probable	Poor	Subject	Remove	Grading	No	Advanced basal and trunk decay; conks; major limbs cracked/broken; healthy foliage.
932B	Sugar Maple	*Acer saccharum*	Native	1	29	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Trunk wound with reaction wood; spreading form; healthy crown.
933B	Manitoba Maple	*Acer negundo*	Native	1	42	5.0	Possible	Poor	Subject	Remove	Grading	No	Leaning west; epicormic shoots; fissured structural branch.
934B	Common Pear	*Pyrus communis*	Non-native	3	21.9+12.9+12	4.0	Improbable	Good	Subject	Remove	Grading	No	Included bark; epicormic shoots; leaf spots.
935B	Manitoba Maple	*Acer negundo*	Native	3	47.5+42.7+34.5	5.5	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; decay at stem union; spreading form; healthy crown.
936B	Common Pear	*Pyrus communis*	Non-native	3	33+23.5+15.3	3.5	Improbable	Fair	Subject	Remove	Grading	No	15% dieback; codominant stems; included bark; decay at stem union.
937B	White Ash	*Fraxinus americana*	**	1	15	2.0	Possible	Very Poor	Subject	Remove	Grading	No	EAB holes; 80% dieback; epicormic shoots; woodpecker holes.
990B	Sugar Maple	*Acer saccharum*	Native	1	56	4.5	Probable	Very Poor	Subject	Remove	Grading	No	Fruiting bodies at trunk base; sloughing bark; boring damage visible on bark; 85% dieback.
1178B	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.0	Possible	Poor	Subject	Remove	Grading	No	Sparse crown; multiple failures.
1179B	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Possible	Poor	Subject	Remove	Grading	No	Moderate lean; epicormic growth.
1183B	Black Locust	*Robinia pseudoacacia*	Non-native	1	28	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Forked crown; minor branch dieback; vines present.
1184B	Black Locust	*Robinia pseudoacacia*	Non-native	1	36	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1186B	Common Apple	*Malus pumila*	Non-native	1	23	4.0	Possible	Fair	Subject	Remove	Grading	No	Epicormic growth; minor dieback.
1187B	Common Apple	*Malus pumila*	Non-native	1	20	4.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; multiple failures.
1188B	Black Locust	*Robinia pseudoacacia*	Non-native	2	21.5+20.5	5.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; open wound with included bark; minor dieback.
1189B	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Epicormic growth; multiple failures.
1190B	Black Locust	*Robinia pseudoacacia*	Non-native	1	20	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Epicormic growth.
1191B	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	3.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; moderate lean; decay at base.
1193B	Black Locust	*Robinia pseudoacacia*	Non-native	2	21.8+21.0	7.0	Possible	Poor	Subject	Remove	Grading	No	Split below dbh with decay; epicormic growth; branch dieback.
1194B	Black Locust	*Robinia pseudoacacia*	Non-native	1	25	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Minor dieback; large branch failure;
1195B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	2.0	Probable	Dead	Subject	Remove	Grading	No	Dead crown mostly intact.
1196B	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	2.0	Probable	Dead	Subject	Remove	Grading	No	Dead crown partially intact.
1197B	Common Pear	*Pyrus communis*	Non-native	1	16	5.0	Improbable	Poor	Subject	Remove	Grading	No	60% deadwood.
1198B	Black Locust	*Robinia pseudoacacia*	Non-native	1	37	5.0	Improbable	Good	Subject	Remove	Grading	Yes	Full large crown.

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1199B	Black Locust	*Robinia pseudoacacia*	Non-native	1	37	4.0	Possible	Very Poor	Subject	Remove	Grading	No	Decay in crotch at base; dieback throughtout; large wound in mid stem.
1200B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; moderate lean.
1201B	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; moderate lean.
1202B	Black Locust	*Robinia pseudoacacia*	Non-native	1	37	5.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; latge branch failure; moderate lean.
1203B	Black Locust	*Robinia pseudoacacia*	Non-native	1	23	4.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; vines in canopy; decay at base.
1204B	Black Locust	*Robinia pseudoacacia*	Non-native	1	26	4.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; vines in canopy; decay at base.
1205B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Extensive dieback.
1206B	Manitoba Maple	*Acer negundo*	Native	1	14	2.0	Possible	Very Poor	Subject	Remove	Grading	No	epicormic growth throughtout; dieback.
1207B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.0	Possible	Poor	Subject	Remove	Grading	No	Open wound with decay; moderate lean; dieback in lower branches.
1208B	Black Walnut	*Juglans nigra*	Native	2	34.6+27.4	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; vines present.
1209B	Black Walnut	*Juglans nigra*	Native	1	25	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; vines present.
1210B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine burden; narrow crown.
1211B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Epicormic growth; dieback throughout.
1212B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	2.0	Probable	Dead	Subject	Remove	Grading	No	
1213B	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Minor dieback; forked crown.
1215B	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Minor dieback; slight lean.
1216B	Black Locust	*Robinia pseudoacacia*	Non-native	1	24	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Minor dieback; vine in crown; moderate lean.
1217B	Black Locust	*Robinia pseudoacacia*	Non-native	1	27	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Dead leader; minor dieback throughtout.
1218B	Black Locust	*Robinia pseudoacacia*	Non-native	1	27	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Moderate lean; epicormic growth.
1219B	Black Walnut	*Juglans nigra*	Native	1	21	4.5	Improbable	Good	Subject	Transplant	Grading	No	Lower vine present.
1220B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	1.0	Possible	Dead	Subject	Remove	Grading	No	Crown mostly lost.
1221B	Black Walnut	*Juglans nigra*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Tall tree with high crown.
1222B	Black Walnut	*Juglans nigra*	Native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines present half way up; 25% deadwood; wound at base growing through rock.
1224B	Black Walnut	*Juglans nigra*	Native	1	26	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Wound at base growing through rock; healthy crown.
1225B	Black Walnut	*Juglans nigra*	Native	1	27	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Dead lower branches; suppressed towards south.
1227B	Black Cherry	*Prunus serotina*	Native	2	29.1+27	4.0	Probable	Poor	Subject	Remove	Grading	No	Torn leader resulting in large unsealed trunk wound; included bark in remaining codominant stems; frass and decay at base.
1228B	Black Cherry	*Prunus serotina*	Native	1	13	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1229B	Black Cherry	*Prunus serotina*	Native	1	16	3.0	Improbable	Poor	Subject	Remove	Grading	No	Crown dieback; vine burden.
1231B	Manitoba Maple	*Acer negundo*	Native	2	26.4+25	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant leaders; decay at stem union; epicormic shoots.
1232B	Black Cherry	*Prunus serotina*	Native	1	39	4.0	Improbable	Poor	Subject	Remove	Grading	No	Union failure of codominant leaders; fungal fruiting bodies.
1233B	Black Cherry	*Prunus serotina*	Native	1	17	2.5	Improbable	Good	Subject	Remove	Grading	Yes	
1234B	Common Pear	*Pyrus communis*	Non-native	1	19	3.0	Improbable	Good	Subject	Remove	Grading	No	
1235B	Common Apple	*Malus pumila*	Non-native	6	25.5+24.4+16.3	5.0	Improbable	Fair	Subject	Remove	Grading	No	Vines present; dead lower branches.
1236B	Manitoba Maple	*Acer negundo*	Native	1	22	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy lean east.
1237B	Common Apple	*Malus pumila*	Non-native	1	29	2.5	Possible	Fair	Subject	Remove	Grading	No	Large wound at base of trunk with signs of decay.
1238B	Black Walnut	*Juglans nigra*	Native	1	20	3.0	Possible	Poor	Subject	Remove	Grading	No	40% dieback; bacterial ooze.
1302B	Eastern White Pine	*Pinus strobus*	Native	1	15	3.0	Improbable	Good	Subject	Transplant	Grading	No	Good crown structure.
1303B	Red Pine	*Pinus resinosa*	Native	1	16	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk; thin crown.
1304B	Eastern White Cedar	*Thuja occidentalis*	Native	1	11	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown.
1305B	Eastern White Cedar	*Thuja occidentalis*	Native	1	14	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure.
1306B	Eastern White Cedar	*Thuja occidentalis*	Native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed canopy.
1307B	Black Cherry	*Prunus serotina*	Native	1	26	3.0	Possible	Dead	Subject	Remove	Grading	No	No canopy; grew within rock wall
1308B	Common Apple	*Malus pumila*	Non-native	2	11.0+15.3	4.0	Improbable	Fair	Subject	Remove	Grading	No	Few dead branches; grape vine within canopy.
1309B	White Ash	*Fraxinus americana*	Native	1	27	5.0	Possible	Dead	Subject	Remove	Grading	No	Peeling bark; main branches attached but no leaves.
1310B	Common Apple	*Malus pumila*	Non-native	1	12	4.0	Improbable	Fair	Subject	Remove	Grading	No	Some defoliated branches; dead branches in lower canopy.
1311B	Black Pine	*Pinus nigra*	Non-native	1	22	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse lower crown; vine present.
1312B	Black Pine	*Pinus nigra*	Non-native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse lower crown; vine present.
1313B	White Spruce	*Picea glauca*	Native	1	17	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; trunk wound.
1314B	White Spruce	*Picea glauca*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sealed trunk wound; generally suppressed.
1315B	White Spruce	*Picea glauca*	Native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed.
1316B	Common Apple	*Malus pumila*	Non-native	1	11	2.0	Improbable	Fair	Subject	Remove	Grading	No	Heavily suppressed on west; epicormic shoots.
1317B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown; dead lower branches
1318B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavily suppressed on north; minor deadwood.
1319B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Thin canopy.
1320B	Eastern White Pine	*Pinus strobus*	Native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed canopy; dead branches in lower canopy.
1321B	Common Apple	*Malus pumila*	Non-native	2	11.2+10.9	5.0	Improbable	Fair	Subject	Remove	Grading	No	Suppressed lower canopy; aggressive epicormic growth.

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1322B	Common Apple	*Malus pumila*	Non-native	1	12	4.5	Improbable	Fair	Subject	Remove	Grading	No	Few dead branches; defoliated lower canopy.
1323B	Common Apple	*Malus pumila*	Non-native	2	30+19.9	4.0	Improbable	Fair	Subject	Remove	Grading	No	Few dead branches; defoliated lower canopy; upper canopy covered in grape vine.
1324B	White Ash	*Fraxinus americana*	Native	1	26	2.0	Possible	Dead	Subject	Remove	Grading	No	Tall snag covered in grape vine; peeling bark.
1325B	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1326B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1327B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1328B	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; vines present; healthy crown.
1330B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; asymmetrical crown towards Crawley; dead lower branches.
1331B	Scots Pine	*Pinus sylvestris*	Non-native	1	13	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed; dead lower branches; vine burden; small high crown.
1332B	Scots Pine	*Pinus sylvestris*	Non-native	1	13	1.5	Improbable	Poor	Subject	Remove	Grading	No	Heavily suppressed mid and lower crown.
1333B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards north; trunk wound with moderate response growth.
1334B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Generally suppressed.
1335B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; vine present; dead lower branches.
1336B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1337B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1338B	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1339B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Fair	Remove	#REF!	Grading	Yes	Few dead branches; epicormic growth.
1340B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1341B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1342B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1343B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1344B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1345B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1346B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1347B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; vine present; dead lower branches; leans northeast.
1348B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; vine present; dead lower branches; epicormic shoots.
1349B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; vine present; dead lower branches; epicormic shoots.
1350B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor dead lower branches.
1351B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor dead lower branches.
1352B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Lightly suppressed.
1355B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1356B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1357B	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1358B	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1359B	Black Locust	*Robinia pseudoacacia*	Non-native	2	10.6+10.4	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1360B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1361B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1362B	Black Locust	*Robinia pseudoacacia*	Non-native	1	14	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1363B	Black Locust	*Robinia pseudoacacia*	Non-native	2	11.2+9.8	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1364B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Woodbine up trunk;few dead branches; epicormic growth.
1365B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1366B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed towards north; codominant trunks with included bark.
1367B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	1.5	Improbable	Poor	Subject	Remove	Grading	No	Slightly suppressed; heavy vine burden; advanced crown dieback.

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1368B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; dead lower branches.
1369B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1370B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1371B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1372B	Common Apple	*Malus pumila*	Non-native	2	33.1+19.4	3.0	Improbable	Fair	Subject	Remove	Grading	No	Generally suppressed; epicormic shoots.
1373B	Black Locust	*Robinia pseudoacacia*	Non-native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1374B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1375B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Few dead branches; epicormic growth.
1376B	Eastern White Pine	*Pinus strobus*	Native	1	13	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical lower crown; few dead branches.
1377B	Eastern White Pine	*Pinus strobus*	Native	1	12	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical lower crown; woodbine up trunk;few dead branches.
1378B	Common Pear	*Pyrus communis*	Non-native	1	21	4.0	Improbable	Fair	Subject	Remove	Grading	No	Large crown; vine burden; lower trunk cavity.
1381B	Black Locust	*Robinia pseudoacacia*	Non-native	1	10	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; dead lower branches.
1382B	Black Locust	*Robinia pseudoacacia*	Non-native	1	15	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor dead lower branches.
1383B	Black Locust	*Robinia pseudoacacia*	Non-native	1	11	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed.
1384B	Scots Pine	*Pinus sylvestris*	Non-native	1	15	1.5	Possible	Dead	Subject	Remove	Grading	No	Most small branches lost.
1385B	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Slightly suppressed.
1386B	Scots Pine	*Pinus sylvestris*	Non-native	1	13	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Lower crown generally suppressed.
1387B	Scots Pine	*Pinus sylvestris*	Non-native	1	10	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Highly suppressed crown.
1388B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	2.0	Improbable	Poor	Subject	Remove	Grading	No	Heavily suppressed crown; dead lower branches
1389B	Black Locust	*Robinia pseudoacacia*	Non-native	1	17	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Minor dead lower branches
1390B	Eastern White Cedar	*Thuja occidentalis*	Native	1	18	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present throughout crown; slightly suppressed.
1391B	Ash	*Fraxinus sp.*	**	1	16	2.0	Possible	Very Poor	Subject	Remove	Grading	No	Vine present throughout crown; epicormic basal sprouts.
1393B	Black Cherry	*Prunus serotina*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Good crown structure; on slope
1394B	Black Cherry	*Prunus serotina*	Native	1	13	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Thin canopy; grape vine within canopy.
1395B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	2.0	Improbable	Poor	Subject	Remove	Grading	No	Vine present; heavily suppressed on west.
1396B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Poor	Subject	Remove	Grading	No	Vine present; heavily suppressed on west.
1397B	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; twisted trunk.
1398B	Scots Pine	*Pinus sylvestris*	Non-native	1	19	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavily suppressed on east; dead lower branches.
1399B	Scots Pine	*Pinus sylvestris*	Non-native	1	14	2.0	Improbable	Poor	Subject	Remove	Grading	No	Thin asymmetrical canopy.
1400B	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed.
1401B	Manitoba Maple	*Acer negundo*	Native	1	26	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Epicormic shoots; phototrophic growth south; suppressed; 5% dieback.
1402B	Manitoba Maple	*Acer negundo*	Native	1	18	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems; leaning south; dead lower branches; epicormic shoots.
1403B	Manitoba Maple	*Acer negundo*	Native	2	26.3+25.1	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Codominant stems split at base; epicormic shoots; slight lean north; dead lower branches.
1404B	Sugar Maple	*Acer saccharum*	Native	1	99	7.0	Probable	Fair	Subject	Remove	Grading	No	Large cavernous cavity at base of leader, with evident decay; healthy crown; spreading form with multiple leaders; several large dead structural branches.
1405B	Sugar Maple	*Acer saccharum*	Native	4	24.6+18.9+9.0+9.0	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Multiple stems from base; leaf rust; defoliation; somewhat suppressed.
1406B	Sugar Maple	*Acer saccharum*	Native	1	21	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Girdling root; sealed trunk wound; crowded branches; healthy crown.
1407B	Black Cherry	*Prunus serotina*	Native	1	14	2.5	Possible	Poor	Subject	Remove	Grading	No	50% dieback; trunk wound with decay; heavy vine growth; leans east.
1408B	Black Cherry	*Prunus serotina*	Native	1	25	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Failed leader; fruiting bodies; boring damage; remaining branches weighed down by vine growth.
1409B	Common Pear	*Pyrus communis*	Non-native	3	29+26.8+24.8	4.0	Probable	Fair	Subject	Remove	Grading	No	Large cavernous cavity at stem union; decay evident; spreading form; epicormic shoots; failed structural branch.
1410B	Scots Pine	*Pinus sylvestris*	Non-native	1	26	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; dead lower branches.
1411B	Scots Pine	*Pinus sylvestris*	Non-native	1	33	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Suppressed on north.
1412B	Scots Pine	*Pinus sylvestris*	Non-native	1	28	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed on north, crown asymmetrical.
1413B	Scots Pine	*Pinus sylvestris*	Non-native	1	19	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Narrow crown, heavily suppressed; sparse lower crown.
1414B	Scots Pine	*Pinus sylvestris*	Non-native	1	16	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed, asymmetrical towards south.
1415B	Scots Pine	*Pinus sylvestris*	Non-native	1	23	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed, asymmetrical towards south.
1416B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed, asymmetrical towards south.
1417B	Scots Pine	*Pinus sylvestris*	Non-native	1	20	3.0	Improbable	Poor	Subject	Remove	Grading	No	Heavily suppressed; 70% deadwood.
1418B	Scots Pine	*Pinus sylvestris*	Non-native	1	25	3.0	Improbable	Very Poor	Subject	Remove	Grading	No	Complete browning and death of needles; insect exit holes visible throughout.
1419B	Scots Pine	*Pinus sylvestris*	Non-native	1	15	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Armillaria root rot; decay and splitting of base; dead needles.
1420B	Scots Pine	*Pinus sylvestris*	Non-native	1	28	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; minor browning of needles.

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1421B	Scots Pine	*Pinus sylvestris*	Non-native	1	37	2.5	Possible	Good	Subject	Remove	Grading	Yes	Asymmetrical crown; woodpecker holes; minor browning of needles; fruiting bodies around base.
1422B	Scots Pine	*Pinus sylvestris*	Non-native	1	18	1.0	Improbable	Very Poor	Subject	Remove	Grading	No	Minimal live growth remaining.
1423B	Scots Pine	*Pinus sylvestris*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Curved stem; sapsucker holes; healthy crown.
1424B	Scots Pine	*Pinus sylvestris*	Non-native	1	22	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Included bark at structural branch union; healthy crown.
1425B	Common Pear	*Pyrus communis*	Non-native	1	11	2.0	Improbable	Poor	Subject	Remove	Grading	No	Crown dieback; early leaf drop.
1426B	Common Pear	*Pyrus communis*	Non-native	1	18	3.5	Improbable	Fair	Subject	Remove	Grading	No	One dead branch in upper crown; girdling of lead due to crossing limbs.
1427B	Manitoba Maple	*Acer negundo*	Native	3	14.2+12+10.3	3.5	Improbable	Good	Subject	Remove	Grading	Yes	Fused trunks with included bark; healthy crown.
1428B	Manitoba Maple	*Acer negundo*	Native	2	53.8+34.7	7.0	Possible	Fair	Subject	Remove	Grading	Yes	One large upright trunk; one fallen prostate trunk; decay and conks at base in between trunks; large full crown
1429B	Manitoba Maple	*Acer negundo*	Native	1	20	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Minor epicormic basal growth.
1430B	Manitoba Maple	*Acer negundo*	Native	3	57.8+43.8+39.1	11.0	Possible	Fair	Subject	Remove	Grading	Yes	Trunks leaning heavily; old and recent crotch failures; decay at base; epicormic shoots;
1431B	Common Pear	*Pyrus communis*	Non-native	1	20	2.5	Improbable	Poor	Subject	Remove	Grading	No	Advanced crown dieback; mostly sealed lower trunk wound.
1432B	Manitoba Maple	*Acer negundo*	Native	2	45+23.5	9.0	Possible	Poor	Subject	Remove	Grading	No	Larger trunk broken, various crotch failures; healthy foilage; significant decay at base; trunks prostate.
1433B	Scots Pine	*Pinus sylvestris*	Non-native	1	32	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Fungal growth on bark; seeping trunk wound; healthy crown.
1434B	Manitoba Maple	*Acer negundo*	Native	1	18	4.0	Possible	Poor	Boundary	Remove	Grading	No	Broken structural branch hanger; aphid infestation; epicormic shoots.
1435B	Common Pear	*Pyrus communis*	Non-native	1	34	3.0	Improbable	Fair	Subject	Remove	Grading	No	15% upper crown dieback; leaf spots; fused codominant stems.
1436B	Common Pear	*Pyrus communis*	Non-native	1	14	3.0	Improbable	Good	Subject	Remove	Grading	No	Leaf spots; spreading form; curved and fused stems.
1437B	Common Pear	*Pyrus communis*	Non-native	3	20.5+12.5+10	3.0	Improbable	Good	Subject	Remove	Grading	No	Codominant stems; included bark; fused stems; healthy crown; leaf spots.
1438B	Manitoba Maple	*Acer negundo*	Native	1	11	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Loss and decay of leaders; competing shrub growth; debris at base.
1439B	Manitoba Maple	*Acer negundo*	Native	3	20+17.7+16.5	6.5	Possible	Fair	Subject	Remove	Grading	Yes	One trunk mostly dead; decay at base; trunks leaning
1440B	Manitoba Maple	*Acer negundo*	Native	1	20	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy, 45degree lean north; epicormic shoots; dead lower branches.
1441B	Manitoba Maple	*Acer negundo*	Native	1	31	8.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy 60degree lean towards north, supported by lower branches; minor epicormic shoots.
1442B	Bitternut Hickory	*Carya cordiformis*	Native	1	14	3.0	Improbable	Good	Subject	Transplant	Grading	No	Good form; slightly suppressed.
1443B	Common Apple	*Malus pumila*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	No	Curved, fused stems; suppressed; 10% dieback.
1444B	White Ash	*Fraxinus americana*	Native	1	12		Possible	Very Poor	Subject	Remove	Grading	No	Epicormic growth only; EAB exit holes; bark loss
1445B	Manitoba Maple	*Acer negundo*	Native	1	27	4.0	Possible	Poor	Subject	Remove	Grading	No	Growing almost parallel to ground; epicormic growth; insect defoliation; crown dieback
1446B	American Basswood	*Tilia americana*	Native	1	12	3.0	Improbable	Poor	Subject	Remove	Grading	No	Sparse crown; vines present; insect herbivory; browned leaf edges.
1447B	Manitoba Maple	*Acer negundo*	Native	1	32	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Failed structural branch; 10% dieback; heavy lean.
1448B	Common Apple	*Malus pumila*	Non-native	1	30	4.0	Improbable	Fair	Subject	Remove	Grading	No	Asymmetrical spreading crown; epicormic shoots; dead lower branches.
1449B	Manitoba Maple	*Acer negundo*	Native	2	43.8+40.3	4.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant spreading stems; included bark; burls; minor decay at stem union.
1450B	White Ash	*Fraxinus americana*	Native	1	16	1.5	Possible	Very Poor	Subject	Remove	Grading	No	Only remaining live growth in basal sprouts; EAB.
1451B	Manitoba Maple	*Acer negundo*	Native	2	22+19.3	3.0	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; basal wound; epicormic shoots.
1452B	Manitoba Maple	*Acer negundo*	Native	2	19+18.7	2.5	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; dead second leader.
1453B	Manitoba Maple	*Acer negundo*	Native	1	25	2.0	Improbable	Poor	Subject	Remove	Grading	No	Lost leader; crown is one scaffold branch; brush and rock ple at base.
1454B	Bitternut Hickory	*Carya cordiformis*	Native	1	23	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Top leans heavily north; vine burden; early leaf drop.
1455B	American Basswood	*Tilia americana*	Native	1	15	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Browning leaves; sparse crown; dead lower branches; suppressed.
1456B	Manitoba Maple	*Acer negundo*	Native	1	35	9.0	Improbable	Fair	Subject	Remove	Grading	Yes	Leans north; large crown; dead lower branches
1457B	American Basswood	*Tilia americana*	Native	1	12	3.5	Improbable	Fair	Subject	Remove	Grading	Yes	Insect herbivory; minor leaf browning.
1458B	Black Locust	*Robinia pseudoacacia*	Non-native	1	21	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Good health; generally suppressed.
1459B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Poor	Subject	Remove	Grading	No	Sparse crown; generally suppressed; browning leaves; insect herbivory; small trunk wound.
1460B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Sparse crown; generally suppressed; insect herbivory.
1461B	American Basswood	*Tilia americana*	Native	1	11	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Generally suppressed; minor leaf browning and insect herbivory; sparse crown.

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1462B	Manitoba Maple	*Acer negundo*	Native	1	23	4.5	Improbable	Poor	Subject	Remove	Grading	No	Suppressed by Black Cherry; crown dieback; phototrophic growth with lean towards field; cavity in lower stem with decay
1463B	Manitoba Maple	*Acer negundo*	Native	1	30	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown towards north; broken leader and branches
1464B	Manitoba Maple	*Acer negundo*	Native	1	11	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Heavy phototrophic lean to south; epicormic shoots,
1465B	American Basswood	*Tilia americana*	Native	1	12	2.0	Possible	Poor	Subject	Remove	Grading	No	Phototrophic growth; adjacent tree branch leaning on crown; crown dieback; stem wound with evidence of decay
1466B	White Spruce	*Picea glauca*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Minor crown dieback; suppressed from above.
1467B	Manitoba Maple	*Acer negundo*	Native	1	12	2.5	Improbable	Good	Subject	Remove	Grading	Yes	Crown asymmetrical towards west.
1468B	Manitoba Maple	*Acer negundo*	Native	1	12	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Suppressed crown due to competition with adjacent tree; slight phototrophic lean south; evidence of decay where old branch pruned off
1469B	American Basswood	*Tilia americana*	Native	2	43.5+26	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large crown; codominant trunks with included bark; epicormic shoots
1470B	Manitoba Maple	*Acer negundo*	Native	1	48	6.0	Improbable	Good	Subject	Remove	Grading	Yes	Large crown; slightly suppressed on south.
1471B	Manitoba Maple	*Acer negundo*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Growing on slight angle; relatively vigorous crown; epicormic growth
1472B	American Basswood	*Tilia americana*	Native	1	39	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Early leaf drop; large crown; suppressed towards Crawley.
1473B	American Basswood	*Tilia americana*	Native	1	38	5.5	Improbable	Fair	Subject	Remove	Grading	Yes	Vine present; slight early leaf drop; insect herbivory.
1474B	Manitoba Maple	*Acer negundo*	Native	3	34.6+24.2+10.5	7.0	Improbable	Fair	Subject	Remove	Grading	Yes	Leaning trunks; vine present; one trunk with fruiting bodies; minor deadwood.
1475B	White Spruce	*Picea glauca*	Native	1	11	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly suppressed on northeast.
1476B	American Basswood	*Tilia americana*	Native	4	41.1+39.9+38.3	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Large crown; minor insect herbivory.
1477B	Black Cherry	*Prunus serotina*	Native	1	95	3.5	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
1478B	Manitoba Maple	*Acer negundo*	Native	1	34	7.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy phototrophic lean north, almost 65%; basal wound.
1479B	Manitoba Maple	*Acer negundo*	Native	1	28	6.0	Possible	Fair	Subject	Remove	Grading	Yes	Trunk wound at 1m with decay and bulging response growth; leans south.
1480B	Manitoba Maple	*Acer negundo*	Native	1	41	7.5	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical towards south; long arching lean.
1481B	American Basswood	*Tilia americana*	Native	1	10	1.5	Improbable	Poor	Subject	Remove	Grading	No	Browning leaves; crown dieback.
1482B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	1.5	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; dead lower branches.
1483B	Scots Pine	*Pinus sylvestris*	Non-native	1	16	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Some necrotic foliage.
1484B	Scots Pine	*Pinus sylvestris*	Non-native	1	10	1.5	Improbable	Fair	Subject	Remove	Grading	Yes	Some necrotic foliage; suppressed crown.
1485B	Eastern White Pine	*Pinus strobus*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form; vine present.
1486B	Eastern White Pine	*Pinus strobus*	Native	1	15	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown.
1487B	Eastern White Pine	*Pinus strobus*	Native	1	13	2.0	Possible	Dead	Subject	Remove	Grading	No	Crown mostly intact.
1488B	Sugar Maple	*Acer saccharum*	Native	1	14	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Good form.
1492B	Common Apple	*Malus pumila*	Non-native	1	21	3.5	Possible	Poor	Subject	Remove	Grading	No	Branch dieback; fused at base with smaller stem; multiple failures.
1547B	Sugar Maple	*Acer saccharum*	Native	1	84	10.0	Possible	Fair	Subject	Remove	Grading	Yes	codominant leaders, 1 scaffold branch recently lost and tear against adjacent scaffold, remaining scaffold branches with good crown
1548B	Black Cherry	*Prunus serotina*	Native	1	15	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	crown on 90 degree angle due to competition for sunlight, shade pruning
1549B	Sugar Maple	*Acer saccharum*	Native	2	18.8+11.7	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Slightly asymmetrical due to competition with adjacent trees; minor crown dieback
1550B	Sweet Cherry	*Prunus avium*	Non-native	1	22	3.0	Improbable	Fair	Subject	Remove	Grading	No	grapevine entering canopy, growing out of rock pile but stem self corrects, shade pruning
1551B	American Basswood	*Tilia americana*	Native	1	12	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	Lower scaffold dieback due to light competition; some crown dieback
1552B	American Basswood	*Tilia americana*	Native	1	11	2.0	Improbable	Good	Subject	Remove	Grading	Yes	slight lean, competition for sunlight, minor defoliation
1553B	American Basswood	*Tilia americana*	Native	1	10	2.0	Probable	Very Poor	Subject	Remove	Grading	No	95% dieback, several cavities show rot throughout stem, insect damage
1554B	American Elm	*Ulmus americana*	Native	1	15		Probable	Dead	Subject	Remove	Grading	No	Bark loss; crown leaning on adjacent tree
1555B	Manitoba Maple	*Acer negundo*	Native	2	32.0+24.8	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	epicormic growth numerous, codominant stems, stems grow on 45 degree angle, minor defoliation
1556B	American Basswood	*Tilia americana*	Native	1	11	2.5	Improbable	Fair	Subject	Remove	Grading	Yes	early defoliation, uneven crown
1557B	American Basswood	*Tilia americana*	Native	1	10	2.5	Improbable	Poor	Subject	Remove	Grading	No	Crown suppressed; relatively extensive crown dieback; defoliation
1558B	Sugar Maple	*Acer saccharum*	Native	1	15	4.0	Improbable	Good	Subject	Remove	Grading	Yes	Uneven crown due to competition for sunlight with adjacent Basswood, very small wound completely calloused.

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1559B	American Basswood	*Tilia americana*	Native	2	11.4+8.2	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	On verge of poor; suppressed; crown dieback and defoliation
1560B	Manitoba Maple	*Acer negundo*	Native	2	25.7+19.6	6.0	Improbable	Fair	Subject	Remove	Grading	Yes	Included bark between stem unions; light pruning dieback; relatively full crown
1561B	Manitoba Maple	*Acer negundo*	Native	5	14.5+12.4+10.2	6.0	Possible	Poor	Subject	Remove	Grading	No	codominant stems with included bark, stems growing on 45 degree angle, decay in 1st stem, crack through 2nd stem, competition for sunlight
1562B	American Basswood	*Tilia americana*	Native	2	16.2+14.3	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	codominant stems with included bark, phototrophic growth, early defoliation
1563B	Manitoba Maple	*Acer negundo*	Native	1	16	3.0	Possible	Poor	Subject	Remove	Grading	No	Wound with calloused tissue in midstem; branch dieback; broken top.
1564B	Manitoba Maple	*Acer negundo*	Native	1	13	2.0	Possible	Poor	Subject	Remove	Grading	No	Smaller second stem; epicormic growth; branch dieback.
1566B	Manitoba Maple	*Acer negundo*	Native	1	36	4.0	Possible	Poor	Subject	Remove	Grading	No	Cavity in stem; branch dieback; epicormic growth.
1567B	Manitoba Maple	*Acer negundo*	Native	1	47	5.0	Possible	Poor	Subject	Remove	Grading	No	Dead second stem; epicormic growth; cavity at base.
1568B	Manitoba Maple	*Acer negundo*	Native	2	37.6+36	5.0	Probable	Very Poor	Subject	Remove	Grading	No	Second stem has split and failed; epicormic growth; branch dieback.
1569B	Eastern White Pine	*Pinus strobus*	Native	1	10	1.0	Improbable	Good	Subject	Remove	Grading	Yes	
1570B	Black Cherry	*Prunus serotina*	Native	1	11	1.0	Possible	Fair	Subject	Remove	Grading	Yes	Heavy lean; full crown.
1571B	Scots Pine	*Pinus sylvestris*	Non-native	1	12	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines in crown; row planting.
1572B	Common Apple	*Malus pumila*	Non-native	2	14.3+13.6	2.0	Possible	Poor	Subject	Remove	Grading	No	Branch dieback; decay throughout.
1573B	Scots Pine	*Pinus sylvestris*	Non-native	1	11	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Competing with buckthorn; poor form.
1574B	Scots Pine	*Pinus sylvestris*	Non-native	1	24	1.0	Improbable	Fair	Subject	Remove	Grading	Yes	Vines overtaking crown; competing with buckthorn.
1972B	Black Cherry	*Prunus serotina*	Native	1	16	2.5	Improbable	Fair	Subject	Retain		No	Suppressed towards south; leaning south; vine burden; sparse crown.
601C	Sugar Maple	*Acer saccharum*	Native	1	16	2.5	Improbable	Fair	Subject	Retain		No	Epicormic growth; few scaffold branches; slight asymmetrical crown.
602C	American Basswood	*Tilia americana*	Native	4	41.9+31.5+24.6+22.4	5.5	Probable	Poor	Subject	Retain		No	Diseased leaves; decay at base from stem failure; frass; several cavities and broken scaffold branches.
603C	White Ash	*Fraxinus americana*	Native	1	11	2.0	Improbable	Very Poor	Subject	Retain		No	Aggressive basal shoots; little foilage in canopy.
604C	Black Cherry	*Prunus serotina*	Native	1	15	3.0	Improbable	Fair	Subject	Retain		No	10% dieback; minor rusting and defoliation of leaves.
605C	White Ash	*Fraxinus americana*	Native	1	15	2.0	Improbable	Dead	Subject	Retain		No	Some epicormic growth and basal shoots; branches defoliated.
606C	Black Cherry	*Prunus serotina*	Native	1	12	2.5	Improbable	Fair	Subject	Retain		No	Epicormic shoots; leaf rust; 5% dieback.
607C	Sugar Maple	*Acer saccharum*	Native	1	11	3.0	Improbable	Fair	Subject	Retain		No	Double stems, smaller under 10cm; some epicormic growth; few defoliated branches.
608C	Common Apple	*Malus pumila*	Non-native	1	32	1.0	Improbable	Fair	Subject	Retain		No	Twisting leaders; epicormic shoots; dead second leader.
609C	Common Pear	*Pyrus communis*	Non-native	1	16	3.0	Improbable	Fair	Subject	Retain		No	Some poor branch attachment; few dead branches.
610C	American Basswood	*Tilia americana*	Native	1	17	2.5	Improbable	Fair	Subject	Retain		No	Diseased leaves; vine growth; dead lower branches.
611C	Common Pear	*Pyrus communis*	Non-native	2	22.2+21.0	4.0	Improbable	Poor	Subject	Retain		No	Aggressive pistol butt; one stem growing ontop of other; wounds at base; few dead branches.
612C	American Basswood	*Tilia americana*	Native	4	19.2+15.9+13.8+12.2+	3.5	Possible	Fair	Subject	Retain		No	Debris at base; fused stems; diseased and defoliated leaves.
613C	American Basswood	*Tilia americana*	Native	1	42	5.0	Imminent	Very Poor	Subject	Prune-Top	Hazard	No	30% dieback; 45 degree lean west; diseased leaves; major decay around large basal wound; cavities; broken branches.
614C	American Basswood	*Tilia americana*	Native	1	30	4.0	Probable	Poor	Subject	Prune-Top	Hazard	No	Large wound at DBH, rotted through core; defoliated upper canopy; insect damage to majority of leaves.
615C	American Basswood	*Tilia americana*	Native	11	33.9+19.8+18.5	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Red marking paint; 11 stems over 10cm; epicormic growth; evidence of branch failures; insect damage on leaves.
616C	Sugar Maple	*Acer saccharum*	Native	1	15	3.0	Improbable	Good	Subject	Remove	Grading	Yes	Scraped bark from wildlife; vine growth; pressure from leaning neighbouring shrub.
617C	Black Cherry	*Prunus serotina*	Native	1	24	4.5	Improbable	Fair	Subject	Remove	Grading	Yes	Growing through old rock wall; large dead scaffold branch with fruiting bodies; few dead branches; overall full canopy.
618C	Sugar Maple	*Acer saccharum*	Native	1	14	2.0	Improbable	Good	Subject	Remove	Grading	Yes	Dead lower branches; scraped bark from wildlife; healthy crown.
619C	American Basswood	*Tilia americana*	Native	2	16.6+14.8	4.0	Improbable	Fair	Subject	Remove	Grading	Yes	Asymmetrical crown; growing through old rock wall; few dead branches; insrct damage on leaves.
620C	American Basswood	*Tilia americana*	Native	1	19	2.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; debris around base; vine growth.
621C	American Basswood	*Tilia americana*	Native	1	20	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Diseased leaves; debris at base; slight lean; vine growth.
622C	American Basswood	*Tilia americana*	Native	2	32.2+30.9	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Growing through old rock wall; vines throughtout canopy; insect damage on leaves; few dead branches.

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623C	Manitoba Maple	*Acer negundo*	Native	3	39.3+34.4+34.3	5.0	Probable	Poor	Subject	Retain		No	Spreading form wuth overextended branches; major wound and basal decay at base of leader; dead scaffold branches; frass.
624C	American Basswood	*Tilia americana*	Native	1	13	2.0	Improbable	Fair	Subject	Retain		No	Diseased leaves; included bark; small woodpecker holes.
625C	Common Pear	*Pyrus communis*	Non-native	2	13.3+13.0	2.0	Improbable	Fair	Subject	Retain		No	Dead branches in lower canopy; full upper canopy.
626C	Common Pear	*Pyrus communis*	Non-native	1	16	2.5	Improbable	Fair	Subject	Retain		No	Pistol butt with maturing basal shoots; several dead young stems at base.
627C	American Basswood	*Tilia americana*	Native	5	21.0+16.2+36	4.0	Improbable	Fair	Subject	Retain		No	Few dead branches; few broken branches; heavy insect damage on leaves.
628C	American Basswood	*Tilia americana*	Native	2	37.5+33.4	4.5	Possible	Poor	Subject	Retain		No	Sprawling overextended branches; dead third leader with basal decay; self corrected lean of smaller stem; diseased leaves; sealed wounds; broken branches.
629C	American Basswood	*Tilia americana*	Native	6	29.6+22.5+28.2	7.0	Improbable	Fair	Subject	Retain		No	Numerous stems from one tree; few overlapping branches; heavy insect damage on leaves.
630C	American Basswood	*Tilia americana*	Native	2	27.7+16.2	3.5	Possible	Poor	Subject	Retain		No	Diseased, heavily defoliated leaves; codominant leaders; loss of main lateral branch.
631C	American Basswood	*Tilia americana*	Native	1	24	4.0	Possible	Fair	Subject	Retain		No	Twisted trunk; evidence of branch failures; few dead branches; heavy insect damage on leaves.
632C	Hop Hornbeam	*Ostrya virginiana*	Native	3	23.9+22.8+15.8	4.0	Improbable	Good	Subject	Retain		No	Sprawling form; healthy crown; debris at branch union.
633C	Common Pear	*Pyrus communis*	Non-native	5	20.2+15.0+17.3	7.0	Possible	Fair	Subject	Retain		No	Scaffold branches; all stems twisted into one another; evidence of numerous branch failures; poor branch attachment.
634C	Common Pear	*Pyrus communis*	Non-native	8	38.6+29.3+24.3	6.5	Probable	Fair	Subject	Retain		No	Crowded codominant stems; basal splitting and death of stem, likely about to fall; frass; healthy crown.
635C	Common Pear	*Pyrus communis*	Non-native	4	24+18+13+12	4.0	Possible	Poor	Subject	Retain		No	Twisted stems; vigorous epicormic shoots; included bark; several dead stems.
636C	Common Pear	*Pyrus communis*	Non-native	1	15	2.0	Improbable	Fair	Subject	Retain		No	Lean in upper canopy; few dead branches.
637C	Common Pear	*Pyrus communis*	Non-native	1	14	3.0	Improbable	Good	Subject	Retain		No	Codominant stems; included bark; few leaves with blotches.
638C	Common Pear	*Pyrus communis*	Non-native	1	23	3.0	Improbable	Good	Subject	Retain		No	Mature shoot becoming second leader; included bark; healthy crown.
639C	Common Pear	*Pyrus communis*	Non-native	1	17	3.0	Improbable	Fair	Subject	Retain		No	Good crown structure; suppressed by buckthorn.
640C	Common Pear	*Pyrus communis*	Non-native	1	17	3.0	Probable	Very Poor	Subject	Retain		No	Numerous branch shoots all with aggressive epicormic growth; numerous branch failures; messy canopy;peeling bark; numerous wounds.
641C	Common Pear	*Pyrus communis*	Non-native	1	15	2.5	Improbable	Fair	Subject	Retain		No	Numerous small stems; poor branch attachment; full canopy.
642C	Common Apple	*Malus pumila*	Non-native	1	23	3.0	Improbable	Good	Subject	Retain		No	Some crown suppression from vine growth.
643C	Common Apple	*Malus pumila*	Non-native	1	33	4.0	Possible	Fair	Subject	Remove	Grading	No	Crowded branches; extensive vine growth over crown; codominant stems; included bark.
644C	Common Pear	*Pyrus communis*	Non-native	4	25.1+22.5+18.2+14.3	3.5	Improbable	Fair	Subject	Remove	Grading	No	Asymmetrical crown; aggressive epicormic growth; stems with multiple leades; growing on slight angle.
645C	Common Apple	*Malus pumila*	Non-native	1	16	3.0	Probable	Poor	Subject	Remove	Grading	No	Failed previously and self corrected; trunk parallel to ground; suckers growing along stem; leaning south.
646C	Common Apple	*Malus pumila*	Non-native	1	18	5.0	Possible	Fair	Subject	Remove	Grading	No	Growing on a lean towards field; lots of epicormic growth.
647C	American Basswood	*Tilia americana*	Native	2	33.1+12.2	4.0	Improbable	Poor	Subject	Remove	Grading	No	Diseased leaves; extensive defoliation; vigorous epicormic shoots at base
648C	American Basswood	*Tilia americana*	Native	1	17	3.0	Probable	Fair	Subject	Remove	Grading	No	Leaning north; supported by vine growth; twisting branches; suppressed crown.
649C	American Beech	*Fagus grandifolia*	Native	2	31.8+31.2	2.0	Probable	Very Poor	Subject	Remove	Grading	No	Lost majority of branches; one remaning branch as foilage; peeling bark; lost limbs; decayed core; wilderness cavities; second stem snag.
650C	Common Apple	*Malus pumila*	Non-native	1	19	2.0	Probable	Dead	Subject	Remove	Grading	No	Leaning south; trunk parallel to ground; root wounds; twisting and broken branches.
651C	Common Pear	*Pyrus communis*	Non-native	1	24	3.0	Improbable	Fair	Subject	Remove	Grading	No	Grape through out canopy; asymmetrical crown; double leader; epicormic growth; defoliated branches in lower canopy.
652C	Common Apple	*Malus pumila*	Non-native	1	24	4.0	Possible	Good	Subject	Remove	Grading	No	Trunk twisting slightly; phototrophic growth; epicormic shoots; heavy vine growth.
653C	Common Pear	*Pyrus communis*	Non-native	1	20	7.0	Probable	Poor	Subject	Remove	Grading	No	Growing within old fence; rocks and rubble on basr; heavy lean; tangled branches.
654C	Sweet Cherry	*Prunus avium*	Non-native	1	14	1.0	Probable	Dead	Subject	Remove	Grading	No	Wound at base; heavy vine burden.
655C	Sweet Cherry	*Prunus avium*	Non-native	1	27	1.0	Imminent	Dead	Subject	Remove	Grading	No	Peeling bark; rotten to core;signs of wildlife feeding holes and cavities; broken branches.

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656C	Black Cherry	*Prunus serotina*	Native	2	35.9+33.1	4.5	Possible	Fair	Subject	Remove	Grading	Yes	Codominant stems; included bark; dead scaffold branches with reaction wood; sealed wounds from broken branches.
657C	American Basswood	*Tilia americana*	Native	2	54.5+13.0	5.0	Possible	Very Poor	Subject	Remove	Grading	No	Large cavity wound from base to crown up trunk; rotted core; evidence of large branch failures; heavy insect damage on leaves.
658C	Black Cherry	*Prunus serotina*	Native	1	42	3.5	Possible	Fair	Subject	Remove	Grading	Yes	Large, poorly sealed basal wounds; dead scaffold branches.
659C	Black Cherry	*Prunus serotina*	Native	1	72	5.0	Possible	Fair	Subject	Remove	Grading	Yes	Evidence of large branch failures; two leaders; some defoilation.
660C	Black Cherry	*Prunus serotina*	Native	1	20	3.0	Probable	Poor	Subject	Remove	Grading	No	Extensive basal decay; loosening bark; boring holes; dead lower branches; pressure from leaning neighbouring tree.
661C	Manitoba Maple	*Acer negundo*	Native	1	28	3.0	Imminent	Very Poor	Subject	Remove	Grading	No	Uprooted; extensive watersprouting throughout stem; laying on ground.
662C	Black Locust	*Robinia pseudoacacia*	Non-native	2	11.5+16.2	4.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; multiple open dark face scars; decay at base.
663C	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	2.0	Probable	Dead	Subject	Remove	Grading	No	Minimal crown remains.
664C	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	3.0	Possible	Very Poor	Subject	Remove	Grading	No	Epicormic growth; extensive dieback.
665C	Black Walnut	*Juglans nigra*	Native	1	27	5.0	Improbable	Poor	Subject	Remove	Grading	No	Nectria canker throughout; open growth characteristics.
666C	Common Apple	*Malus pumila*	Non-native	1	41	6.0	Possible	Poor	Subject	Remove	Grading	No	Epicormic growth; open growth characteristics; minor branch dieback.
667C	Black Locust	*Robinia pseudoacacia*	Non-native	1	18	4.0	Possible	Poor	Subject	Remove	Grading	No	Multiple failures; dead lower branches; decay within.
668C	Black Locust	*Robinia pseudoacacia*	Non-native	2	21.5+37.6	2.0	Possible	Poor	Subject	Remove	Grading	No	Decay at base; branch dieback throughout.
669C	Black Locust	*Robinia pseudoacacia*	Non-native	1	19	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Minor branch dieback; decay at branch unions.
670C	Black Locust	*Robinia pseudoacacia*	Non-native	1	14		Imminent	Very Poor	Subject	Remove	Grading	No	Failed stem; epicormic growth only.
671C	Black Locust	*Robinia pseudoacacia*	Non-native	1	33	4.0	Probable	Poor	Subject	Remove	Grading	No	Codominant crotch split at 1.5m; 50% deadwood; suppressed crown.
672C	Black Locust	*Robinia pseudoacacia*	Non-native	1	16	1.5	Probable	Dead	Subject	Remove	Grading	No	Most of crown lost.
673C	Manitoba Maple	*Acer negundo*	Native	3	52+47.7+17.9	8.0	Possible	Fair	Subject	Remove	Grading	Yes	Leaning codominant trunks; vigorous epicormic shoots; swollen at base over stone fence.
674C	Sugar Maple	*Acer saccharum*	Native	1	54	7.0	Improbable	Good	Subject	Remove	Grading	Yes	Healthy crown, minor deadwood.
675C	Black Locust	*Robinia pseudoacacia*	Non-native	1	13	3.0	Improbable	Poor	Subject	Remove	Grading	No	Vine burden; trunk wound; 30% deadwood.
678C	Black Locust	*Robinia pseudoacacia*	Non-native	1	32	5.0	Possible	Poor	Subject	Remove	Grading	No	Decay at base; multiple failures; branch dieback throughout.
41X	Common Apple	*Malus pumila*	Non-native	2	15.3+14.1	2.0	Improbable	Poor	Subject	Remove	Grading	No	Multiple dead branches; decay throughout.
584X	Manitoba Maple	*Acer negundo*	Native	1	31	4.5	Improbable	Good	Subject	Remove	Grading	Yes	Leans east; healthy crown.
590X	Eastern White Pine	*Pinus strobus*	Native	1	29	3.0	Improbable	Fair	Subject	Remove	Grading	Yes	Scar in upper stem; minor branch dieback.
NT1	Manitoba Maple	*Acer negundo*	Native	4	19+18.5+15+12	5.0	Improbable	Fair	Subject	Remove	Grading	Yes	Clonal growth; small dead branches.
NT2	Scots Pine	*Pinus sylvestris*	Non-native	1	34	4.5	Possible	Dead	Boundary	Remove	Grading	No	Crown intact.
NT3	Scots Pine	*Pinus sylvestris*	Non-native	1	34	4.0	Probable	Dead	Boundary	Remove	Grading	No	Dead crown.
NT4	Scots Pine	*Pinus sylvestris*	Non-native	1	32	4.0	Possible	Dead	Subject	Remove	Grading	No	Crown intact.
NT5	Scots Pine	*Pinus sylvestris*	Non-native	1	28	3.0	Probable	Dead	Subject	Remove	Grading	No	Dead.
NT6	Scots Pine	*Pinus sylvestris*	Non-native	1	17	3.0	Probable	Dead	Subject	Remove	Grading	No	Dead.
NT7	White Spruce	*Picea glauca*	Native	1	24	3.5	Improbable	Good	Boundary	Remove	Grading	Yes	Minor lower crown dieback.
NT8	Scots Pine	*Pinus sylvestris*	Non-native	1	24	3.5	Improbable	Fair	Boundary	Remove	Grading	Yes	Lower crown dieback.
NT9	Scots Pine	*Pinus sylvestris*	Non-native	1	21	2.5	Probable	Dead	Boundary	Remove	Grading	No	Dead.
NT10	Scots Pine	*Pinus sylvestris*	Non-native	1	25	2.5	Probable	Dead	Boundary	Remove	Grading	No	Dead.
NT11	Scots Pine	*Pinus sylvestris*	Non-native	1	18	3.0	Possible	Very Poor	Boundary	Remove	Grading	No	5% remaining crown.
NT12	Norway Spruce	*Picea abies*	Non-native	1	28	4.0	Improbable	Good	Boundary	Remove	Grading	Yes	Slightly sparse crown.
NT13	White Spruce	*Picea glauca*	Native	1	20	4.0	Improbable	Fair	Boundary	Remove	Grading	Yes	Self pruning.
NT14	Norway Spruce	*Picea abies*	Non-native	1	35	4.5	Improbable	Good	Boundary	Remove	Grading	Yes	Minor dieback.
NT15	Silver Maple	*Acer saccharinum*	Native	1	42	6.0	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; clearance pruned above driveway.
NT16	Silver Maple	*Acer saccharinum*	Native	1	57	6.5	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor deadwood.
NT17	Silver Maple	*Acer saccharinum*	Native	1	43	6.5	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor epicormic shoots; minor deadwoo.
NT18	Silver Maple	*Acer saccharinum*	Native	1	66	7.0	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor epicormic shoots; minor deadwoo.
NT19	Silver Maple	*Acer saccharinum*	Native	1	34	5.0	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor epicormic shoots; minor deadwoo.
NT20	Norway Maple	*Acer platanoides*	Non-native	1	31	6.0	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor deadwood.
NT21	Manitoba Maple	*Acer negundo*	Native	1	40	6.0	Improbable	Fair	Off-property	Retain		No	Full large crown; minor epicormic shoots; minor deadwood; estimated dbh; leans west.

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
NT22	Norway Maple	*Acer platanoides*	Non-native	1	43	6.5	Improbable	Fair	Boundary	Remove	Grading	Yes	Full large crown; minor epicormic shoots; minor deadwood; minor epicormic shoots; deep frost crack; old leader removed for driveway clearance.
NT23	Silver Maple	*Acer saccharinum*	Native	1	61	7.0	Improbable	Good	Boundary	Remove	Grading	Yes	Full large crown; minor epicormic shoots; minor deadwood; minor epicormic shoots; old branch removed for driveway clearance.
NT24	European Larch	*Larix decidua*	Non-native	1	28	3.0	Improbable	Fair	Off-property	Retain		No	Light pruning; minor vines.
NT25	Black Cherry	*Prunus serotina*	Native	1	35	5.0	Improbable	Good	Off-property	Retain		No	Good form and health.
NT26	American Basswood	*Tilia americana*	Native	1	11	1.0	Improbable	Fair	Boundary	Retain		No	Growing on slope; dieback of lower branches; one small leader less than 10cm dbh.
NT27	Eastern White Pine	*Pinus strobus*	Native	1	21	2.5	Improbable	Good	Subject	move-Grind stu	Grading	Yes	Self-corrected upper stem; suppressed.
NT28	Eastern White Pine	*Pinus strobus*	Native	1	30	3.0	Improbable	Good	Off-property	Retain		No	Suppressed; vine growth; minor dieback.
NT29	Eastern White Pine	*Pinus strobus*	Native	1	22	2.0	Improbable	Good	Boundary	move-Grind stu	Grading	Yes	Suppressed; vine growth.
NT30	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Good	Off-property	Retain		No	Suppressed; asymmetrical crown; vine growth.
NT31	Eastern White Pine	*Pinus strobus*	Native	1	18	2.0	Possible	Dead	Off-property	Remove	Grading	No	Insect galleries; extensive woodpecker damage and vine growth.
NT32	Common Apple	*Malus pumila*	Non-native	2	22+20.5	5.0	Improbable	Fair	Off-property	Retain		No	Suppressed towards Maltby Rd; asymmetrical crown; vine present.
NT33	Common Apple	*Malus pumila*	Non-native	2	11.8+9	5.0	Possible	Fair	Off-property	Retain		No	Trunk wound; twisted stems; heavy lean towards field; vine growth.
NT34	Eastern White Pine	*Pinus strobus*	Native	1	20	3.5	Improbable	Fair	Off-property	Retain		No	Suppressed towards Maltby Rd; dead lower branches; vine present.
NT35	Eastern White Pine	*Pinus strobus*	Native	1	22	3.0	Improbable	Good	Off-property	Retain		No	Vine growth; healthy crown; somewhat suppressed from neighbouring tree growth.
NT36	Eastern White Pine	*Pinus strobus*	Native	1	19	3.5	Improbable	Fair	Off-property	Retain		No	Suppressed towards Maltby Rd; dead lower branches; vine present.
NT37	Eastern White Pine	*Pinus strobus*	Native	1	24	3.5	Improbable	Good	Off-property	Retain		No	Excessive sap seepage; overextended lower branch; vine growth.
NT38	Eastern White Pine	*Pinus strobus*	Native	1	27	4.0	Improbable	Good	Off-property	Retain		No	Slightly sparse crown; vine present.
NT39	Hawthorn species	*Crataegus sp.*	**	1	12	3.0	Improbable	Fair	Off-property	Retain		No	Suppressed towards Maltby Rd; vine present.
NT40	Eastern White Pine	*Pinus strobus*	Native	1	29	3.5	Improbable	Good	Off-property	Retain		No	Vine growth; healthy crown; suppressed.
NT41	Black Cherry	*Prunus serotina*	Native	1	47	5.5	Improbable	Fair	Off-property	Retain		No	Trunk wounds around base; large crown; dead lower branches
NT42	White Spruce	*Picea glauca*	Native	1	31	3.5	Improbable	Good	Off-property	Retain		No	Suppressed; excessive vine growth; self pruning.
NT43	Common Apple	*Malus pumila*	Non-native	4	27.8+17.8+16.9+11.3	3.0	Improbable	Good	Off-property	Retain		No	Twisted stems with lower stem wounds; dead basal sprouts; one dead stem.
NT44	Common Apple	*Malus pumila*	Non-native	2	20.7+16.2	5.5	Improbable	Fair	Off-property	Retain		No	Suppressed towards Maltby Rd; vines present.

APPENDIX II
Conditions of Assessment

Conditions of Tree Assessment

Limitations

This tree inventory and assessment is based on the circumstances and observations by Natural Resource Solutions Inc. (NRSI) as they existed at the time of the site inspection(s) of the Client's Property as described in this report (the "Property") and the trees situated thereon, and upon information provided by the Client to NRSI. The opinions in this assessment are given based on observations made and using generally accepted professional judgment, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only at the date any such observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by NRSI as to the length of the validity of the results, observations, recommendations and analysis contained within this assessment. As a result, the Client shall not rely upon this assessment, save and except for representing the circumstances and observations at the date of site inspection(s), and the analysis and recommendations made in relation to the proposed undertaking. It is recommended that the inventoried trees discussed in this assessment should be re-assessed periodically, where required (i.e., after 2 years).

Further Services

Neither NRSI, nor any assessor employed or retained by NRSI (the "Assessor") for the purpose of preparing or assisting in the preparation of this assessment shall be required to provide any further consultation or services to the Client including, without limitation, acting as an expert witness or witness in any court in any jurisdiction unless the Client has first made specific arrangements with respect to such further services, including providing payment of the Assessor's regular hourly billing fees.

NRSI accepts no responsibility for the implementation of all or any part of this report, unless specifically requested to examine the implementation of such activities recommended herein. Any request for the inspection or supervision of all or part of the implementation shall be made in writing and the details agreed to in writing by both parties.

Assumptions

The Client is hereby notified that where any of the information set out and referenced in this assessment are based on assumptions, facts or information provided to NRSI, NRSI will in no way be responsible for the veracity or accuracy of any such information. Further, the Client acknowledges and agrees that NRSI has, for the purposes of preparing their assessment, assumed that the Property is in full compliance with all applicable federal, provincial, municipal and local statutes, regulations, by-laws, guidelines and other related laws. NRSI explicitly denies any legal liability for any and all issues with respect to non-compliance with any of the above-referenced statutes, regulations, by-laws, guidelines and laws as it may pertain to or affect the Property.

Restriction of Assessment

The assessment carried out was restricted to the areas as described in this report. NRSI is not legally liable for any other trees except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, or any other property not covered or referenced in this assessment.

Professional Responsibility

In carrying out this assessment, NRSI and any Assessor appointed for and on behalf of NRSI to perform and carry out the assessment has exercised a reasonable standard of care, skill and diligence. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discolored foliage (during the leaf-on period), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the assessment, none of the trees examined on the property were dissected, cored, probed, or climbed, and detailed root crown examinations involving excavation were not undertaken.

No guarantees are offered, or implied, that trees recommended for retention, or all parts of them, will remain standing. It is professionally impossible to predict with absolute certainty the behaviour of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of extreme weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by NRSI or its directors, officers, employers, contractors, agents or Assessors for:

a) Any legal description provided with respect to the Property;

b) Issues of title and/or ownership with respect to the Property;

c) The accuracy of the Property line locations or boundaries with respect to the Property; and

d) The accuracy of any other information provided to NRSI by the Client or third parties;

e) Any consequential loss, injury or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings and business interruption; and,

f) The unauthorized distribution of the assessment.

Third Party Liability

This assessment was prepared by NRSI for the Client. The data collected reflect NRSI's best assessment of the inventoried trees situated on the Property with the information available at the time of observation. Data analysis and the assessment of potential impacts to inventoried trees is specific to the proposed undertaking as described in this report. NRSI accepts no responsibility for any damages or loss suffered by any third party or by the Client as a result of decisions made or actions based upon the use of this assessment for purposes unrelated to the proposed undertaking.

General

Any plans and/or illustrations in this assessment are included only to help the Client visualize the issues in this assessment and shall not be relied upon for any other purpose.

This report shall be considered as a whole, no sections are severable, and the assessment shall be considered incomplete if any pages are missing.

APPENDIX III

Tree Health & Risk Assessment Criteria

Tree Health Assessment Criteria

Assessment Criteria	Definition[1]
Excellent	Represents a tree in near perfect form, health, and vigour. This tree would exhibit no deadwood, no decline, and no visible defects.
Good	Represents a tree ranging from a generally healthy tree to a near perfect tree in terms of health, vigour and structure. This tree exhibits a complete, balanced crown structure with little to no deadwood and minimal defects as well as a properly formed root flare.
Fair	Represents a tree with minor health, balance or structural issues with minimal to moderate deadwood. Branching structure shows signs of included bark or minor rot within the branch connections or trunk wood. The root flare shows minimal signs of mechanical injury, decay, poor callusing, or girdling roots. Trees in the category require minor remedial actions to improve the vigour and structure of the tree.
Poor	Represents a tree that exhibits a poor vigour, reduced crown size (<30% of crown typical of species caused by overcrowding or decline), extreme crown imbalance, or extensive rot in the branching and trunk wood. Fungus could be seen from these rotting areas, suggesting further decay. These trees have extensive crown die back with a large amount of deadwood, and possibly dead sections. These weakened areas can lead to a potential failure of tree sections. Rooting zones show signs of extensive root decay or damage (fruiting bodies or mechanical damage) or girdling roots. Trees in this category require more extensive actions to prevent failure. A tree identified as poor would be a candidate for removal in the near future.
Very Poor	Represents a tree that exhibits major health and structural defects. Quite often the defects or diseases affecting this tree will be fatal. Large quantities of fungus, large dead sections with possible cavities and bark falling off all are signs that a tree is in a major state of decline and would be identified as very poor. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.
Dead	Represents a tree that exhibits no sign of new growth, including buds, foliage, or shoot growth. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.

[1] (Dunster 2009)

Potential for Structural Failure Assessment Criteria

Assessment Criteria*	Definition[1]
Improbable	The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified time frame.
Possible	Failure could occur, but it is unlikely during normal weather conditions within the specified time frame.
Probable	Failure may be expected under normal weather conditions within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for an assessor to encounter, and it may require immediate action to protect people from harm.
*A specified time frame of 2 year will be used when assessing potential for structural failure.	

[1] (Dunster et al. 2013)

APPENDIX IV
Tree Data Summary Tables

Summary of Inventoried Trees								
Common Name	**Scientific Name**	**Excellent**	**Good**	**Fair**	**Poor**	**Very Poor**	**Dead**	**Grand Total**
Native								
American Basswood	*Tilia americana*		29	242	68	12	8	359
American Beech	*Fagus grandifolia*			1	2	2		5
American Elm	*Ulmus americana*		3	13	2		32	50
Bitternut Hickory	*Carya cordiformis*		9	6	1			16
Black Cherry	*Prunus serotina*		42	86	18	2	7	155
Black Walnut	*Juglans nigra*		6	15	3		3	27
Blue-beech	*Carpinus caroliniana ssp. virginiana*			1				1
Common Hackberry	*Celtis occidentalis*			3	1			4
Eastern Cottonwood	*Populus deltoides*		2	4	1	1		8
Eastern Red Cedar	*Juniperus virginiana*			1				1
Eastern White Cedar	*Thuja occidentalis*		6	18	4			28
Eastern White Pine	*Pinus strobus*	2	108	131	19		5	265
Freeman's Maple	*Acer x freemanii*		1	2				3
Hop Hornbeam	*Ostrya virginiana*		3	18		1		22
Manitoba Maple	*Acer negundo*		16	114	50	12	2	194
Mountain Maple	*Acer spicatum*				1			1
Red Pine	*Pinus resinosa*			1				1
Silver Maple	*Acer saccharinum*		9					9
Slippery Elm	*Ulmus rubra*				1			1
Sugar Maple	*Acer saccharum*		51	65	16	3	4	139
Tamarack	*Larix laricina*		2					2
Trembling Aspen	*Populus tremuloides*			10	1			11
Tulip Tree	*Liriodendron tulipifera*				1			1
White Ash	*Fraxinus americana*		5	15	18	27	22	87
White Birch	*Betula papyrifera*		5	1	1			7
White Spruce	*Picea glauca*		3	19	4			26
Total		**2**	**300**	**766**	**212**	**60**	**83**	**1423**
Non-native								

Summary of Inventoried Trees								
Common Name	**Scientific Name**	**Excellent**	**Good**	**Fair**	**Poor**	**Very Poor**	**Dead**	**Grand Total**
Amur Maple	*Acer ginnala*			3				3
Black Locust	*Robinia pseudoacacia*	1	43	122	47	18	19	250
Black Pine	*Pinus nigra*			4				4
Blue Spruce	*Picea pungens*		3	1				4
Butternut hybrid	*Juglans cinerea hybrid*			1				1
Common Apple	*Malus pumila*		6	66	23	7	1	103
Common Pear	*Pyrus communis*		18	76	18	2		114
European Larch	*Larix decidua*			1				1
European Mountain-ash	*Sorbus aucuparia*			2				2
Golden Weeping Willow	*Salix x sepulcralis*			2				2
Little-leaf Linden	*Tilia cordata*		1	1				2
Norway Maple	*Acer platanoides*		5	8	1			14
Norway Spruce	*Picea abies*		2	12		1	1	16
Scots Pine	*Pinus sylvestris*		19	111	19	4	12	165
Sweet Cherry	*Prunus avium*			2	1		2	5
Thornless Honey Locust	*Gleditsia triacanthos var. inermis*		1					1
White Fir	*Abies concolor*		1					1
White Mulberry	*Morus alba*		3	3		2		8
Non-native Total		**1**	**102**	**415**	**109**	**34**	**35**	**696**
Native status unknown			**1**	**3**		**2**	**6**	**12**
Grand Total		**3**	**403**	**1184**	**321**	**96**	**124**	**2131**

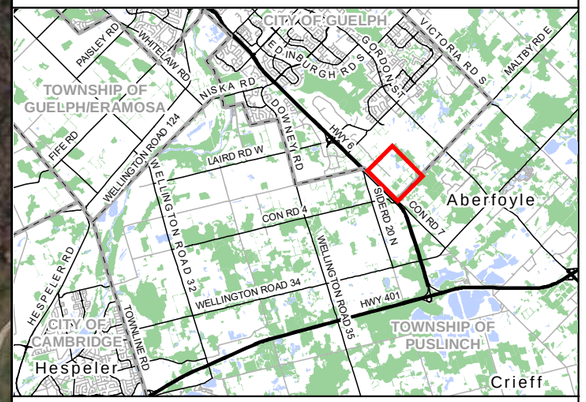
Overall Condition of Trees Inventoried							
Potential for Structural Failure Rating	**Overall Condition**						**Total**
	Excellent	**Good**	**Fair**	**Poor**	**Very Poor**	**Dead**	
Improbable	3	386	1039	133	9	6	1576
Possible	0	17	130	160	52	44	403
Probable	0	0	14	27	30	69	140
Imminent	0	0	1	1	5	5	12
Total	**3**	**403**	**1184**	**321**	**96**	**124**	**2131**

MAPS

Map 1

NewCold Guelph: Phase 1

Subject Property and Natural Features



Legend

- Subject Property
- Phase 1
- Vegetation Removals
- Inventoried Tree
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Provincially Significant Wetland (PSW)
- Other Wetland (Non-PSW)

Natural Heritage System (City of Guelph 2022)

- Significant Natural
- Ecological Linkages
- Restoration
- Amphibian Crossings
- Deer Crossings
- Other Wildlife Crossing Opportunities
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Imagery: First Base Solutions Inc. (2022).

Project: 2778
Date: April 22, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

Phase 1
Phase 2
Phase 3
Phase 4
Phase 5
Phase 6

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map1_SubjectProperty_NaturalFeatures_4K_2023_04_22_LEH.mxd

Map 2a

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
- Proposed Development
- Significant Landform
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Wetland Buffer
- Significant Woodland Buffer
- Tree Protection Signage
- Combined Tree Protection and Sediment Control
- Potential Future Trail Block
- Plantation to be Removed
- Proposed Woodland Compensation

N

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" 1:400

0 5 10 15 20 25 30 Meters

NT25 1956A 1957A 1958A 1961A 1962A 1960A 1959A 1955A

1953A 1954A 1952A 1951A 1949A 1950A 1947A 1948A 1946A

1943A 1944A 1945A 1941A 1942A 1940A 1939A

1936A 1937A 1935A 1938A 1934A 1932A 1933A 1931A 1930A

1928A 1929A 1927A 1926A 1925A

NT24 847B 846B 845B 843B 842B NT26 848B 849B 844B 841B 850B 851B 852B 853B 854B

857B 855B 856B 858B 859B 860B 862B 863B 861B 864B 865B 867B 866B

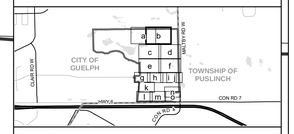
868B 869B 871B 875B 876B 877B 880B 870B 872B 873B 874B 878B 883B 881B 884B 879B 882B 887B 886B 885B 888B 889B 890B 891B 892B 893B 895B 894B 896B 898B 900B 897B 899B 1901A 1902A 1903A 1904A

1907A 1905A 1906A 1908A 1910A 1909A 1914A 1924A 1923A 1911A 1918A 1917A 1916A 1919A 1915A 1913A 1912A 1920A 1922A 1921A

Map 2b

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan



Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
- Proposed Development
- Significant Landform
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Wetland Buffer
- Significant Woodland Buffer (10m)
- Tree Protection Signage
- Combined Tree Protection and Sediment Control Fencing
- Potential Future Trail Block
- Plantation to be Removed
- Proposed Woodland Compensation

N

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" 1:400

0 5 10 15 20 25 30 Meters

NT24
842B
NT26
847B
846B
845B
843B
841B
848B
849B
844B
850B
851B
852B
853B
854B
857B
855B
856B
858B
859B
860B
863B
862B
861B
864B
865B
867B
866B
868B
869B
871B
875B
876B
877B
880B
870B
872B
873B
874B
878B
883B
881B
879B
882B
884B
887B
886B
885B
888B
889B
890B
891B
892B
893B
895B
894B
896B
898B
900B
897B
899B
1902A
1901A
1903A
1904A
1907A
1905A
1906A
1908A
1910A
1909A
1914A
1911A
1918A
1924A
1923A
1917A
1916A
1919A
1915A
1913A
1912A
1920A
1922A
1921A
840B
839B
836B
838B
837B
835B
834B
833B
832B
831B
830B
829B
96B
95B
94B
87B
93B
92B
88B
89B
91B
90B
819B
826B
822B
820B
828B
821B
823B
827B
825B
824B

Map 2c
NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan
CITY OF GUELPH
TOWNSHIP OF PUSLINCH
CLAIR RD W
MALTBY RD W
CON RD 7
Legend
Subject Property
Phase 1 Limits
Tree to be Removed (Crown to Scale)
Tree to be Removed - Grind Stump (Crown to Scale)
Tree to be Transplanted (Crown to Scale)
Tree to be Retained (Crown to Scale)
Tree to be Retained - Top (Crown to Scale)
Proposed Development
Significant Landform
Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
Significant Wetland Buffer
Significant Woodland Buffer (10m)
Tree Protection Signage
Combined Tree Protection and Sediment Control Fencing
Potential Future Trail Block
Plantation to be Removed
N
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Aquatic, Terrestrial and Wetland Biologists
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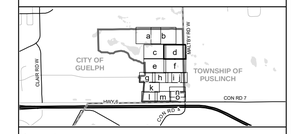
Project: 2788
Date: April 22, 2023
NAD83 - UTM Zone 17
Size: 24x36"
1:350
0 5 10 15 20 25 Meters
FUTURE SWIM
FUTURE LANDSCAPING
FUTURE AMBIENT HI-BAY WAREHOUSE
FUTURE PAVED AREA
1398A
1408B
661C
659C
660C
658C
657C
656C
655C
654C
653C
652C
651C
650C
649C
648C
647C
646C
645C
644C
643C
97B
1409B

Map 2d

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan



Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
- Proposed Development
- Significant Landform
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Significant Wetland Buffer
- Significant Woodland Buffer (10m)
- Tree Protection Signage
- Combined Tree Protection and Sediment Control
- Potential Future Trail Block
- Plantation to be Removed

N

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" 1:350

0 5 10 15 20 25 Meters

FUTURE LANDSCAPING
FUTURE PARKING
FUTURE SNOW STORAGE
FUTURE LANDSCAPING
FUTURE PAVED AREA
FUTURE 5m ROAD WIDENING
EX. HYD

1392A 1391A 1403B 1402B 1393A 1401B 1390A
1388A 1380A 1378A 1379A 1389A
1395A 1394A 1404B 1405B 1396A 1397A 1406B 1407B
71B 70B 68B 69B 74B 77B 73B 72B 75B 78B 76B 79B 80B 81B 85B 82B 86B 83B 84B
1787A 1788A 1793A 1789A 1790A 1791A 1792A 1795A 1794A 1796A
282A 281A
280A 279A 278A 277A 275A 274A 276A 273A 272A 271A 269A 268A 270A 265A 267A 266A 264A 263A 262A 260A 261A
1797A 1798A
258A 259A

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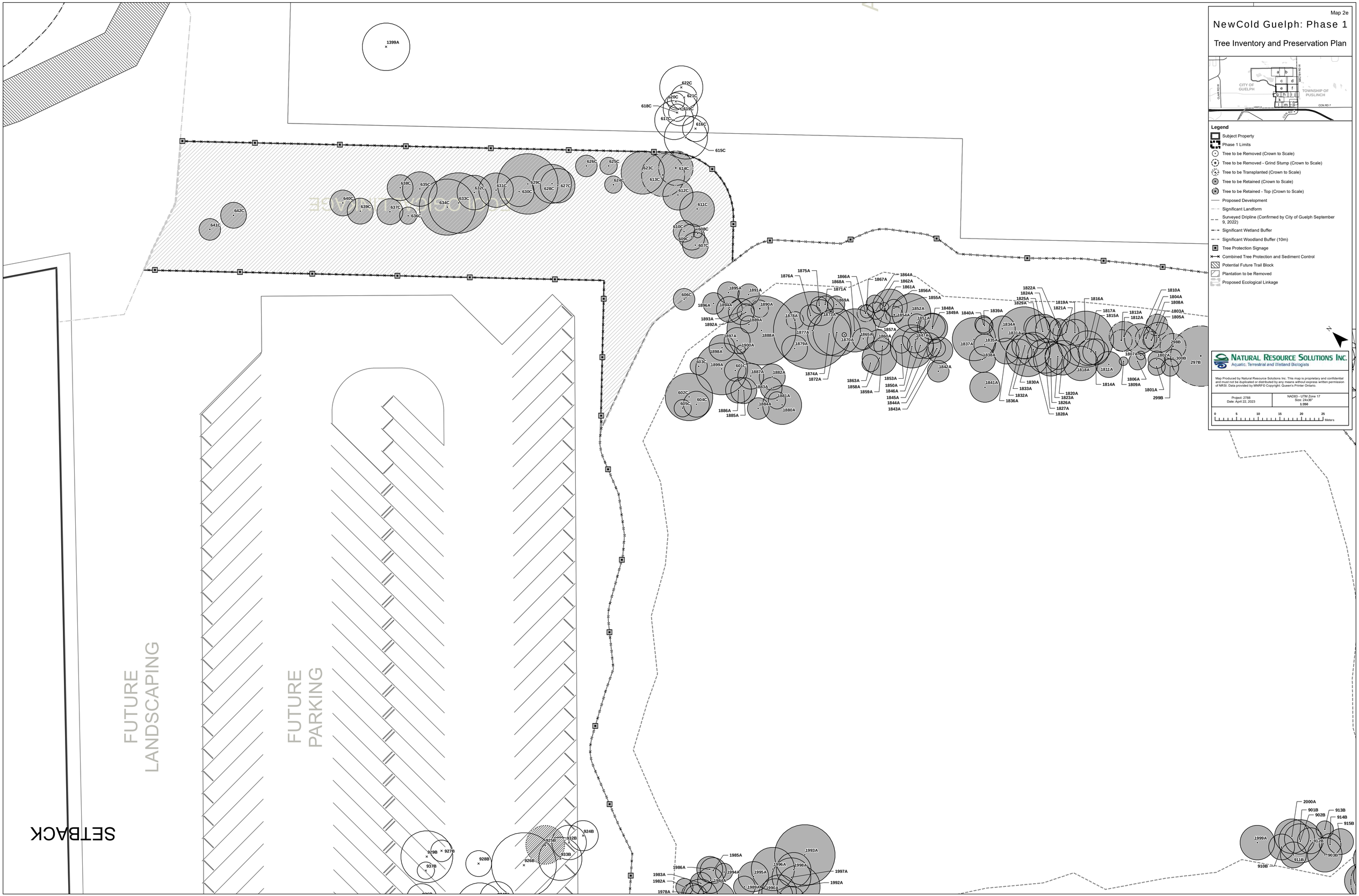

Map 2e
NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan
CITY OF GUELPH
TOWNSHIP OF PUSLINCH
Legend
Subject Property
Phase 1 Limits
Tree to be Removed (Crown to Scale)
Tree to be Removed - Grind Stump (Crown to Scale)
Tree to be Transplanted (Crown to Scale)
Tree to be Retained (Crown to Scale)
Tree to be Retained - Top (Crown to Scale)
Proposed Development
Significant Landform
Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
Significant Wetland Buffer
Significant Woodland Buffer (10m)
Tree Protection Signage
Combined Tree Protection and Sediment Control
Potential Future Trail Block
Plantation to be Removed
Proposed Ecological Linkage
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Project: 2788
Date: April 22, 2023
NAD83 - UTM Zone 17
Size: 24x36"
1:350
0 5 10 15 20 25 Meters
FUTURE LANDSCAPING
FUTURE PARKING
SETBACK

Map 2f

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
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- Significant Wetland Buffer
- Significant Woodland Buffer (10m)
- Tree Protection Signage
- Combined Tree Protection and Sediment Control Fencing
- Potential Future Trail Block
- Plantation to be Removed

N

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" 1:350

0 5 10 15 20 25 Meters

FUTURE LANDSCAPING

FUTURE PARKING

FUTURE LANDSCAPING

FUTURE SWIM

SETBACK

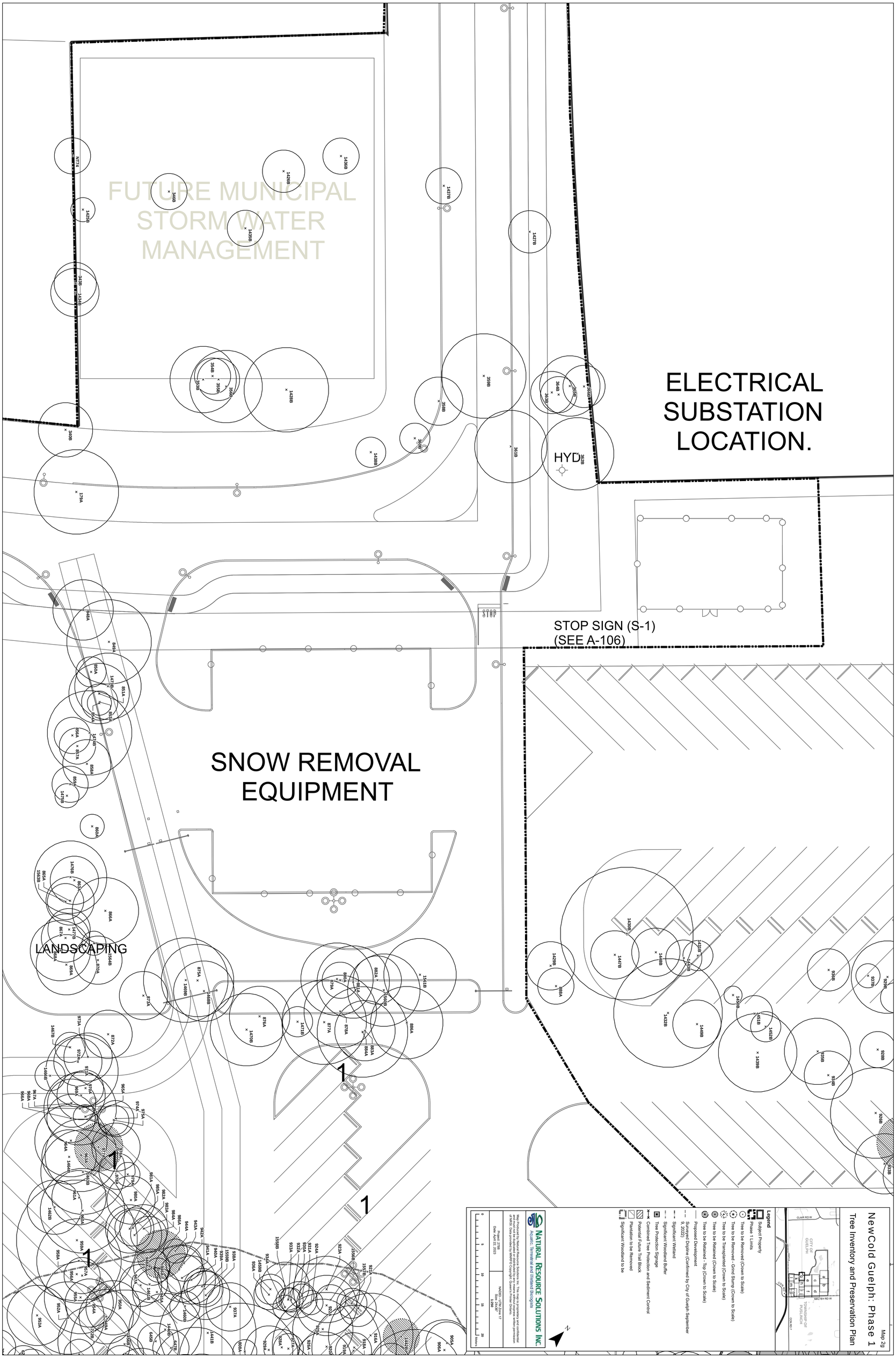
1799A 1800A 217A 218A 219A 220A

258A 259A 256A 257A 254A 255A 253A 252A 251A 923B 289A 296B 295B 294B 292B 293B 291B 290A 288A 287A 285A 284A 286A 283A

249A 250A 248A 247A 246A 244A 242A 245A 243A 241A 240A 238A 239A 237A 236A 232A 233A 231A

229A 230A 234A 235A 228A 227A 225A 224A 226A 222A 223A

2000A 901B 902B 913B 914B 915B 912B 1999A 911B 903B 910B 916B 905B 917B 904B 906B 919B 907B


FUTURE MUNICIPAL STORM WATER MANAGEMENT
ELECTRICAL SUBSTATION LOCATION.
HYD
STOP SIGN (S-1)
(SEE A-106)
SNOW REMOVAL EQUIPMENT
LANDSCAPING
1
1
1
1
NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan
Map 2g
Legend
Subject Property
Phase 1 Limits
Tree to be Removed (Crown to Scale)
Tree to be Removed - Grind Stump (Crown to Scale)
Tree to be Transplanted (Crown to Scale)
Tree to be Retained (Crown to Scale)
Tree to be Retained - Top (Crown to Scale)
Proposed Development
Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
Significant Wetland
Significant Woodland Buffer
Tree Protection Signage
Combined Tree Protection and Sediment Control
Potential Future Trail Block
Plantation to be Removed
Significant Woodland to be
NATURAL RESOURCE SOLUTIONS INC.
Acoustic, Terrestrial and Wetland Biologists
Project: 2198
Date: April 22, 2023
NAD83 - UTM Zone 17
Scale: 24.36"
1:250
Meters

Map 2h

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
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- Combined Tree Protection and Sediment Control
- Potential Future Trail Block
- Plantation to be Removed
- Significant Woodland to be

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2788	NAD83 - UTM Zone 17
Date: April 22, 2023	Size: 24x36"
	1:250

0 5 10 15 20 Meters

LANDSCAPING

FIRE ROUTE

ENCLOSURE FOR ROLL-OFF DUMPSTER BINS

HYD

TEMPORARY FENCE LINE (SEE LANDSCAPE)

PHASE 1 CAR PARKING

FUTURE PARKING AND ROADWAYS

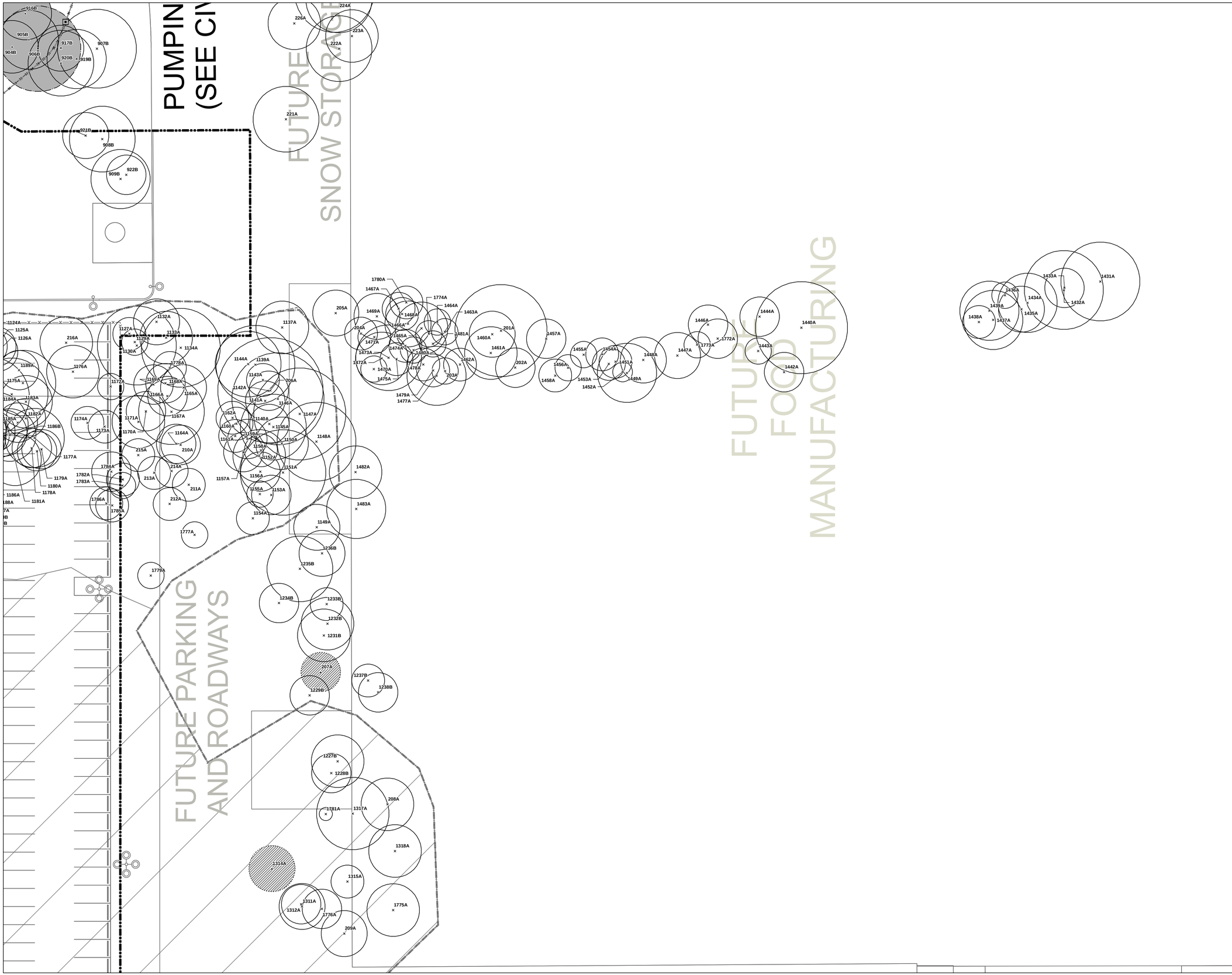
1

23

25

21

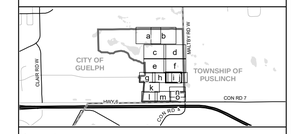
28



Map 2i

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan



Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
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- Tree Protection Signage
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- Potential Future Trail Block
- Plantation to be Removed
- Significant Woodland to be

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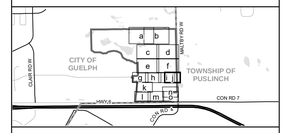
Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" 1:250

0 5 10 15 20 Meters

Map 2j

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan



Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
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- Significant Wetland
- Significant Woodland Buffer
- Potential Future Trail Block
- Plantation to be Removed

N

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" **1:250**

0 5 10 15 20 Meters

FUTURE FOOD MANUFACTURING

1455A 1454A 1451A 1448A 1453A 1449A 1452A 1447A 1446A 1772A 1773A 1444A 1443A 1440A 1442A

1436A 1433A 1431A 1434A 1432A 1439A 1435A 1438A 1437A

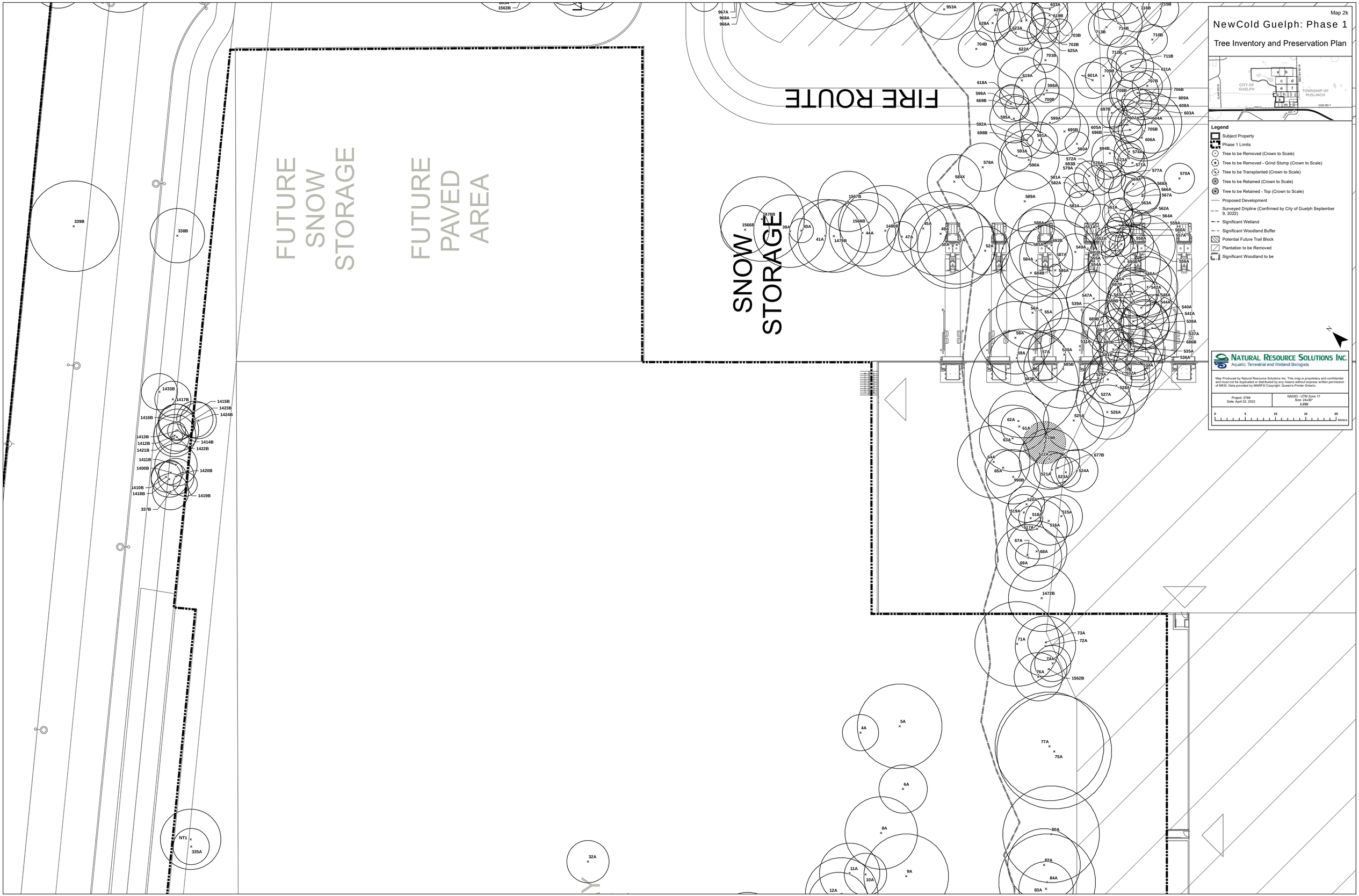
1430A 1429A 1428A

FUTURE LANDSCAPING

SETBACK

1771A

MALTBY ROAD



Map 2k
NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan
CITY OF GUELPH
TOWNSHIP OF PUSLINCH
Legend
Subject Property
Phase 1 Limits
Tree to be Removed (Crown to Scale)
Tree to be Removed - Grind Stump (Crown to Scale)
Tree to be Transplanted (Crown to Scale)
Tree to be Retained (Crown to Scale)
Tree to be Retained - Top (Crown to Scale)
Proposed Development
Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
Significant Wetland
Significant Woodland Buffer
Potential Future Trail Block
Plantation to be Removed
Significant Woodland to be
NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists
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Project: 2788
Date: April 22, 2023
NAD83 - UTM Zone 17
Size: 24x36"
1:250
0 5 10 15 20 Meters
FIRE ROUTE
SNOW STORAGE
FUTURE SNOW STORAGE
FUTURE PAVED AREA

Map 2I

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
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- Combined Tree Protection and Sediment Control
- Potential Future Trail Block
- Plantation to be Removed
- Significant Woodland to be

N

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" **1:250**

0 5 10 15 20 Meters

SOUTHGATE DRIVE E

EXISTING BUILDINGS

FUTURE LANDSCAPING

FUTURE FROZEN HI-BAY WAREHOUSE

FUTURE LANDSCAPING

LANDSCAPING

STOP SIGN (S-1) (SEE A-106)

STOP

NT1 NT2 NT3 NT4 NT5 NT6 NT7 NT8 NT9 NT10 NT11 NT12 NT13 NT14 NT15 NT16 NT17 NT18 NT19 NT20 NT21 NT22 NT23

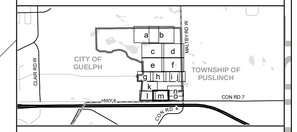
1A 2A 3A 8A 9A 10A 11A 12A 13A 14A 15A 16A 17A 18A 20A 21A 22A 23A 24A 25A 26A 27A 30A 31A 32A 100A 106A 108A 109A 110A 111A 112A 113A 114A 115A 116A 117A 118A 192A 191A 294A 295A 296A 297A 298A 299A 300A 301A 302A 303A 304A 305A 306A 307A 308A 310A 311A 312A 313A 314A 315A 316A 317A 318A 319A 320A 321A 322A 324A 325A 326A 327A 328A 329A 330A 331A 332A 333A 334A 335A 376A 379A 380A 381A 382A 383A 384A 385A 387A 388A 389A 390A 391A 392A 393A 394A 395A 396A 398A 401A 402A 403A 405A 412A 413A 414A 733B 734B 735B 736B 737B 738B 739B 740B 746B 1481B 1482B 1483B 1484B 1485B 1486B 1487B 1569B 1570B 1571B 1572B 1573B 1574B 1376B 1377B 1384B

2788_NRSI_SiteSupplementsandDetails.dwg, 2788SU_2I1B Sheet, Treeinventoryandpres, Jul 5, 2023, 10:35 AM, Jeff Hunt

Map 2m

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan



Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
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- Significant Woodland Buffer
- Potential Future Trail Block
- Plantation to be Removed
- Significant Woodland to be

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Project: 2788 Date: April 22, 2023	NAD83 - UTM Zone 17 Size: 24x36" **1:250**

0 5 10 15 20 Meters

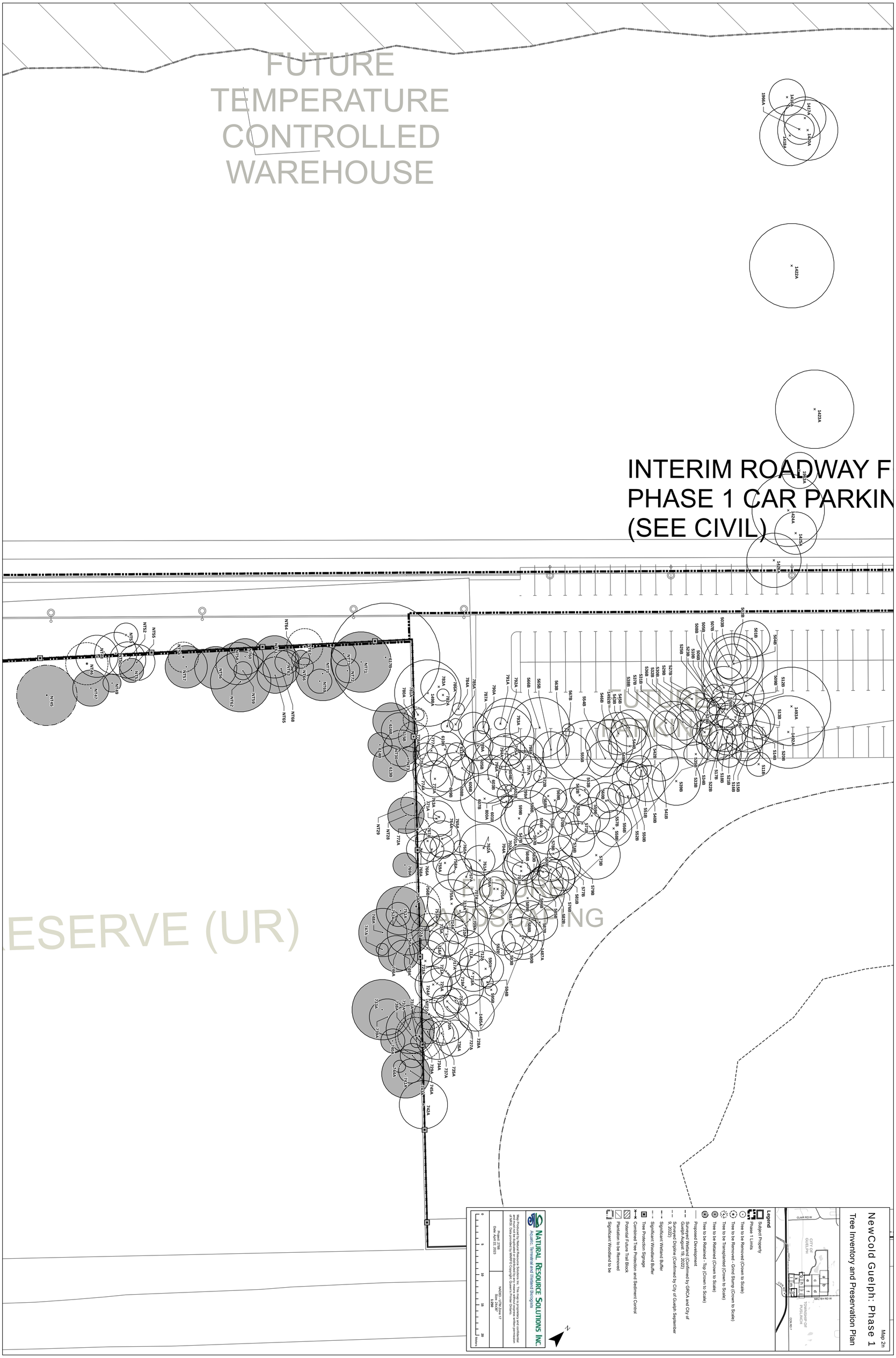
FROZEN HI-BAY WAREHOUSE

GND.F.A. = 14,682m²
G.F.A = 14,682m²
PARAPET HEIGHT = 44.5m

FUTURE 10m ROAD WIDENING

FUTURE 10m ROAD WIDENING

FUTURE 10m ROAD WIDENING


FUTURE
TEMPERATURE
CONTROLLED
WAREHOUSE
INTERIM ROADWAY F
PHASE 1 CAR PARKIN
(SEE CIVIL)
FUTURE
PARKING
RESERVE (UR)
Map 2n
NewCold Guelph: Phase 1
Tree Inventory and Preservation Plan
Legend
Subject Property
Phase 1 Limits
Tree to be Removed (Crown to Scale)
Tree to be Removed - Grind Stump (Crown to Scale)
Tree to be Transplanted (Crown to Scale)
Tree to be Retained (Crown to Scale)
Tree to be Retained - Top (Crown to Scale)
Proposed Development
Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
Significant Wetland Buffer
Significant Woodland Buffer
Tree Protection Signage
Combined Tree Protection and Sediment Control
Potential Future Trail Block
Plantation to be Removed
Significant Woodland to be
NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists
Project 2198
Date: April 22, 2023
NAD83 / UTM Zone 17
Scale: 24.00'
1:250
Meters

FUTURE TEMPERATURE CONTROLLED WAREHOUSE

URBAN RESERVE (UR)

EXISTING BUILDING

FUTURE LANDSCAPING

STOP SIGN (S-1)
(SEE A-106)

HYD

LANDSCAPING

EX. HP

EX. HP

EX. A/G H

R. HP

R. HP

Map 2o

NewCold Guelph: Phase 1

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Phase 1 Limits
- Tree to be Removed (Crown to Scale)
- Tree to be Removed - Grind Stump (Crown to Scale)
- Tree to be Transplanted (Crown to Scale)
- Tree to be Retained (Crown to Scale)
- Tree to be Retained - Top (Crown to Scale)
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- Significant Woodland Buffer (10m)
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- Potential Future Trail Block
- Plantation to be Removed
- Significant Woodland to be

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Aquatic, Terrestrial and Wetland Biologists

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Project: 2788
Date: April 22, 2023

NAD83 - UTM Zone 17
Size: 24x36"
1:250

0 5 10 15 20 Meters

Appendix VI
Bat Acoustic Monitoring Report

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

March 17, 2023 Project No. 2778

Matthew Midgley
Industrial Equities Guelph Limited Partnership
161 Bay Street, Suite 3930
Toronto, ON M5J 2S1

RE: Southgate Business Park
Species at Risk Bat Monitoring Results

1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained to complete an Environmental Impact Study (EIS) associated with the proposed industrial development of the Southgate Business Park at 384-352 Crawley Road in the City of Guelph, Ontario (Map 1).

The subject property is approximately 81.7 ha in area and is bordered by Crawley Road to the southwest, Maltby Road West to the south, open industrial lands (developed and undeveloped) to the west, and woodlands and agricultural fields to the north (Map 1). The subject property contains active agricultural fields, plantation, and other treed areas, wetlands, and open savannah habitats.

A relatively diverse assemblage of vegetation communities exists on the subject property, including natural forest communities such as Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) and Dry - Fresh Deciduous Forest (FOD4), a Mineral Cultural Woodland (CUW1), an old farmyard with isolated trees, a White Pine Coniferous Plantation (CUP3-2), and a number of distinct Hedgerow (H) communities (Map 1). The proposed development will require the removal of some of the natural features on the property.

Several isolated trees and treed features within the subject property that are proposed for removal as part of the development were identified as candidate habitat for bats during a bat habitat assessment (Map 1). NRSI completed passive acoustic surveys to assess the potential presence of bat habitat and species composition, with a specific focus on bat Species at Risk (SAR) within the subject property. The scope of acoustic surveys was determined through consultation with the Ministry of Environment, Conservation and Parks (MECP) (M. Shepherd pers. comm., May 5, 2022). This report provides a summary of the methods and results of the acoustic monitoring.

2.0 Methods

Bat habitat assessments were completed in treed communities within the subject property (Map 1). Bat acoustic monitoring was completed in June/July 2022 and methodology followed the guidelines outlined in the Ministry of Natural Resources and Forestry's (MNRF) Survey Protocol for Species at Risk Bats within Treed Habitats for Little Brown Myotis, Northern Myotis & Tri-Colored Bats (MNRF 2017), MECP's Survey Protocol for Maternity Roost Surveys (Forests/Woodlands) (MECP 2022a) and the MECP's 2022 Bat Survey Standards Note (MECP 2022b), and are described in detail below.

2.1 Bat Habitat Assessments

A plot-based, leaf-off bat habitat assessment was completed by Aboud & Associates Inc. (2020) within the White Pine Coniferous Plantation (CUP3-2 [#40]) and Dry – Fresh Deciduous Forest (FOD4 [#39]) communities on February 11, 2020. Subsequently, a leaf-off, inventory-style bat habitat assessment was completed for hedgerows and isolated trees within the subject property in areas proposed for development on May 4, 2022.

On November 10, 18, 21, 22, and December 8, 2022, additional bat habitat assessments were completed by NRSI to further characterize the plantation feature as well as the habitats to be retained. Full inventories were completed in the FOD4 #39, CUP3-2 #40, and within the proposed trail block to identify the extent of potential candidate bat SAR roost tree removals and characterize overall habitat quality. Retained woodland habitats were also surveyed using primarily plot-based assessments (i.e. sub-sampling) to characterize habitat quality for comparison purposes. The SWD3-3 #42 is proposed to be retained but was assessed by full inventory due to its small size. Assessment types per feature are shown on Map 1.

Oak and/or Maple species were identified in a number of vegetation communities within the subject property, providing candidate roosting habitat for Tri-colored Bat (*Perimyotis subflavus*).

2.2 Acoustic Monitoring

Acoustic bat monitoring was carried out in June of 2022 to assess whether suitable bat habitat trees might be used by Species at Risk bats for roosting, or to identify whether other potentially important habitats for SAR bats are present. Station locations were selected based on the results of the bat habitat assessments completed by Aboud & Associates in 2020 and NRSI in May 2022 and within the areas proposed for development. A total of 23 acoustic monitoring stations were placed within approximately 10 m of candidate bat roost trees or in suitable foraging and/or travel corridors (flyways) to assess the potential presence of SAR bats within the areas proposed for development (Map 2). A summary of the location and set-up details for each acoustic monitoring station is provided in Appendix I.

2.2.1 Acoustic Detector Settings

Bat activity was monitored with the use of a Song Meter Mini Bat acoustic recorder (Wildlife Acoustics Inc., Massachusetts, USA). Table 1 summarizes the unit settings used for this project.

Table 1. Acoustic recorder settings used for bat acoustic monitoring.

Parameter	Setting Used
Detector Type	Wildlife Acoustics Song Meter Mini Bat
Microphone Type	N/A
Microphone Attachments	N/A
Recording Format	Full-Spectrum
Gain	12dB
16kHz High Pass Filter	N/A
Sample Rate	384kHz
Min Duration	N/A
Max Duration	N/A

Minimum Trigger Frequency	16kHz
Trigger Level	N/A
Trigger Window	3 sec
Maximum Length	00:15 min
Latitude	Auto-location
Longitude	Auto-location
Sunrise/Sunset Type	Solar
Timezone	UTC -04:00
Delay Start	Off
Schedule Start	Sunset + 00:00hrs
Schedule End	Sunset + 05:00hrs

2.2.2 Acoustic Monitoring Frequency and Timing

Acoustic detectors were set to record bat passes for a total of five hours each night during the monitoring period, commencing at sunset. Passive acoustic monitoring was conducted between May 26 and July 4, 2022. Thirteen monitoring stations recorded data from May 26-June 13, 2022. On June 14, 2022, 10 stations were moved to different locations within the subject property where they recorded data from June 14-July 4, 2022. The monitoring period for each acoustic station is provided in Appendix II.

Upon review of weather conditions, bat echolocation calls recorded on the 10 evenings with the most ideal weather conditions for bat activity (ambient temperature >10°C, low wind and no precipitation) in each monitoring period in June were selected for further analyses (Appendix III). As per MECP (2022a), the analysis of acoustic data from at least 10 monitoring nights that align with the above weather conditions where no SAR bat activity is detected is required to confirm the absence of SAR bats from a given habitat.

Due to equipment error, no data was recorded at monitoring stations BAT-001, BAT-011 and BAT-012 between June 1-7. Therefore, all available data from these monitoring stations was included in the analysis, despite unsuitable weather conditions, for a total monitoring period of six nights (June 8-June 13).

2.2.3 Acoustic Data Analysis

The acoustic recorders used for this study employ direct digital recording technology and are designed to collect records from the full spectrum of bat calls (15-120kHz) for the entire duration of the monitoring period. This allows for a full analysis of activity in the vicinity of each acoustic monitoring station. Identification of call sequences to species level are typically possible with a quality ultrasound microphone (as used in this study) when recordings of bat echolocation calls are made in the open, the bat approaches close to the microphone, the bat produces echolocation calls typical for that species, and there is little interference (wind, proximity to the ground, type and abundance of vegetation, etc.) with the passage of ultrasound from the bat to the microphone. However, this perfect scenario rarely exists. All of the above factors can influence the ability to identify a call sequence to the species level. In addition to these conditional factors, many of the sounds produced by a particular species of bat are also produced by other species (i.e., they have overlapping ranges of call characteristics). The degree of overlap in call characteristics varies by species. These factors must all be taken into consideration when acoustic bat monitoring is undertaken.

Bat echolocation calls recorded during passive acoustic surveys were reviewed with the software program SonoBat 4.2.2 for the North/Northeastern US, Southern Ontario Region and initially identified to species with the SonoBat Auto-classifier. Settings for the auto-classification of the acoustic data included the following:

- Autofilter: 5 kHz;
- Acceptable call quality: 0.70;
- Decision threshold: 0.90; and
- Maximum number of calls to consider per file: 16.

All bat pass sequences that were auto-classified by the software to the SAR Tri-colored Bat, Eastern Small-footed Myotis (*Myotis leibii*) or Northern Myotis, were manually vetted by NRSI biologists to bat species or species grouping (Table 2). As a large number of bat pass sequences were auto-classified to the SAR Little Brown Myotis, only a very small subset (approximately 0.2%) of these recordings were manually vetted.

Table 2. Call classifications for Ontario bat species.

Species Groupings			Species	Typical Characteristic Frequency (kHz)	NRSI Call Sequence Classification			
20 kHz			Hoary Bat (*Lasiurus cinereus*)	20 (~to 30)	Low Frequency	30 kHz	Myotis spp.	Hoary Bat
30 kHz			Big Brown Bat (*Eptesicus fuscus*)	~30				Big Brown Bat
			Silver-haired Bat (*Lasionycteris noctivagans)*	~30				Silver-haired Bat
40 kHz			Eastern Red Bat (*Lasiurus borealis*)	~40	High Frequency	40 kHz		Eastern Red Bat
	Species at Risk		Tri-colored Bat (*Perimyotis subflavus*)	~40				Tri-colored Bat
		Myotis	Eastern Small-footed Myotis (*Myotis leibii*)	~40				Eastern Small-footed Myotis
			Little Brown Myotis (*Myotis lucifugus*)	~40				Little Brown Myotis
			Northern Myotis (*Myotis septentrionalis*)	~40				Northern Myotis

Once the required files were manually vetted, the auto-classification program provided an estimated likelihood of presence for each species, also known as a maximum likelihood estimate (MLE). A MLE value provides an indication of the strength of evidence for the presence of a species. A MLE value of zero suggests that the data presents strong evidence of species presence and a value of one suggests that the data presents weak evidence of species presence. These values are discussed in the results below at the site-level and at the station-level in Appendix IV. It is important to note that the likelihood estimate provides a probabilistic estimate and does not convey certainty.

3.0 Results

3.1 Bat Habitat Assessments

A total of 227 candidate bat SAR roosting trees were documented within the subject property between 2020-2022. This included two candidate roost trees identified by Aboud & Associates in 2020, 58 candidate roost trees identified by NRSI in May 2022, and 167 candidate roost trees identified by NRSI in November/December 2022 (Map 1). Characteristics of candidate SAR bat roost trees identified by NRSI are provided in Appendix II.

In total, 25 candidate SAR bat roost trees located within hedgerows and 12 candidate roost trees in isolated situations were identified within areas proposed for development.

Wooded habitats within the area proposed for development contained 109 candidate SAR bat roost trees. Additional candidate roost trees were identified within wooded features to be retained. Table 3 below provides the candidate roost tree densities within the wooded habitats that were assessed on the subject property, including both those within areas proposed for development as well as those to be retained.

Table 3. Candidate Roost Tree Densities within Wooded Features

Wooded Feature	Assessment Type	Habitat Size (ha)	Area Assessed (ha)	Number of Candidate Roost Trees	Density (roost trees/ha)
Areas proposed for development					
BHA-01 (CUP3-2 #40)	Inventory	5.49	5.49	41	7.47
BHA-02 (FOD4 #39)		1.14	1.14	37	32.35
BHA-03 (CUS1 #43)		0.66	0.66	26	39.39
BHA-04 (CUW1 #43)		0.43	0.43	4	9.30
BHA-11 (CUW1 #29)		0.20	0.20	1	5.00
BHA-12 (CUW1 #44)		0.51	0.51	0	0.00
Areas to be retained					
BHA-05 (SWD3-3 #42)	Inventory	0.28	0.28	10	35.71
BHA-06 (FOD6-5 #33)		2.10	2.10	41	19.52
BHA-07 (SWD4-1 #27/FOD4 #28)	Plot-based subsampling	1.40	0.50	6	12.00
BHA-08 (SWD3-3 #1, FOM6-1 #2, FOD3-1 #4)		2.57	0.50	5	10.00
BHA-09 (FOD5-1 #11)		3.12	0.50	15	30.00
BHA-10 (FOC3-1 #12)		2.98	0.50	4	8.00

3.2 Acoustic Results

During passive acoustic monitoring within the subject property, a total of seven bat species were documented. Three of these species (Little Brown Myotis, Tri-colored Bat, and Eastern Small-footed Myotis) are listed as SAR in Ontario (MECP 2022c). A summary of the acoustic monitoring results is provided in Table 4. A detailed summary of the acoustic monitoring results by monitoring station is provided in Appendix IV.

Table 4. Summary of the bat species and species grouping classification results.

Species or Species Grouping		Number of Recorded Bat Pass Sequences	Percent of Total Recorded Bat Pass Sequences	MLE Value[1]
Common Name	Scientific Name			
Big Brown Bat	*Eptesicus fuscus*	3,776	25.2%	0
Low Quality[2]	N/A	1,096	7.3%	-
Low Frequency[3]	N/A	4,078	27.2%	-
Hoary Bat	*Lasiurus cinereus*	1,692	11.3%	0
Silver-haired Bat	*Lasionycteris noctivagans*	458	3.1%	0
Little Brown Myotis	*Myotis lucifugus*	660	4.4%	0
High Frequency[4]	N/A	2,204	14.7%	-
Eastern Red Bat	*Lasiurus borealis*	459	3.1%	0
Myotis spp.[5]	N/A	430	2.9%	-
Eastern Small-footed Myotis	*Myotis leibii*	126	0.8%	0
Tri-colored Bat	*Perimyotis subflavus*	1	0.01%	0.96
TOTAL		**14,980**		

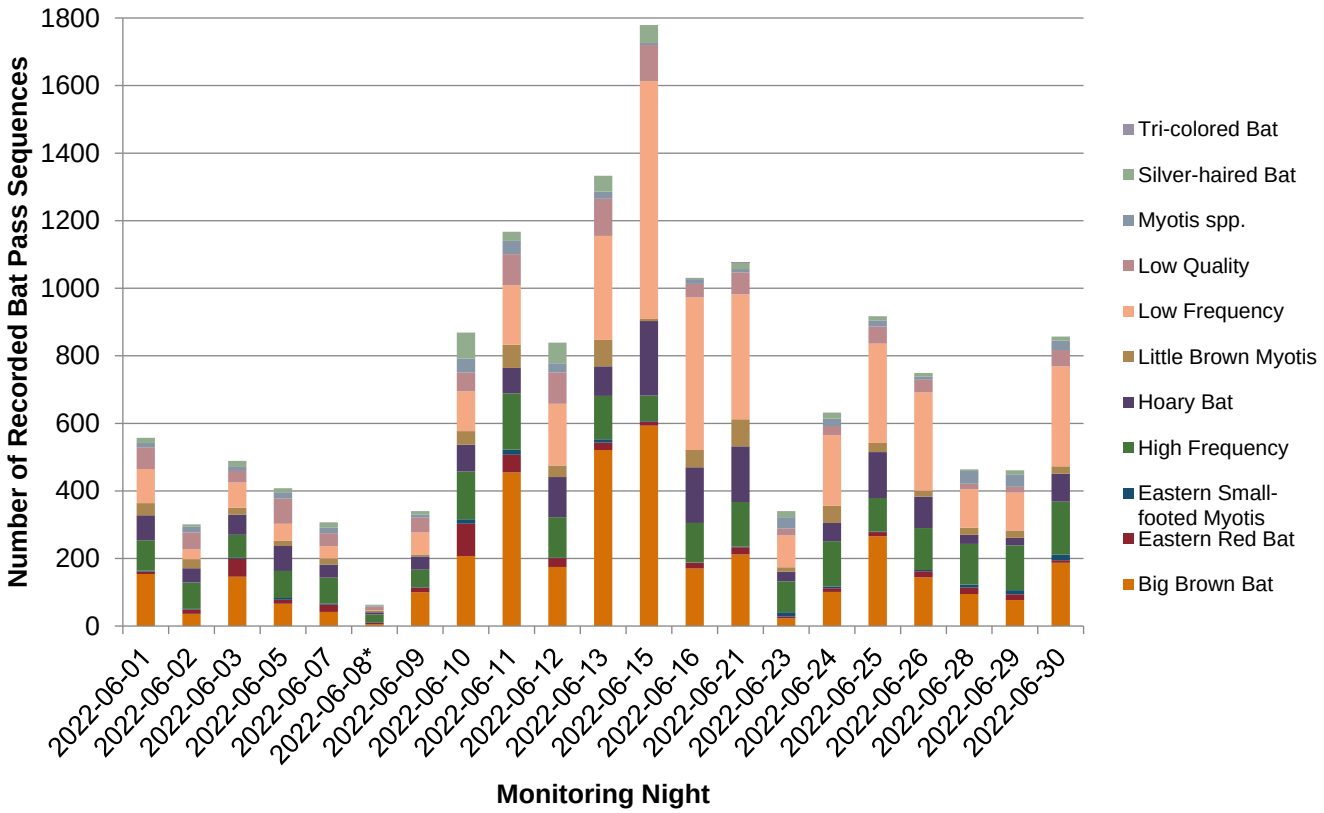
[1]Maximum likelihood estimate (MLE) calculated by Sonobat 4.2.2. A MLE value of 0 represents strong evidence of species presence and a value of 1 suggests weak evidence of species presence.
[2]Low quality recordings that could not be assigned a species or species grouping classification by the auto-classifier.
[3]Low Frequency species include: Hoary Bat, Big Brown Bat and Silver-haired Bat.
[4]High Frequency species include: Eastern Red Bat, Little Brown Myotis, Eastern Small-footed Myotis, Northern Myotis, and Tri-colored Bat.
[5]Myotis spp. grouping includes: Little Brown Myotis, Eastern Small-footed Myotis and Northern Myotis.

3.2.1 Monitoring Night

Bat pass sequences were recorded on all monitoring nights included in the analysis (Figure 1). Bat activity peaked on the evening of June 15, 2022, with 1,779 recordings. The evening of June 2, 2022 had the lowest number of recorded bat pass sequences with 301 recordings.

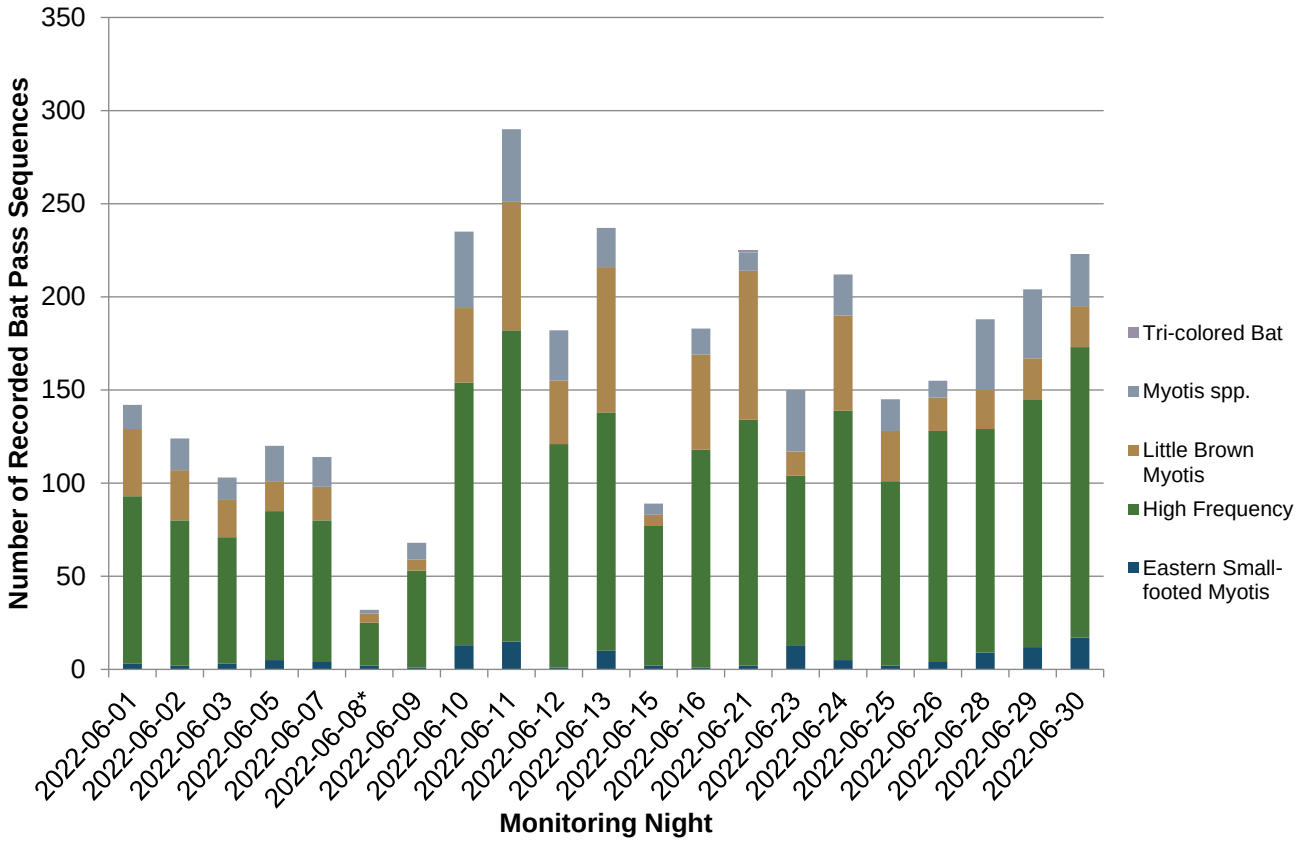
Variation in the number of bat pass sequences recorded per monitoring night may be due to several factors, including variation in corresponding weather conditions. Bats are more likely to leave the roost to drink, forage, and socialize on warm or mild nights (i.e., ambient temperature >10°C) with low wind speed and no precipitation (MECP 2022a). Emergence of individuals from their roost can also be influenced by the presence/absence of predators and insect activity. Appendix III summarizes the weather conditions for each recording interval throughout the monitoring period.

Bat pass sequences classified to Little Brown Myotis, Eastern Small-footed Myotis, the Myotis species grouping, and the high frequency species grouping were recorded on every monitoring night (Figure 2). Tri-colored Bat was recorded on 1 monitoring night. Between 32 and 290 bat pass sequences classified to Little Brown Myotis, Eastern Small-footed Myotis, Tri-colored Bat, Myotis species, and potential SAR (i.e., high frequency species grouping) were recorded each monitoring night.



*Includes bat pass sequences recorded at monitoring stations BAT-001, BAT-011 and BAT-012 only.

Figure 1. Number of recorded bat pass sequences per classification and monitoring night.



*Includes bat pass sequences recorded at monitoring stations BAT-001, BAT-011 and BAT-012 only.

Figure 2. Number of recorded bat pass sequences classified to Species at Risk and potential Species at Risk per monitoring night.

3.2.2 Monitoring Station

Acoustic monitoring stations BAT-020 and BAT-022 had the highest total number of bat pass sequences recorded with 1,590 and 1,390 recordings, respectively, while stations BAT-019 and BAT-014 had the lowest, with 102 and 106 recordings, respectively (Figure 3). Bat pass sequences classified to Little Brown Myotis were recorded at 18 of the 23 monitoring stations (Figure 4). Bat pass sequences classified to Eastern Small-footed Myotis were recorded at 17 stations, and Tri-colored Bat was recorded at one of the 23 stations. Bat pass sequences classified to the Myotis species grouping were recorded at 22 stations, and sequences classified to the high frequency species grouping were recorded at all of the 23 monitoring stations.

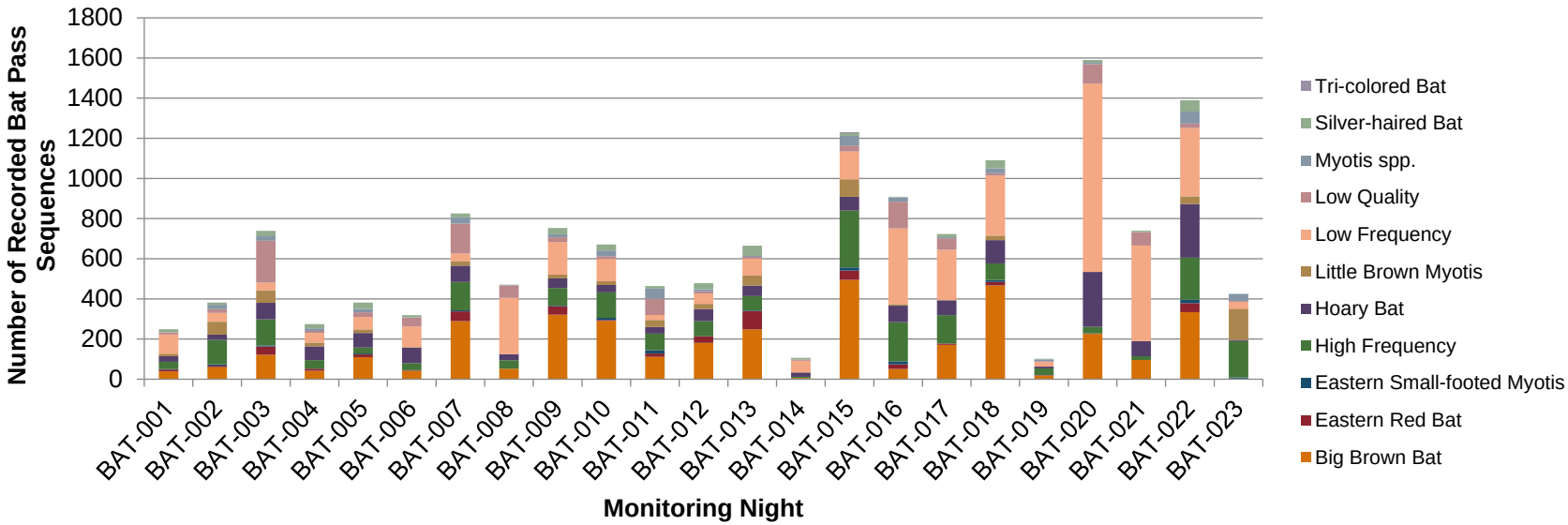


Figure 1. Number of recorded bat pass sequences per classification and monitoring station.

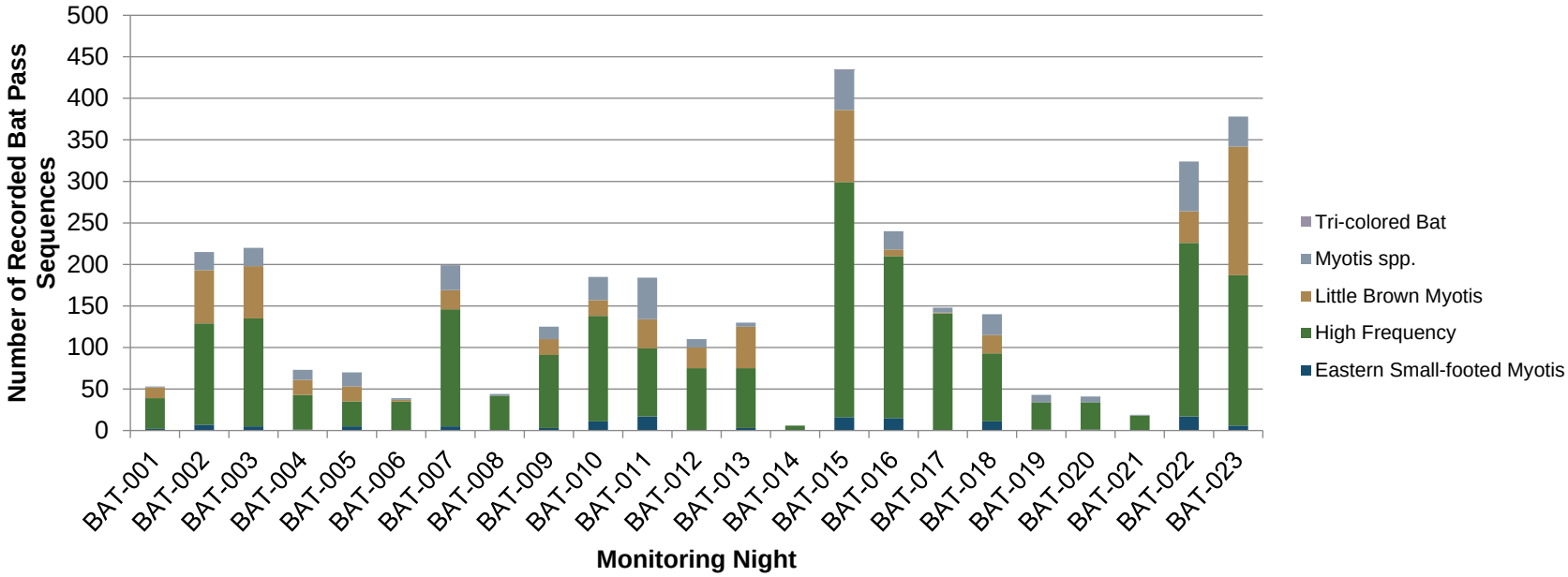


Figure 2. Number of recorded bat pass sequences classified to Species at Risk and potential Species at Risk per monitoring station.

3.2.3 Monitoring Hour

At the site-level (across all monitoring stations throughout both monitoring periods), overall bat activity was highest during the 22:00 monitoring hour, and decreased over the remainder of the monitoring night (Figure 5). Only one bat pass sequence was recorded in the 20:00 monitoring hour across all stations and monitoring nights, occurring just two minutes after sunset. Sunset occurred between 20:55 and 21:06 during the monitoring period. Activity of SAR, Myotis species, and potential SAR (i.e., high frequency species grouping) was similar to the overall trend observed, with peak activity occurring during the 22:00 monitoring hour (Figure 6). However, a slight increase in activity was observed in the 1:00 hour compared to the 00:00 hour, rather than a gradual decline in activity throughout the remainder of the night after 22:00.

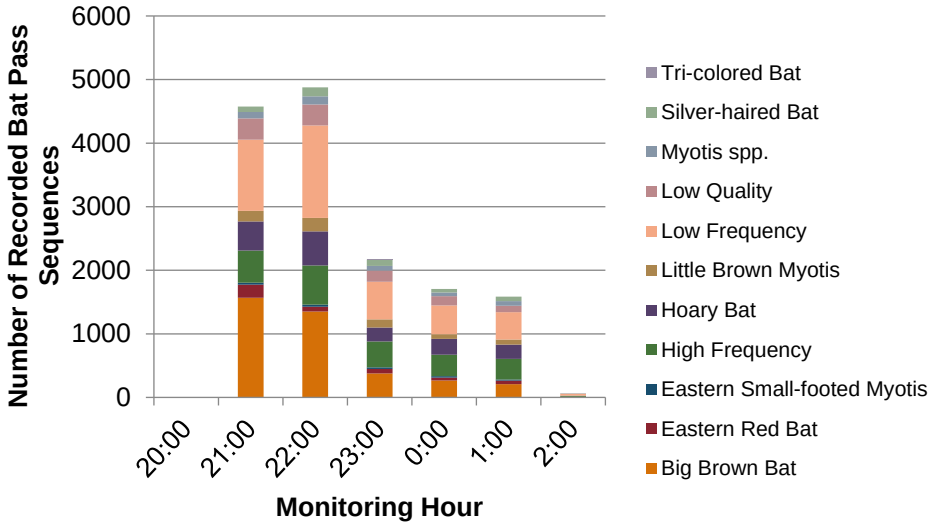


Figure 3. Number of recorded bat pass sequences per classification and monitoring hour.

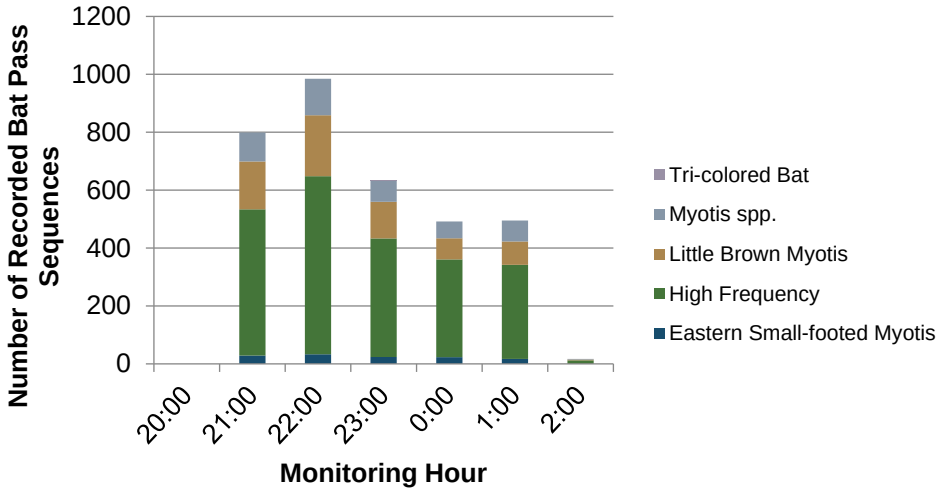


Figure 4. Number of recorded bat pass sequences classified to Species at Risk and potential Species at Risk per monitoring hour.

3.2.4 Species at Risk

An analysis of the number and approximate timing of recorded bat pass sequences classified to SAR and potential SAR (i.e., high frequency grouping) by habitat type is presented in Appendix V.

A summary of this analysis is provided below, and candidate habitats for SAR bats are shown on Map 3.

The following habitats were identified to provide potential Little Brown Myotis maternity roosting habitat, male or non-reproductive female Little Brown Myotis day roosting habitat, and foraging/flyway habitat for Little Brown Myotis and Eastern Small-footed Myotis:

- BHA-01 [White Pine Coniferous Plantation (CUP3-2) (40)]
- BHA-02 [Dry - Fresh Deciduous Forest (FOD4) (39)]
- BHA-06 [Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (33)]
- Old farmyard with Isolated Trees (Trees 1, 2, 3)
- Isolated Trees (Trees 17, 18)
- Hedgerow 30
- Hedgerow 32
- Hedgerow 41

The following habitats were identified to provide potential male or non-reproductive female Little Brown Myotis day roosting habitat and foraging/flyway habitat for Little Brown Myotis and Eastern Small-footed Myotis:

- Hedgerow 36
- Hedgerow 37

The following habitats were identified to provide only potential foraging/flyway habitat for Little Brown Myotis and Eastern Small-footed Myotis:

- BHA-11 [Mineral Cultural Woodland (CUW1) (29)]
- Hedgerow 5
- Hedgerow 8
- Hedgerow 31
- Hedgerow 35.

4.0 Discussion

A total of seven bat species were documented as present during passive acoustic monitoring within the subject property. Three of these species, Little Brown Myotis, Tri-colored Bat, and Eastern Small-footed Myotis, are listed as a SAR in Ontario (MECP 2022c). The presence and use of the subject property by each of these SAR is discussed further in the following sections.

4.1 Little Brown Myotis

In Ontario, Little Brown Myotis primarily use buildings and other anthropogenic structures to roost, including for maternity colony roost sites. However, this species will also use natural roost sites such as exfoliating tree bark and cavities and crevices in trees for roosting (ECCC 2018, Humphrey and Fotherby 2019). Males will roost individually or in small groups, while maternity colonies may consist of hundreds of females with young. This species most often forages in open habitats or within forests (ECCC 2018).

Little Brown Myotis was detected in all but two of the treed communities surveyed within the subject property (H [#8] and CUW-1 [#29]; Appendix V). Bat pass sequences classified to the Myotis species and/or the high frequency species grouping were recorded in all treed communities. While SAR are included in the high frequency species grouping, this species grouping also includes Eastern Red Bat, and should therefore not independently be considered probable evidence of the presence of SAR.

Results presented by Henry et al. (2002) suggest that, at colonies where Little Brown Myotis have already given birth, they are likely to emerge from the roost between sunset and 100 minutes after sunset, with peak emergence occurring between 20 and 60 minutes after sunset. This initial phase of activity at emergence time was followed by a period of time between 100 and 280 minutes after sunset beginning with low activity followed by a gradual increase in activity when lactating females were returning to the roost after their initial bouts of foraging and drinking (Henry et al. 2002). Based on this pattern of activity, it can be expected that in proximity to a Little Brown Myotis maternity colony, the highest number of recordings classified to Little Brown Myotis would be documented within 60 minutes of sunset. A decrease in the number of recordings would then be observed between 60 and 100 minutes following sunset. When lactating females are present, this decrease in activity would be followed by a gradual increase in the number of recordings between 100 and 280 minutes after sunset.

Within the subject property, call sequences classified to Little Brown Myotis generally were not observed to follow this pattern of activity (Appendix V). However, this pattern of activity, and specifically the second peak of activity between 100 and 280 minutes after sunset, assumes that females at a roost site have given birth. While the absence of this pattern could suggest the absence of a maternity colony, it's also possible that the survey timing for many of the stations did not correspond with the period of time after Little Brown Myotis have given birth, and that females may have still been pregnant. NRSI's capture efforts in central and southern Ontario have suggested that it is common for Little Brown Myotis to still be pregnant in late June. Regardless, some bat pass sequences classified to Little Brown Myotis, the Myotis spp. grouping, and potential Little Brown Myotis (i.e., the high frequency grouping) were documented within 60 minutes of sunset, during the expected time of peak emergence from a maternity colony roost site, within 8 monitored habitat areas: BHA-01 (CUP3-2, #40), BHA-02 (FOD4, #39), BHA-06 (FOD6-5, #33), the old farmyard with isolated trees, isolated trees 17 and 18, hedgerow #30, hedgerow #32, and hedgerow #41.

Typically, Little Brown Myotis maternity colonies are found in anthropogenic structures and consist of much larger numbers, up to hundreds of individuals (ECCC 2018). However, post White-nose Syndrome, Schorr and Siemers (2021) estimated summer abundance of adult females ranged between 100 and 400 individuals at known maternity colony sites (anthropogenic structures) in 2016-2018. Within the subject property, the highest number of bat pass sequences recorded in a single evening during the peak emergence period that were classified to Little Brown Myotis, Myotis species and high frequency species groupings was 120 recordings at monitoring station BAT-023 (located in BHA-01, CUP3-2 [#40]) on June 21, 2022. Although the number of recordings does not directly relate to the number of individuals, this does suggest that the population of Little Brown Myotis and possible/likely SAR bats is relatively small within the subject property, in line with the findings by Schorr and Siemers (2021) in the era of White-nose Syndrome, although there remains potential for maternity colonies in natural habitats to consist of fewer individuals owing to the inability for trees to accommodate such large numbers.

Given the variety of treed features within the subject property and the relatively high number of candidate roost trees documented, it is likely that at least one tree is being utilized as a maternity roost. Alternatively or additionally, an anthropogenic structure near the subject property may be utilized as a maternity roost site. Suitable anthropogenic structures were not documented within the subject property itself, but anthropogenic structures that may provide candidate maternity roost sites exist on adjacent properties. As bats are capable of moving large distances quite quickly upon emergence, the bat pass sequences recorded during the suggested emergence period may represent individuals roosting near the subject property and using the treed features for foraging and/or as a flyway for movement between key habitat features shortly after emerging from the roost.

Passive acoustic monitoring studies do not provide the data required to confirm the absence of roosting habitat. The absence of SAR roosting within the subject property would need to be confirmed through a detailed capture and telemetry study. Therefore, the data suggests that a maternity roosting colony is potentially present in the subject property. The following vegetation communities have been identified as candidate maternity colony roosting habitat for Little Brown Myotis: BHA-01 (CUP3-2, #40), BHA-02 (FOD4, #39), BHA-06 (FOD6-5, #33), the old farmyard with isolated trees, H (#28), isolated trees 17 and 18, H hedgerow (#30), H hedgerow (#32), FOD6-5 (#33), FOD4 (#39), CUP3-2 (#40), and H hedgerow (#41) (Map 3). When considering the overall candidate roost tree densities within the assessed woodland features, habitats BHA-02, BHA-03, and BHA-06 exceeded a potential roost tree density of greater than 10 trees/ha and are considered high quality maternity roost habitat (Table 4, and shown on Map 2). Other woodland habitats within the subject property that are proposed to be retained are also considered high quality maternity habitat (Map 2), including BHA-05, BHA-07, BHA-08, and BHA-09.

It should be noted that suitable maternity and male/non-reproductive female day roosting habitat for Little Brown Myotis within the White Pine Coniferous Plantation (CUP3-2) (#40) community is limited to certain portions of the community. The majority of this community contains planted coniferous trees, few of which were identified as potentially suitable roost trees. An old hedgerow community, consisting of mature deciduous trees such as Sugar Maple (*Acer saccharum*), runs through the center of the CUP3-2, and additional deciduous trees exist along the southern edge of the feature. Dead American Elms with loose bark are scattered through some areas. Of the 41 potential roost trees identified within BHA-01, only 5 of them (12%) are coniferous trees. Although Little Brown Myotis is known to roost in coniferous trees, the older age class, larger diameter tree size, deciduous species, and greater prevalence in providing

potential roosting habitat all indicate that the deciduous trees found within it provide more suitable roosting habitat than the majority of the coniferous trees throughout the CUP3-2.

Acoustic monitoring results also suggest that Little Brown Myotis is using the treed features within the subject property for foraging and/or as a flyway to move between key habitat features. All 15 of the treed communities surveyed as part of this study are considered candidate flyway/foraging habitat for the species. Additionally, 10 of the monitored habitats are identified as candidate male or non-reproductive female day roosting for Little Brown Myotis (Appendix V).

4.2 Eastern Small-footed Myotis

Although little information is available, Eastern Small-footed Myotis seem to prefer open, sunny and rocky habitats, and sometimes buildings, for roosting and maternity colonies (Humphrey 2017). Foraging habitat is also poorly understood in Ontario, but this species likely forages in forests as well as over water bodies, within riparian forests, and occasionally in open fields (Humphrey 2017).

Eastern Small-footed Myotis was detected in 10 of the 15 monitored treed vegetation communities within the subject property (Table 4). Bat pass sequences classified to the Myotis species and the high frequency species grouping were recorded in all treed communities. While all SAR bats are included in the high frequency species grouping, this species grouping also includes Eastern Red Bat, and should therefore not independently be considered probable evidence of the presence of SAR.

Although it has not specifically been described in literature, it is likely that Eastern Small-footed Myotis follows the same roost emergence and return patterns as those documented for Little Brown Myotis by Henry et al. (2002), as described in Section 4.1 above. Bat pass sequences were recorded within the assumed peak emergence period (i.e., within 60 minutes of sunset) at 17 of the 23 monitoring stations (Appendix V). However, the pattern of activity generally associated with the presence of lactating females (i.e., a gradual increase in the number of recordings between 100 and 280 minutes after sunset) was not observed.

Although Eastern Small-footed Myotis bat pass sequences were recorded at the majority of the acoustic monitoring stations and within the suggested peak emergence period (i.e., within 60 minutes after sunset), suitable roosting habitat for the species was not documented within the surveyed treed communities during habitat assessments as open, sunny, rocky habitats were not present. Additionally, no anthropogenic structures suitable for providing maternity roosting habitat are present within the subject property. However, one long rock wall and one small pile of slab rocks, both with open solar exposure, were noted within other areas of the subject property (Map 3). The rock wall is located within the Mineral Cultural Savannah (CUS1, #17) in the northern portion of the property and the pile of slab rock is located on the outskirts of agricultural land just east of the BHA-11 Cultural Mineral Woodland (CUW1, #29). It is possible that these may provide maternity and/or day/male roosting habitat for Eastern Small-footed Myotis but they fall outside of the surveyed treed communities. Alternatively or additionally, suitable roosting habitat may be present outside of the subject property and on adjacent properties in the form of open, sunny rocky habitats and/or anthropogenic structures. It is most likely that Eastern Small-footed Myotis are utilizing roosting habitat within anthropogenic buildings outside of the subject property, but the rock piles noted above cannot be ruled out as potential maternity and/or day/male roosting habitat at this time. As bats are capable of moving large distances quite quickly upon emergence, the bat pass sequences recorded during the suggested emergence period are likely to represent individuals roosting near the subject

property and using the surveyed features for foraging and/or as a flyway for movement between key habitat features shortly after emerging from a roost.

Acoustic monitoring results suggest that Eastern Small-footed Myotis is present in all treed vegetation communities in the subject property and using the treed features for foraging and/or as flyways to move between key habitat features. All 15 of the habitats surveyed are therefore considered candidate flyway/foraging habitat for the species.

4.3 Tri-colored Bat

Across all monitoring stations and all monitoring nights, a single bat pass sequence was classified as Tri-colored Bat. This call sequence was documented at BAT-015 at the edge of the FOD6-5 (#33) community, on the night of June 21, 2022. This call sequence was recorded more than 100 minutes after sunset in the 23:00 monitoring hour. Although Tri-colored Bat is included in the high frequency species grouping and the potential exists for some of the high frequency bat pass sequences to represent Tri-colored Bat, the relative percentage of total passes identified as Tri-colored Bat (0.01%) compared to other species identified within the grouping (Little Brown Myotis [4.4%], Eastern Red Bat [3.1%], and Eastern Small-footed Myotis [0.8%]), it is unlikely that any of the high frequency bat passes would be Tri-colored Bat. The site-wide maximum likelihood estimate (MLE) for Tri-colored Bat is 0.96, suggesting weak evidence of species presence within the subject property.

The timing and location of the single bat pass sequence identified as Tri-colored Bat, described above, suggests that this pass may represent an isolated individual moving through the subject property rather than utilizing the subject property for roosting, foraging, or as a flyway between specific key habitat features. If the species was using the subject property for movement between key habitat features, a higher number of call sequences are expected to have been recorded and classified to the species.

4.4 Proposed Development

The development proposes that the majority of the fully inventoried treed communities within the subject property are to be removed, including: the old farmyard with isolated trees; Hedgerows #30, #31, #35, #36, and #41; the BHA-11 Mineral Cultural Woodland (CUW1) (#29); the BHA-02 Dry - Fresh Deciduous Forest (FOD4) (#39); the BHA-01 White Pine Coniferous Plantation (CUP3-2) (#40), BHA-03 Mineral Cultural Savannah (CUS1) (#43), and BHA-04 Mineral Cultural Woodland (CUW1) (#43) (Map 3). Approximately two-thirds of Hedgerow #37 (the entirety of the feature that is located within the subject property) is also proposed for removal. These communities are proposed for removal in order to accommodate the development of buildings, including a food production facility, stormwater management facilities, roadways, and parking lots. It is anticipated that all trees within the development footprint will be removed for site grading during the first phase of development (Map 3).

Presently, the Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (#33) is proposed to be completely retained, along with the Hedgerow #8, located on the northeastern portion of the property. Hedgerow #32 is expected to largely be retained, with the exception of a small area at the northern extent of this feature. Hedgerow #28 is proposed to be retained and will also be encompassed within a Buffer/Landform Planting area.

The monitoring stations that surveyed vegetation communities entirely or mostly within the proposed development footprint consisted of BAT-001, -002, -004, -006, -010, -011, -012, -013, -014, -017, -021, and BAT-023. The number of SAR or potential SAR bat pass sequences recorded within the peak emergence period at these stations was similar to the numbers

recorded at monitoring stations in habitats that are proposed to be fully or mostly retained: 481 bat pass sequences at stations within communities to be removed and 416 bat pass sequences at stations within communities to be retained. The total number of SAR or potential SAR bat pass sequences (i.e., regardless of time of recording) at the stations located in habitats proposed for removal was lower than the total number at stations in habitats that are proposed to be retained (1,540 bat pass sequences vs. 1,881 bat pass sequences, respectively). The highest number of recorded bat pass sequences classified to SAR or potential SAR was at station BAT-015, located within the BHA-06 Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (#33), which will be retained. The lowest number of recorded bat pass sequences classified to SAR or potential SAR was at station BAT-014, located within the White Pine Coniferous Plantation (CUP3-2) (#40), which is proposed to be removed.

However, of the eight treed communities that were identified as candidate Little Brown Myotis maternity colony roosting habitat, five are proposed to be fully or mostly removed (i.e., the farmyard with isolated trees, H [#30], BHA-02 FOD4 [#39], BHA-01 CUP3-2 [#40], and H [#41]). Ten of the 15 vegetation communities identified as candidate flyway/foraging habitat for SAR, including Little Brown Myotis and Eastern Small-footed Myotis, are proposed to be fully or mostly removed. Of the 11 vegetation communities that were identified as candidate male/non-reproductive female day roosting habitat for Little Brown Myotis, seven are proposed to be fully or mostly removed (i.e., the farmyard with isolated trees, H [#30], H [#36], H [#37], H [#41], FOD4 [#39], and CUP3-2 [#40]).

The rock piles observed within the CUS (#17) community, which may provide potential Eastern Small-footed Myotis maternity and/or day/male roosting habitat, do not fall within the development footprint and will be retained. The slab pile located within the agricultural lands east of CUW1 [#29]) may also provide potential Eastern Small-footed Myotis maternity and/or day/male roosting habitat and does fall within the proposed development. It is recommended this slab pile not be disturbed until a visual inspection is completed on this slab pile during the bat active period to determine if that habitat is being used.

Because SAR bat males are known to periodically switch roosts (ECCC 2018), the removal of candidate male/non-reproductive female day roost trees is not likely to significantly impact the species as these types of roosts do not require the highly specialized environmental conditions that maternity roost habitats require and other options are therefore widely available on the landscape, and males/non-reproductive females would be roosting alone or in very small numbers. Additional male/non-reproductive female day roosting habitat for Little Brown Myotis is available in treed communities that will be retained within the subject property, as indicated by the bat habitat assessment and acoustic monitoring results.

It is likely that suitable flyway/foraging habitat, male/non-reproductive female day roosting habitat, and maternity roosting habitat for Little Brown Myotis and Eastern Small-footed Myotis is present within the vicinity of the subject property, beyond its limits.

It should also be noted that there are other treed habitats within the subject property that were not surveyed acoustically due to their distance from the proposed development footprint; they include deciduous woodlands and deciduous swamps that contain high quality bat habitats as assessed through plot-based surveys (Map 2).

5.0 Summary and Conclusions

Passive acoustic monitoring results support the potential for the bat SAR, Little Brown Myotis and Eastern Small-footed Myotis, to be using all treed communities and the community edges

within the subject property for foraging and/or as a flyway to move between key habitat features. Results also suggest the potential for the SAR, Little Brown Myotis, to be using the majority of treed communities as male/non-reproductive female day roosting habitat. Additionally, results suggest the potential presence of Little Brown Myotis maternity colony roosting within eight of the 15 monitored vegetation communities. Bat pass sequences of Eastern Small-footed Myotis were documented at the majority of the acoustic stations and maternity roosting habitat and day/male roosting habitat considered to be potentially present within the subject property where rock and slab piles have been documented in open, sunny locations. There are no anthropogenic structures within the subject property.

The majority of the surveyed treed communities (10) are proposed to be fully or mostly removed as per the development plan. These communities proposed for removal include: the old farmyard with isolated trees; Hedgerows #30, #31, #35, #36, #37, and #41; the BHA-011 Mineral Cultural Woodland (CUW1) (#29); the BHA-02 Dry - Fresh Deciduous Forest (FOD4) (#39); and the BHA-01 White Pine Coniferous Plantation (CUP3-2) (#40). NRSI's understanding is that the BHA-06 Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (#33) will be fully retained, along with the Hedgerow communities #5, #8, #28, and #32, which will be fully or mostly retained. These Hedgerow communities are to be encompassed within compensation planting, linkage, and/or buffer areas.

A suitable buffer is recommended to be applied to all retained treed communities, particularly the Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (#33), in order to preserve and protect flyway and foraging habitats.

Consultation with MECP is required prior to the proposed tree removals to ensure compliance with the *Endangered Species Act*, 2007. It is recommended that MECP consultation be initiated through the submission of an Information Gathering Form (IGF). An IGF describes the existing natural features within the subject property, maps and describes the presence of SAR habitat, and provides a general summary of the proposed activities that may impact SAR or their habitats. MECP will use the IGF to inform their recommendations for any additional actions that may be required in conformance with the ESA. Mitigation measures to avoid direct impacts to bat SAR and reduce impacts to their habitat are discussed in the EIS.

6.0 References

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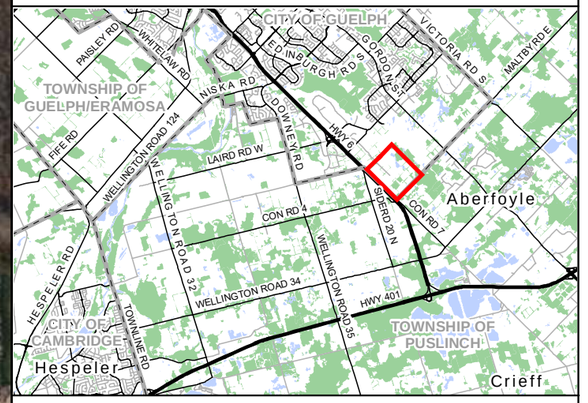
Maps

Map 1

Southgate Business Park

Bat Habitat Assessments



Legend

- Subject Property
- Proposed Trail Block
- Full Feature Assessment
- Plot-based Assessment
- Bat Assessment Plot

Candidate Bat SAR Roost Trees

- Aboud & Associates (2020)
- NRSI (May 2022)
- NRSI (November/December 2022)
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow

(CUM1) Mineral Cultural Meadow Ecosite

(CUP3) Coniferous Plantation

(CUP3-2) White Pine Coniferous Plantation Type

(CUS1) Mineral Cultural Savannah Ecosite

(CUT1) Mineral Cultural Thicket Ecosite

(CUW1) Mineral Cultural Woodland Ecosite

(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type

(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type

(FOD4) Dry - Fresh Deciduous Forest Ecosite

(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type

(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type

(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type

(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type

(H) Hedgerow

(MAM2) Mineral Meadow Marsh Ecosite

(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

(MAS3-10) Forb Organic Shallow Marsh Type

(MAS3-2) Bulrush Organic Shallow Marsh Type

(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type

(SWD4-1) Willow Mineral Deciduous Swamp Type

(SWT2-2) Willow Mineral Thicket Swamp Type

(SWT2-4) Buttonbush Mineral Thicket Swamp Type

(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Project: 2778
Date: February 23, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

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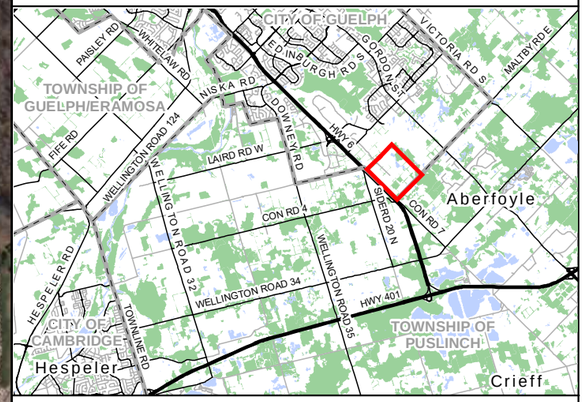
Map 2

Southgate Business Park

Bat Acoustic Monitoring Stations and Habitat Quality



Legend

- Subject Property
- Bat Acoustic Monitoring Station (BAT)
- High Quality Bat Habitat (≥10 roost trees/ha)

Candidate Bat SAR Roost Trees

- Aboud & Associates (2020)
- NRSI (May 2022)
- NRSI (November/December 2022)

Ecological Land Classification (ELC)

(CUM) Cultural Meadow

(CUM1) Mineral Cultural Meadow Ecosite

(CUP3) Coniferous Plantation

(CUP3-2) White Pine Coniferous Plantation Type

(CUS1) Mineral Cultural Savannah Ecosite

(CUT1) Mineral Cultural Thicket Ecosite

(CUW1) Mineral Cultural Woodland Ecosite

(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type

(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type

(FOD4) Dry - Fresh Deciduous Forest Ecosite

(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type

(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type

(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type

(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type

(H) Hedgerow

(MAM2) Mineral Meadow Marsh Ecosite

(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type

(MAS3-10) Forb Organic Shallow Marsh Type

(MAS3-2) Bulrush Organic Shallow Marsh Type

(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type

(SWD4-1) Willow Mineral Deciduous Swamp Type

(SWT2-2) Willow Mineral Thicket Swamp Type

(SWT2-4) Buttonbush Mineral Thicket Swamp Type

(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

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Project: 2778
Date: January 4, 2023

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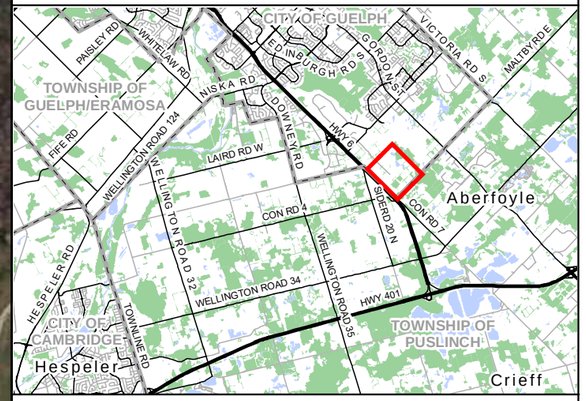
Map 3

Southgate Business Park

Species at Risk Bat Habitat



Legend

- Subject Property
- Proposed Trail Block
- Development Footprint
- Significant Landform
- Significant Wetland Buffer (30m)
- Expanded Wetland Buffer (variable)
- Reduced Wetland Buffer (variable)
- Significant Woodland Buffer (10m)
- Rockpile
- Slabpile
- Woodland Compensation Area (5.49ha)
- Buffer/Landform Planting (5.55ha)
- Ecological Linkage Planting (0.42ha)
- Ecological Land Classification (ELC)

Eastern Small-footed Myotis Habitat

- Candidate flyway/foraging

Little Brown Myotis Habitat

- Candidate flyway/foraging
- Candidate male/non-reproductive female roosting
- Candidate male/non-reproductive female roosting & maternity roosting

Candidate Bat SAR Roost Trees

- Aboud & Associates (2020)
- NRSI (May 2022)
- NRSI (November/December 2022)

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Imagery: First Base Solutions Inc. (2022).

Project: 2778
Date: February 23, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

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Appendix I
Bat Acoustic Monitoring Station Details

Acoustic Monitoring Station	Location UTM Zone: 17T		Microphone Height (m)	Microphone Direction (degrees)	Habitat Type	Clutter[1]	Monitoring Period (2022)
	Easting	Northing					
BAT-001	565336	4814156	5	95	Old farm yard	LOW	June 1-June 13
BAT-002	565474	4814262	5	350	Deciduous forest edge	HIGH	June 1-June 13
BAT-003	565590	4814324	5	100	Hedgerow	LOW	June 1-June 13
BAT-004	565419	4814401	5	50	Hedgerow	LOW	June 1-June 13
BAT-005	565680	4814468	5	330	Hedgerow	LOW	June 1-June 13
BAT-006	565792	4814588	5	125	Hedgerow	HIGH	June 1-June 13
BAT-007	565893	4814676	5	245	Hedgerow	LOW	June 1-June 13
BAT-008	565933	4814732	5	80	Hedgerow	HIGH	June 1-June 13
BAT-009	566105	4814623	5	260	Hedgerow	LOW	June 1-June 13
BAT-010	565953	4814454	5	190	Hedgerow	LOW	June 1-June 13
BAT-011	565786	4814328	5	90	Hedgerow	LOW	June 1-June 13
BAT-012	565728	4814146	5	320	Hedgerow	LOW	June 1-June 13
BAT-013	565603	4814013	5	140	Hedgerow	LOW	June 1-June 13
BAT-014	565464	4814032	5	45	Forest	HIGH	June 14-June 30
BAT-015	565583	4814372	5	119	Woodland edge	EDGE	June 14-June 30
BAT-016	565637	4814312	5	5	Forest	HIGH	June 14-June 30
BAT-017	565580	4814368	5	131	Forest	HIGH	June 14-June 30
BAT-018	565675	4814267	5	90	Forest edge	EDGE	June 14-June 30
BAT-019	565650	4814397	5	5	Forest	HIGH	June 14-June 30
BAT-020	565677	4814425	5	10	Forest	HIGH	June 14-June 30
BAT-021	566054	4814302	5	80	Woodland	HIGH	June 14-June 30
BAT-022	565657	4814301	5	120	Forest	HIGH	June 14-June 30
BAT-023	565524	4814104	5	90	Forest edge	EDGE	June 14-June 30

[1]NO = stadium sized open meadow without vegetation or topography interfering with the airspace; LOW = large fields or other open areas bordered by hedgerows or tree lines; EDGE = significant vegetation, topography, or anthropogenic structures bordering a NO or LOW clutter open area; MED = large area with widely spaced trees and other topographic or anthropogenic structures; HIGH = understory travel corridors either along tree covered roads or within a forested clearing

Appendix II
Location and Description of Candidate Bat Habitat

Tree ID	Habitat	Species		Location UTM Zone: 17T		DBH[1] (cm)	Height Class[2]	Decay Class[3]	Microhabitat Details
		Common Name	Scientific Name	Easting	Northing				
1	Isolated	Sugar Maple	*Acer saccharum*	565373	4814173	50	2	1	Cavities, tree species with potential to contain leaf clusters
2	Isolated	Trembling Aspen	*Populus tremuloides*	565345	4814149	30	2	2	Loose bark
3	Isolated	Common Pear	*Pyrus communis*	565362	4814174	20	4	1	Cavities
4	Isolated	Manitoba Maple	*Acer negundo*	565426	4814258	25	3	1	Cavities, tree species with potential to contain leaf clusters
5	BHA-02	American Basswood	*Tilia americana*	565477	4814266	30	2	4	Loose bark
6	H (36)	American Basswood	*Tilia americana*	565475	4814273	25	1	1	Loose bark
7	H (36)	Black Cherry	*Prunus serotina*	565470	4814277	70	2	2	Loose bark
8	H (36)	American Basswood	*Tilia americana*	565468	4814277	25	3	2	Loose bark
9	Isolated	Manitoba Maple	*Acer negundo*	565350	4814337	80	2	2	Cavity, loose bark, tree species with potential to contain leaf clusters
10	Isolated	White Ash	*Fraxinus americana*	565383	4814363	70	1	2	Loose bark
11	H (37)	Manitoba Maple	*Acer negundo*	565431	4814417	65	1	1	Cavities, tree species with potential to contain leaf clusters
12	Isolated	Sugar Maple	*Acer saccharum*	565550	4814324	55	1	1	Cavities, tree species with potential to contain leaf clusters
13	H (32)	American Basswood	*Tilia americana*	565655	4814499	20	3	1	Cavities
14	H (32)	American Basswood	*Tilia americana*	565687	4814475	40	2	1	Cavities
15	H (31)	American Beech	*Fagus grandifolia*	565761	4814548	65	3	5	Cavities
16	H (31)	Black Cherry	*Prunus serotina*	565793	4814580	65	1	2	Cavities
17	Isolated	American Basswood	*Tilia americana*	565879	4814674	70	1	1	Cavities
18	Isolated	American Basswood	*Tilia americana*	565887	4814679	65	3	2	Cavities
19	H (8)	American Beech	*Fagus grandifolia*	565925	4814722	45	2	3	Cavities
20	H (8)	Sugar Maple	*Acer saccharum*	565937	4814734	65	1	1	Cavities, tree species with potential to contain leaf clusters
21	H (8)	Trembling Aspen	*Populus tremuloides*	565973	4814770	20	3	1	Cavities
22	H (8)	American Basswood	*Tilia americana*	566002	4814794	70	2	1	Cavities
23	H (5)	Black Cherry	*Prunus serotina*	566097	4814624	55	1	1	Cavities
24	H (5)	American Basswood	*Tilia americana*	566096	4814617	65	1	1	Cavities
25	H (30)	Sugar Maple	*Acer saccharum*	565950	4814457	85	1	2	Cavities, tree species with potential to contain leaf clusters
26	H (30)	Sugar Maple	*Acer saccharum*	565818	4814319	80	2	1	Cavities, tree species with potential to contain leaf clusters
27	H (30)	Sugar Maple	*Acer saccharum*	565803	4814311	80	2	1	Cavities, tree species with potential to contain leaf clusters
28	H (30)	Sugar Maple	*Acer saccharum*	565805	4814294	75	2	2	Cavities, loose bark, tree species with potential to contain leaf clusters
29	H (30)	Sugar Maple	*Acer saccharum*	565796	4814296	85	2	1	Cavities, tree species with potential to contain leaf clusters
30	H (30)	Sugar Maple	*Acer saccharum*	565781	4814317	115	2	2	Cavities, tree species with potential to contain leaf clusters
31	H (35)	American Basswood	*Tilia americana*	565707	4814154	30	2	1	Cavities
32	H (35)	American Basswood	*Tilia americana*	565707	4814154	20	2	1	Cavities
33	H (35)	Sugar Maple	*Acer saccharum*	565740	4814128	60	1	2	Cavities, tree species with potential to contain leaf clusters
34	H (41)	Freeman's Maple	*Acer x freemanii*	565596	4814026	55	3	1	Cavities, tree species with potential to contain leaf clusters
35	H (41)	Freeman's Maple	*Acer x freemanii*	565629	4813990	90	1	1	Cavities, tree species with potential to contain leaf clusters
36	BHA-11	Sugar Maple	*Acer saccharum*	566063	4814299	20	3	2	Cavities, tree species with potential to contain leaf clusters
37	BHA-06	White Ash	*Fraxinus americana*	565586	4814343	25	2	4	Loose bark
38	BHA-06	Sugar Maple	*Acer saccharum*	565588	4814366	100	3	2	Cavities, crevices, leaf clusters
39	BHA-06	Sugar Maple	*Acer saccharum*	565597	4814377	70	1	2	Cavities, tree species with potential to contain leaf clusters
40	BHA-06	Sugar Maple	*Acer saccharum*	565598	4814361	60	2	1	Cavity, tree species with potential to contain leaf clusters
41	BHA-06	American Basswood	*Tilia americana*	565612	4814397	40	3	2	Cavity
42	BHA-06	American Basswood	*Tilia americana*	565623	4814402	70	2	1	Cavities
43	BHA-06	American Basswood	*Tilia americana*	565637	4814423	80	2	1	Cavities
44	BHA-06	Sugar Maple	*Acer saccharum*	565634	4814402	65	2	1	Cavities, tree species with potential to contain leaf clusters
45	BHA-06	Sugar Maple	*Acer saccharum*	565684	4814424	85	2	1	Cavities, loose bark, tree species with potential to contain leaf clusters
46	BHA-06	Sugar Maple	*Acer saccharum*	565677	4814429	75	2	1	Cavity, tree species with potential to contain leaf clusters
47	BHA-06	White Ash	*Fraxinus americana*	565678	4814394	40	3	4	Loose bark
48	BHA-06	Sugar Maple	*Acer saccharum*	565693	4814381	30	3	6	Crevice
49	BHA-06	American Basswood	*Tilia americana*	565730	4814377	75	2	1	Cavities
50	BHA-06	Sugar Maple	*Acer saccharum*	565744	4814356	70	2	2	Cavity, tree species with potential to contain leaf clusters

Tree ID	Habitat	Species		Location UTM Zone: 17T		DBH[1] (cm)	Height Class[2]	Decay Class[3]	Microhabitat Details
		Common Name	Scientific Name	Easting	Northing				
51	BHA-06	Sugar Maple	*Acer saccharum*	565723	4814307	50	2	2	Cavity, tree species with potential to contain leaf clusters
52	BHA-06	American Basswood	*Tilia americana*	565715	4814297	85	2	1	Cavity
53	BHA-06	Sugar Maple	*Acer saccharum*	565690	4814279	60	2	1	Cavity, tree species with potential to contain leaf clusters
54	BHA-06	Sugar Maple	*Acer saccharum*	565699	4814273	60	2	1	Cavity, tree species with potential to contain leaf clusters
55	BHA-06	Sugar Maple	*Acer saccharum*	565686	4814275	40	2	4	Cavity
56	BHA-06	Sugar Maple	*Acer saccharum*	565684	4814272	20	2	1	Cavities, tree species with potential to contain leaf clusters
57	BHA-06	Sugar Maple	*Acer saccharum*	565656	4814300	30	2	1	Cavity, tree species with potential to contain leaf clusters
58	BHA-06	Sugar Maple (branch)	*Acer saccharum*	565641	4814301	N/A	N/A	N/A	Leaf clusters (large fallen branch)
59	BHA-01	Sugar Maple	*Acer saccharum*	565524	4814093	112	Unknown	Unknown	Surveyed by Aboud 2020; cavities, loose bark, tree species with potential to contain leaf clusters
60	BHA-01	American Elm	*Ulmus americana*	565472	4814046	46	Unknown	Unknown	Surveyed by Aboud 2020; cavities, loose bark
61	BHA-06	Sugar Maple	*Acer saccharum*	565624	4814385	25	3	2	Cavity, loose bark, tree species with potential to contain leaf clusters
62	BHA-06	Sugar Maple	*Acer saccharum*	565634	4814382	27	3	1	Cavities, tree species with potential to contain leaf clusters
63	BHA-06	White Ash	*Fraxinus americana*	565671	4814398	33	3	4	Cavity
64	BHA-06	Sugar Maple	*Acer saccharum*	565657	4814373	29	2	1	Cavity, tree species with potential to contain leaf clusters
65	BHA-06	Sugar Maple	*Acer saccharum*	565642	4814353	38	2	1	Cavity, tree species with potential to contain leaf clusters
66	BHA-06	Sugar Maple	*Acer saccharum*	565644	4814346	37	2	1	Cavity, tree species with potential to contain leaf clusters
67	BHA-06	Sugar Maple	*Acer saccharum*	565635	4814338	50	2	1	Cavities, tree species with potential to contain leaf clusters
68	BHA-06	Sugar Maple	*Acer saccharum*	565625	4814322	28	3	1	Cavity, tree species with potential to contain leaf clusters
69	BHA-06	Sugar Maple	*Acer saccharum*	565599	4814340	35	2	1	Cavity, tree species with potential to contain leaf clusters
70	BHA-06	Sugar Maple	*Acer saccharum*	565705	4814362	24	4	2	Cavity, tree species with potential to contain leaf clusters
71	BHA-06	Sugar Maple	*Acer saccharum*	565718	4814333	26	4	2	Cavity, tree species with potential to contain leaf clusters
72	BHA-06	Sugar Maple	*Acer saccharum*	565717	4814345	15	4	1	Cavity, tree species with potential to contain leaf clusters
73	BHA-06	Sugar Maple	*Acer saccharum*	565702	4814332	23	4	2	Loose bark, crack/crevice, tree species with potential to contain leaf clusters
74	BHA-06	Sugar Maple	*Acer saccharum*	565675	4814301	39	2	1	Cavity, tree species with potential to contain leaf clusters
75	BHA-06	Sugar Maple	*Acer saccharum*	565678	4814291	30	4	5	Crack/Crevice, tree species with potential to contain leaf clusters
76	BHA-06	Sugar Maple	*Acer saccharum*	565690	4814287	17	4	1	Cavity, tree species with potential to contain leaf clusters
77	BHA-06	Sugar Maple	*Acer saccharum*	565688	4814324	36	2	1	Cavity, tree species with potential to contain leaf clusters
78	BHA-06	Sugar Maple	*Acer saccharum*	565702	4814312	35	3	1	Cavity, tree species with potential to contain leaf clusters
79	BHA-06	Sugar Maple	*Acer saccharum*	565706	4814314	25	4	2	Loose bark, tree species with potential to contain leaf clusters
80	BHA-02	Manitoba Maple	*Acer negundo*	565677	4814183	58	3	2	Cavity and loose bark
81	BHA-02	Black Locust	*Robinia pseudoacacia*	565666	4814189	29	2	1	Cavity
82	BHA-02	Manitoba Maple	*Acer negundo*	565664	4814194	55	3	1	Cavity
83	BHA-02	Sugar Maple	*Acer saccharum*	565657	4814199	72	3	5	Crack/Crevice, tree species with potential to contain leaf clusters
84	BHA-02	Sugar Maple	*Acer saccharum*	565630	4814225	80	4	6	Cavity, crack/crevice, tree species with potential to contain leaf clusters
85	BHA-02	American Elm	*Ulmus americana*	565617	4814236	14	3	4	Loose bark
86	BHA-02	White Ash	*Fraxinus americana*	565603	4814255	27	3	4	Loose bark
87	BHA-02	Black Locust	*Robinia pseudoacacia*	565574	4814270	22	2	1	Cavity
88	BHA-02	Black Locust	*Robinia pseudoacacia*	565566	4814278	22	4	3	Loose bark, crack/crevice
89	BHA-02	American Basswood	*Tilia americana*	565562	4814289	55	2	1	Cavity
90	BHA-02	American Basswood	*Tilia americana*	565556	4814291	33	2	1	Cavity
91	BHA-02	Sugar Maple	*Acer saccharum*	565529	4814297	65	2	1	Cavity, tree species with potential to contain leaf clusters
92	BHA-02	American Basswood	*Tilia americana*	565521	4814292	38	2	1	Cavity
93	BHA-02	Manitoba Maple	*Acer negundo*	565518	4814298	50	3	1	Cavity
94	BHA-02	Sugar Maple	*Acer saccharum*	565507	4814281	75	2	1	Cavity, tree species with potential to contain leaf clusters
95	BHA-02	American Basswood	*Tilia americana*	565501	4814272	30	4	5	Cavity
96	BHA-02	Sugar Maple	*Acer saccharum*	565489	4814256	90	3	1	Cavity, loose bark, tree species with potential to contain leaf clusters
97	BHA-02	Manitoba Maple	*Acer negundo*	565487	4814249	21	3	1	Cavity
98	BHA-02	American Basswood	*Tilia americana*	565483	4814250	40	4	5	Cavity
99	BHA-02	American Basswood	*Tilia americana*	565476	4814240	57	2	1	Cavity, crack/crevice

Tree ID	Habitat	Species		Location UTM Zone: 17T		DBH[1] (cm)	Height Class[2]	Decay Class[3]	Microhabitat Details
		Common Name	Scientific Name	Easting	Northing				
100	BHA-02	Sugar Maple	*Acer saccharum*	565469	4814237	55	3	4	Cavity, crack/crevice, tree species with potential to contain leaf clusters
101	BHA-02	Sugar Maple	*Acer saccharum*	565463	4814229	65	2	1	Cavity, tree species with potential to contain leaf clusters
102	BHA-02	Sugar Maple	*Acer saccharum*	565459	4814226	34	3	1	Cavities, tree species with potential to contain leaf clusters
103	BHA-02	Sugar Maple	*Acer saccharum*	565442	4814208	43	2	1	Cavity, tree species with potential to contain leaf clusters
104	BHA-02	Sugar Maple	*Acer saccharum*	565442	4814212	48	2	1	Cavities, tree species with potential to contain leaf clusters
105	BHA-02	Sugar Maple	*Acer saccharum*	565429	4814196	50	2	3	Cavity, loose bark, tree species with potential to contain leaf clusters
106	BHA-02	Sugar Maple	*Acer saccharum*	565406	4814168	70	2	1	Cavity, tree species with potential to contain leaf clusters
107	BHA-02	Sugar Maple	*Acer saccharum*	565401	4814162	80	2	3	Cavities, tree species with potential to contain leaf clusters
108	BHA-02	Sugar Maple	*Acer saccharum*	565393	4814153	60	2	1	Cavity, loose bark, tree species with potential to contain leaf clusters
109	BHA-02	Sugar Maple	*Acer saccharum*	565393	4814154	60	3	3	Cavity, tree species with potential to contain leaf clusters
110	BHA-02	Black Cherry	*Prunus serotina*	565387	4814147	60	3	1	Cavity
111	BHA-02	Black Cherry	*Prunus serotina*	565384	4814144	65	3	1	Cavity, loose bark
112	BHA-02	American Basswood	*Tilia americana*	565379	4814138	Too large	2	1	Cavities
113	BHA-07	Green Ash	*Fraxinus pennsylvanica*	566052	4814402	18	2	2	Crack, tree declining wth canopy dieback
114	BHA-07	White Ash	*Fraxinus americana*	566048	4814412	75	1	3	Loose bark
115	BHA-07	Sugar Maple	*Acer saccharum*	566011	4814408	88	1	1	Cavity, tree species with potential to contain leaf clusters
116	BHA-07	American Elm	*Ulmus americana*	566012	4814424	82	1	6	Cavities, crack
117	BHA-07	American Basswood	*Tilia americana*	565975	4814490	62	2	1	Knot hole cavity
118	BHA-07	Willow sp.	*Salix sp.*	566040	4814540	65	1	2	Loose bark up main stem, cavity
119	BHA-08	Trembling Aspen	*Populus tremuloides*	566158	4814473	32	2	1	Loose bark
120	BHA-08	Freeman's Maple	*Acerr x freemanii*	566151	4814488	46	2	2	Crevice, tree species with potential to contain leaf clusters
121	BHA-08	Freeman's Maple	*Acer x freemanii*	566216	4814480	20	3	5	Loose bark and crevices, no crown remaining, tree species with potential to contain leaf clusters
122	BHA-08	Tamarack	*Larix laricina*	566248	4814487	16	4	6	Crevices
123	BHA-08	Unk.	*N/A*	566147	4814557	DNC	4	6	Cavity and crevices - snag, no bark left
124	BHA-02	Black Locust	*Robinia pseudoacacia*	565532	4814275	65	2	1	Cavity and loose bark
125	BHA-02	Black Locust	*Robinia pseudoacacia*	565539	4814283	48	2	1	Cavity
126	BHA-02	Sugar Maple	*Acer saccharum*	565363	4814121	95	2	1	Cavity, tree species with potential to contain leaf clusters
127	BHA-03	Basswood	*Tilia americana*	565354	4814112	45+40	2	1	Cavities
128	BHA-03	Sugar Maple	*Acer saccharum*	565336	4814097	110	2	1	Cavities, loose bark, contained leaf cluster
129	BHA-03	Sugar Maple	*Acer saccharum*	565351	4814109	120	4	3	Crack/Crevice, tree species with potential to contain leaf clusters
130	BHA-03	Sugar Maple	*Acer saccharum*	565332	4814092	65	1	1	Cavity, tree species with potential to contain leaf clusters
131	BHA-03	Basswood	*Tilia americana*	565303	4814064	90+25+25+20	1	1	Cavity
132	BHA-03	Basswood	*Tilia americana*	565305	4814068	15	3	1	Cavity
133	BHA-03	American Elm	*Ulmus americana*	565318	4814065	30	2	1	Loose bark
134	BHA-03	American Elm	*Ulmus americana*	565323	4814074	30	2	4	Loose bark
135	BHA-03	American Elm	*Ulmus americana*	565326	4814074	30	2	4	Loose bark
136	BHA-03	American Elm	*Ulmus americana*	565327	4814071	20	2	4	Loose bark
137	BHA-03	American Elm	*Ulmus americana*	565334	4814077	20	3	5	Loose bark
138	BHA-03	American Elm	*Ulmus americana*	565336	4814079	30	2	4	Loose bark
139	BHA-03	American Elm	*Ulmus americana*	565353	4814096	20+15+12+12	2	4	Loose bark
140	BHA-03	American Elm	*Ulmus americana*	565348	4814072	15	2	4	Loose bark
141	BHA-03	American Elm	*Ulmus americana*	565343	4814069	27	1	4	Loose bark
142	BHA-03	American Elm	*Ulmus americana*	565315	4814047	12	2	4	Loose bark
143	BHA-03	American Elm	*Ulmus americana*	565326	4814033	30+20	3	6	Cavity
144	BHA-03	American Elm	*Ulmus americana*	565359	4814073	55	2	4	Cavities
145	BHA-03	American Elm	*Ulmus americana*	565364	4814029	32	2	4	Loose bark
146	BHA-03	American Elm	*Ulmus americana*	565365	4814030	40	2	4	Loose bark
147	BHA-03	American Elm	*Ulmus americana*	565358	4814026	30	2	4	Loose bark
148	BHA-03	American Elm	*Ulmus americana*	565366	4814017	45	1	4	Loose bark
149	BHA-03	American Elm	*Ulmus americana*	565353	4814015	65	2	4	Loose bark

Tree ID	Habitat	Species		Location UTM Zone: 17T		DBH[1] (cm)	Height Class[2]	Decay Class[3]	Microhabitat Details
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150	BHA-03	American Elm	*Ulmus americana*	565347	4814019	33	2	4	Loose bark
151	BHA-03	American Elm	*Ulmus americana*	565341	4814016	35	2	4	Loose bark
152	BHA-03	American Elm	*Ulmus americana*	565371	4814007	13	2	4	Loose bark
153	BHA-04	Common Pear	*Pyrus communis*	565388	4813977	35	3	1	Cavity
154	BHA-04	Black Locust	*Robinia pseudoacacia*	565394	4813972	40	2	1	Cavity
155	BHA-04	American Elm	*Ulmus americana*	565375	4814054	40	2	4	Cavities
156	BHA-04	American Elm	*Ulmus americana*	565442	4813942	30	2	4	Cavities
157	BHA-01	American Elm	*Ulmus americana*	565438	4813969	65	2	4	Loose bark
158	BHA-01	American Elm	*Ulmus americana*	565383	4814057	37	2	4	Loose bark
159	BHA-01	American Elm	*Ulmus americana*	565389	4814070	42	2	4	Loose bark
160	BHA-01	American Elm	*Ulmus americana*	565386	4814073	35	2	4	Loose bark
161	BHA-01	American Elm	*Ulmus americana*	565394	4814084	14	2	2	Cavity
162	BHA-01	American Elm	*Ulmus americana*	565396	4814091	45+36	2	4	Loose bark
163	BHA-01	American Elm	*Ulmus americana*	565413	4814034	35	2	5	Loose bark
164	BHA-01	American Elm	*Ulmus americana*	565403	4814127	30	3	4	Loose bark
165	BHA-01	Common Apple	*Malus pumila*	565411	4814106	18	4	2	Cavities
166	BHA-01	American Elm (Snag)	*Ulmus americana*	565432	4814069	40	4	6	Cavity
167	BHA-01	American Elm	*Ulmus americana*	565458	4814030	35	3	3	Loose bark
168	BHA-01	American Elm	*Ulmus americana*	565478	4814054	60	1	5	Loose bark
169	BHA-01	Scots Pine	*Pinus sylvestrs*	565466	4814095	20	2	2	Loose bark
170	BHA-01	American Elm	*Ulmus americana*	565408	4814133	28	2	4	Loose bark
171	BHA-01	American Elm	*Ulmus americana*	565456	4814137	20	2	4	Loose bark
172	BHA-01	American Elm	*Ulmus americana*	565462	4814129	30	3	4	Loose bark
173	BHA-01	American Elm	*Ulmus americana*	565479	4814117	18	3	3	Loose bark
174	BHA-01	American Elm	*Ulmus americana*	565484	4814097	45	1	4	Loose bark
175	BHA-01	American Elm	*Ulmus americana*	565523	4814071	40	3	4	Loose bark
176	BHA-01	American Elm	*Ulmus americana*	565530	4814025	43	3	4	Loose bark
177	BHA-01	American Elm	*Ulmus americana*	565532	4814028	19	3	5	Loose bark
178	BHA-01	Sugar Maple	*Acer saccharum*	565558	4814062	100	1	2	Cavities, tree species with potential to contain leaf clusters
179	BHA-01	American Basswood	*Tilia americana*	565537	4814087	85	1	2	Cavity, crack/crevice
180	BHA-01	Sugar Maple	*Acer saccharum*	565530	4814089	90	2	1	Cavity, tree species with potential to contain leaf clusters
181	BHA-01	Sugar Maple	*Acer saccharum*	565509	4814109	90	3	1	Cavity, tree species with potential to contain leaf clusters
182	BHA-01	American Basswood	*Tilia americana*	565489	4814136	45	2	2	Cavity
183	BHA-01	Sugar Maple	*Acer saccharum*	565476	4814143	70	1	2	Cavities, crack/crevice, tree species with potential to provide leaf cover
184	BHA-01	Sugar Maple	*Acer saccharum*	565464	4814152	85	1	1	Cavity
185	BHA-01	American Elm	*Ulmus americana*	565458	4814159	75+50	1	2	Loose bark
186	BHA-01	American Elm	*Ulmus americana*	565439	4814167	25	3	5	Loose bark
187	BHA-01	American Basswood	*Tilia americana*	565437	4814181	65	1	1	Cavities
188	BHA-01	American Basswood	*Tilia americana*	565439	4814179	40+30	2	2	Cavity and loose bark
189	BHA-01	White Pine	*Pinus strobus*	565506	4814156	26	4	6	Loose bark
190	BHA-01	White Pine	*Pinus strobus*	565532	4814123	20	4	6	Loose bark
191	BHA-01	White Pine	*Pinus strobus*	565566	4814089	25	2	5	Loose bark
192	BHA-01	White Pine	*Pinus strobus*	565565	4814081	17	3	5	Cavity
193	BHA-01	American Elm	*Ulmus americana*	565574	4814128	20	3	5	Loose bark
194	BHA-01	White Ash	*Fraxinus americana*	565641	4814121	60	1	3	Loose bark
195	BHA-01	Black Cherry	*Prunus serotina*	565555	4814041	45	D	3	Cavity, loose bark, and tree species with potential to contain leaf clusters
196	BHA-05	Freeman's Maple	*Acer x freemanii*	565696	4813927	130	1	1	Cavities, tree species with potential to contain leaf clusters
197	BHA-05	American Elm	*Ulmus americana*	565689	4813921	45	2	4	Loose bark
198	BHA-05	American Elm	*Ulmus americana*	565703	4813927	38	3	4	Loose bark
199	BHA-05	Freeman's Maple	*Acer x freemanii*	565704	4813930	30	4	5	Loose bark
200	BHA-05	Freeman's Maple	*Acer x freemanii*	565697	4813939	15	4	5	Loose bark
201	BHA-05	Freeman's Maple	*Acer x freemanii*	565694	4813941	24	4	5	Loose bark, cavity
202	BHA-05	American Elm	*Ulmus americana*	565769	4813969	47	2	4	Loose bark

Tree ID	Habitat	Species		Location UTM Zone: 17T		DBH[1] (cm)	Height Class[2]	Decay Class[3]	Microhabitat Details
		Common Name	Scientific Name	Easting	Northing				
203	BHA-05	Freeman's Maple	*Acer x freemanii*	565723	4813933	22	3	3	Loose bark
204	BHA-05	Freeman's Maple	*Acer x freemanii*	565699	4813910	20	2	1	Cavity, tree species with potential to contain leaf clusters
205	BHA-05	Freeman's Maple	*Acer x freemanii*	565696	4813916	18	2	1	Cavity, tree species with potential to contain leaf clusters
206	Isolated	American Beech	*Fagus grandifolia*	565520	4814694	75	2	5	Loose Bark
207	Isolated	American Beech	*Fagus grandifolia*	565507	4814698	56	1	4	Loose bark
208	Isolated	Sugar Maple	*Acer saccharum*	565498	4814817	90	1	2	Loose bark, tree species with potential to contain leaf clusters
209	BHA-09	Sugar Maple	*Acer saccharum*	565444	4815298	36	2	2	Cavity, loose bark, crack/crevice, tree species with potential to contain leaf clusters
210	BHA-09	Sugar Maple	*Acer saccharum*	565450	4815292	71	2	1	Crack/Crevice, tree species with potential to contain leaf clusters
211	BHA-09	Sugar Maple	*Acer saccharum*	565431	4815286	62	2	2	Crack/Crevice, tree species with potential to contain leaf clusters
212	BHA-10	White Pine	*Pinus strobus*	565591	4815174	20	3	4	Loose bark
213	BHA-10	White Pine	*Pinus strobus*	565580	4815168	44	2	4	Loose bark
214	BHA-10	Eastern White Cedar	*Thuja occidentalis*	565547	4815124	50	4	5	Cavity and loose bark
215	BHA-09	White Ash	*Fraxinus americana*	565715	4814935	42	2	3	Loose bark
216	BHA-09	White Ash	*Fraxinus americana*	565716	4814942	27	2	3	Loose bark
217	BHA-09	Sugar Maple	*Acer saccharum*	565698	4814945	44	3	2	Cavity, tree species with potential to contain leaf clusters
218	BHA-09	Sugar Maple	*Acer saccharum*	565688	4814990	26	2	1	Cavity, tree species with potential to contain leaf clusters
219	BHA-09	Sugar Maple	*Acer saccharum*	565624	4814964	47	2	2	Cavities, tree species with potential to contain leaf clusters
220	BHA-09	American Beech	*Fagus grandifolia*	565670	4815015	46	3	6	Cavity
221	BHA-09	Sugar Maple	*Acer saccharum*	565675	4815018	77	1	2	Cavity, tree species with potential to contain leaf clusters
222	BHA-09	Black Cherry	*Prunus serotina*	565711	4814990	45	3	6	Cavities
223	BHA-09	Sugar Maple	*Acer saccharum*	565780	4815020	29	4	4	Cavity, tree species with potential to contain leaf clusters
224	BHA-09	American Beech	*Fagus grandifolia*	565751	4815026	48	2	2	Cavity
225	BHA-09	American Beech	*Fagus grandifolia*	565734	4815030	55	4	6	Cavities
226	BHA-09	American Beech	*Fagus grandifolia*	565715	4815062	63	4	6	Cavities
227	BHA-10	White Pine	*Pinus strobus*	565572	4815129	50	4	6	Cavity

[1]Diameter at Breast Height

[2]Height Class: 1 = Dominant (above canopy); 2 = Co-dominant (canopy height); 3 = Intermediate (just below canopy); 4 = Suppressed (well below canopy)

[3]Decay Class: 1 = Healthy, live tree; 2 = Declining live tree, part of canopy lost; 3 = Very recently dead, bark intact, branches intact; 4 = Recently dead, bark peeling, only branches intact; 5 = Older dead tree, 90% of bark lost, few branch stubs, broken top; 6 = Very old dead tree, advanced decay, no branches, parts of stem have rotted away

Appendix III
Weather Conditions

Monitoring Night[1]	Survey Start (hrs)	Survey End (hrs)	Survey Start			Survey End		
			Temperature (°C)[2]	Wind Speed (km/hr)[2]	Precipiation Amount (mm)[2]	Temperature (°C)[2]	Wind Speed (km/hr)[2]	Precipiation Amount (mm)[2]
01-Jun-22	21:00	2:00	15.1	10	0	8.8	11	0
02-Jun-22	21:00	2:00	14.0	10	0	8.6	6	0
03-Jun-22	21:00	2:00	16.5	2	0	7.7	12	0
04-Jun-22	21:00	2:00	9.6	1	0	6.7	1	0
05-Jun-22	21:00	2:00	14.6	8	0	11.7	6	0.1
06-Jun-22	21:00	2:00	14.8	4	0.2	16.5	9	0
07-Jun-22	21:00	2:00	12.5	7	0	9.5	3	0
08-Jun-22	21:00	2:00	14.7	1	0.4	12.1	7	1.9
09-Jun-22	21:00	2:00	11.8	8	0	11.0	9	0
10-Jun-22	21:00	2:00	14.1	2	0	13.3	2	0
11-Jun-22	21:00	2:00	17.9	7	0	16.7	2	0
12-Jun-22	21:00	2:00	15.3	7	0	9.6	3	0
13-Jun-22	21:00	2:00	17.8	8	0	15.5	8	0
14-Jun-22	21:00	2:00	17.0	4	0	13.9	4	0
15-Jun-22	21:00	2:00	21.3	4	0	17.8	3	0
16-Jun-22	21:00	2:00	25.2	6	0	20.8	9	0
17-Jun-22	21:00	2:00	14.2	20	0	10.0	22	0
18-Jun-22	21:00	2:00	12.3	11	0	7.7	2	0
19-Jun-22	21:00	2:00	14.8	6	0	12.6	4	0
20-Jun-22	21:00	2:00	17.4	4	0	16.7	4	0
21-Jun-22	21:00	2:00	27.0	8	0	24.4	5	0
22-Jun-22	21:00	2:00	20.6	15	0	14.7	15	0
23-Jun-22	21:00	2:00	19.4	10	0	10.7	0	0
24-Jun-22	21:00	2:00	21.6	7	0	15.6	3	0
25-Jun-22	21:00	2:00	22.1	9	0	15.3	4	0
26-Jun-22	21:00	2:00	22.2	7	0	15.8	8	0
27-Jun-22	21:00	2:00	13.4	11	0	9.5	6	0
28-Jun-22	21:00	2:00	18.0	8	0	12.1	2	0
29-Jun-22	21:00	2:00	17.5	6	0	10.9	2	0
30-Jun-22	21:00	2:00	24.0	9	0	20.5	6	0

[1]The monitoring period is June 1-13, 2022 for stations BAT-001 to BAT-013 and June 14-30, 2022 for stations BAT-014 to BAT-023

[2]Government of Canada 2022

Note: shaded cells indicate dates with suitable weather that were included in analysis

Appendix IV
Acoustic Monitoring Results – MLE Values

Acoustic Monitoring Station	Eastern Small-footed Myotis (*Myotis leibii*)		Northern Myotis (*Myotis septentrionalis*)		Little Brown Myotis (*Myotis lucifugus*)		Tri-colored Bat (*Perimyotis subflavus*)		Eastern Red Bat (*Lasiurus borealis*)		Big Brown Bat (*Eptesicus fuscus*)		Silver-haired Bat (*Lasionycteris noctivagans*)		Hoary Bat (*Lasiurus cinereus*)		High Frequency[2]	Low Frequency[3]	Myotis spp.[4]	Low Quality[5]
	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	MLE[1]	Number of Recordings	Number of Recordings			
BAT-001	0.83	2	1	0	0.02	13	1	0	0.01	9	0	39	0.09	15	0	27	37	96	1	10
BAT-002	0.49	7	1	0	0	64	1	0	0.19	7	0	60	0.38	11	0	26	122	44	22	19
BAT-003	0.80	5	1	0	0	63	1	0	0	41	0	122	0.07	27	0	82	130	38	22	209
BAT-004	0.98	1	1	0	0	18	1	0	0.01	10	0	42	0.04	21	0	69	42	48	12	11
BAT-005	0.51	5	1	0	0	18	1	0	0	13	0	110	0.01	32	0	72	30	62	17	23
BAT-006	1	0	1	0	0.57	2	1	0	0.19	3	0	42	0.56	10	0	78	35	103	2	44
BAT-007	0.69	5	1	0	0	23	1	0	0	49	0	289	0.94	20	0	82	141	37	30	150
BAT-008	1	0	1	0	1	0	1	0	1	0	0	52	0.99	2	0	31	42	280	2	62
BAT-009	0.87	3	1	0	0.01	19	1	0	0	42	0	321	0.38	31	0	48	88	163	15	23
BAT-010	0.12	11	1	0	0	19	1	0	0.28	4	0	291	0.30	30	0	36	127	111	28	14
BAT-011	0.05	17	1	0	0	35	1	0	0	17	0	111	0.57	13	0	33	82	25	50	81
BAT-012	1	0	1	0	0	25	1	0	0	33	0	181	0.09	30	0	61	75	51	10	12
BAT-013	1	3	1	0	0	50	1	0	0	91	0	248	0	51	0	52	72	84	5	9
BAT-014	1	0	1	0	1	0	1	0	1	0	0.18	6	0.18	8	0	22	6	58	0	6
BAT-015	0.16	16	1	0	0	87	0.96	1	0	46	0	495	1	18	0	69	283	138	48	30
BAT-016	0.06	15	1	0	0.22	8	1	0	0	23	0	51	0.99	3	0	82	195	377	22	133
BAT-017	1	0	1	0	0.89	1	1	0	0.02	7	0	171	0.82	15	0	74	141	251	6	57
BAT-018	0.16	11	1	0	0	22	1	0	0	17	0	467	0.50	40	0	116	82	299	25	12
BAT-019	0.81	1	1	0	1	0	1	0	0.57	1	0	19	0.82	3	0.02	9	33	23	9	4
BAT-020	0.81	1	1	0	1	0	1	0	0.57	1	0	226	1	14	0	273	33	939	7	96
BAT-021	1	0	1	0	1	0	1	0	1	0	0	96	1	7	0	76	18	476	1	66
BAT-022	0.08	17	1	0	0	38	1	0	0	45	0	334	0.03	57	0	268	209	341	60	21
BAT-023	0	6	1	0	0	155	1	0	1	0	0.13	3	0.53	0	0	6	181	34	36	4

[1]Maximum likelihood estimate (MLE) calculated by Sonobat 4.2.2. A MLE value of 0 represents strong evidence of species presence and a value of 1 suggests weak evidence of species presence.

[2]High Frequency species include: Eastern Red Bat, Little Brown Myotis, Eastern Small-footed Myotis, Northern Myotis and Tri-colored Bat

[3]Low Frequency species include: Hoary Bat, Big Brown Bat and Silver-haired Bat

[4]Myotis spp. grouping includes: Little Brown Myotis, Eastern Small-footed Myotis and Northern Myotis

[5]Low quality recordings that could not be assigned a species or species grouping classification by the auto-classifier

Appendix V
Acoustic Monitoring Results – SAR Analysis

Appendix V
Number and timing of recorded bat pass sequences classified to Species at Risk and potential Species at Risk by community.

Vegetation Community[1]	Monitoring Station(s)	Classification[3, 4, 5]	Number and Timing of Recorded Bat Pass Sequences			Type of Candidate Habitat Present and Species		
			(Minutes After Sunset)			Maternity Roosting	Male/Non-reproductive Female Day Roosting	Foraging or Flyway
		Common Name	0-60	61-100	>100			
BHA-01 White Pine Coniferous Plantation (CUP3-2) (40)	BAT-014 BAT-023	Eastern Small-footed Myotis	4*	1	1	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	86	57	12			
		Myotis sp.	17	6	13			
		Tri-colored Bat	-	-	-			
		High Frequency	106	49	32			
		Eastern Red Bat	-	-	-			
BHA-02 Dry - Fresh Deciduous Forest (FOD4) (39)	BAT-002	Eastern Small-footed Myotis	1*	-	6	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	10	7	47			
		Myotis sp.	5	2	15			
		Tri-colored Bat	-	-	-			
		High Frequency	24	22	76			
		Eastern Red Bat	1	2	4			
BHA-06 Fresh - Moist Sugar Maple - Hardwood Deciduous Forest (FOD6-5) (33)	BAT-003 BAT-015 BAT-016 BAT-018 BAT-019 BAT-020 BAT-022	Eastern Small-footed Myotis	9*	11	46	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	27	50	141			
		Myotis sp.	34	38	121			
		Tri-colored Bat	-	-	1			
		High Frequency	193	167	605			
		Eastern Red Bat	71	21	82			
BHA-11 Mineral Cultural Woodland (CUW1) (29)	BAT-021	Eastern Small-footed Myotis	-	-	-			Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	-	-	-			
		Myotis sp.	-	-	1			
		Tri-colored Bat	-	-	-			
		High Frequency	-	1	17			
		Eastern Red Bat	-	-	-			
Farmyard with Isolated Trees[2]	BAT-001	Eastern Small-footed Myotis	1*	1	-	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	5	3	5			
		Myotis sp.	-	-	1			
		Tri-colored Bat	-	-	-			
		High Frequency	15	5	17			
		Eastern Red Bat	2	2	5			
Isolated Trees[2]	BAT-007	Eastern Small-footed Myotis	1*	-	4	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	5	6	12			
		Myotis sp.	16	-	14			
		Tri-colored Bat	-	-	-			
		High Frequency	37	16	88			
		Eastern Red Bat	6	11	32			

Vegetation Community[1]	Monitoring Station(s)	Classification[3, 4, 5]	Number and Timing of Recorded Bat Pass Sequences			Type of Candidate Habitat Present and Species		
			(Minutes After Sunset)			Maternity Roosting	Male/Non-reproductive Female Day Roosting	Foraging or Flyway
		Common Name	0-60	61-100	>100			
Hedgerow (H) (5)	BAT-009	Eastern Small-footed Myotis	2*	-	1			Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	3	9	7			
		Myotis sp.	2	5	8			
		Tri-colored Bat	-	-	-			
		High Frequency	43	11	34			
		Eastern Red Bat	31	6	5			
Hedgerow (H) (8)	BAT-008	Eastern Small-footed Myotis	-	-	-			Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	-	-	-			
		Myotis sp.	-	-	2			
		Tri-colored Bat	-	-	-			
		High Frequency	14	6	22			
		Eastern Red Bat	-	-	-			
Hedgerow (H) (30)	BAT-010 BAT-011	Eastern Small-footed Myotis	12*	10	6	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	23	5	26			
		Myotis sp.	21	30	27			
		Tri-colored Bat	-	-	-			
		High Frequency	64	63	82			
		Eastern Red Bat	7	2	12			
Hedgerow (H) (31)	BAT-006	Eastern Small-footed Myotis	-	-	-			Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	-	-	2			
		Myotis sp.	1	-	1			
		Tri-colored Bat	-	-	-			
		High Frequency	12	7	16			
		Eastern Red Bat	3	-	-			
Hedgerow (H) (32)	BAT-005	Eastern Small-footed Myotis	3*	1	1	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	8	7	3			
		Myotis sp.	8	2	7			
		Tri-colored Bat	-	-	-			
		High Frequency	11	2	17			
		Eastern Red Bat	7	-	6			
Hedgerow (H) (35)	BAT-012	Eastern Small-footed Myotis	-	-	-			Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	2	4	19			
		Myotis sp.	-	3	7			
		Tri-colored Bat	-	-	-			
		High Frequency	4	18	53			
		Eastern Red Bat	11	-	22			

Vegetation Community[1]	Monitoring Station(s)	Classification[3, 4, 5]	Number and Timing of Recorded Bat Pass Sequences			Type of Candidate Habitat Present and Species		
			(Minutes After Sunset)			Maternity Roosting	Male/Non-reproductive Female Day Roosting	Foraging or Flyway
		Common Name	0-60	61-100	>100			
Hedgerow (H) (36)	BAT-017	Eastern Small-footed Myotis	-	-	-		Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	-	-	1			
		Myotis sp.	1	1	4			
		Tri-colored Bat	-	-	-			
		High Frequency	11	34	96			
		Eastern Red Bat	-	5	2			
Hedgerow (H) (37)	BAT-004	Eastern Small-footed Myotis	-	-	1		Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	2	7	9			
		Myotis sp.	2	2	8			
		Tri-colored Bat	-	-	-			
		High Frequency	3	9	30			
		Eastern Red Bat	1	2	7			
Hedgerow (H) (41)	BAT-013	Eastern Small-footed Myotis	1*	-	2	Little Brown Myotis	Little Brown Myotis	Little Brown Myotis Eastern Small-footed Myotis
		Little Brown Myotis	11	14	25			
		Myotis sp.	2	1	2			
		Tri-colored Bat	-	-	-			
		High Frequency	18	9	45			
		Eastern Red Bat	71	4	16			

[1] Refer to Maps

[2] Not delineated on Map 1 and Map 2 as an Ecological Land Classification (ELC) polygon, but candidate SAR bat roost trees were documented.

[3] Myotis sp. grouping includes: Little Brown Myotis, Eastern Small-footed Myotis and Northern Myotis.

[4] High Frequency species include: Eastern Red Bat, Little Brown Myotis, Eastern Small-footed Myotis, Northern Myotis and Tri-colored Bat.

[5] Eastern Red Bat is not a Species at Risk or a potential Species at Risk but is shown here for comparison purposes as it is included in the High Frequency species grouping.

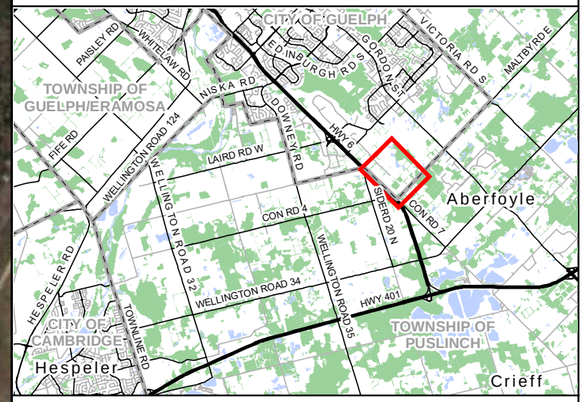
* Suitable roosting habitat for Eastern Small-footed Myotis is not present within the feature.

Appendix VII
Significant Landform Mapping

Map 1

NewCold Guelph: Phase 1

Appendix VII: Significant Landform



Legend

- Subject Property
- Municipal Boundary
- City of Guelph Significant Landform (Official Plan 2021)
- Utility Line
- Permanent Watercourse
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)

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Aquatic, Terrestrial and Wetland Biologists

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Imagery: First Base Solutions Inc. (2022).

Project: 2778 Date: March 2, 2023	NAD83 - UTM Zone 17 Size: 11x17" **1:5,000**

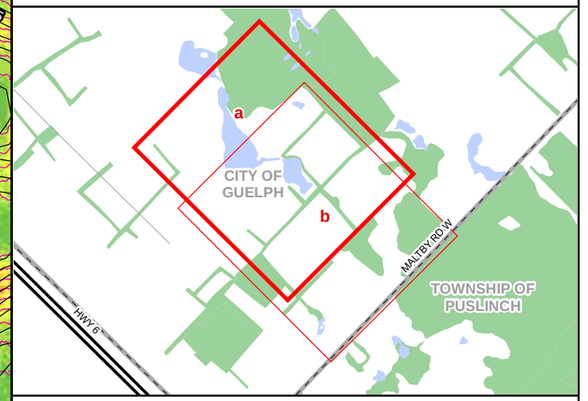
0 50 100 150 200 250 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_AppVIIa_LandformAirphoto_5K_2023_03_02_LEH.mxd

Map 2a

NewCold Guelph: Phase 1

Appendix VII: Significant Landform



Legend

- Subject Property
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)
- Topo Survey Contour (1m)
- Ontario DTM (Lidar) - MNRF (0.5m Contour)
- Confirmed Landform (1080 Southgate)
- Landform Flag

Slope Percent

- <5
- 5-10
- 10-15
- 15-20
- >20

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Project: 2778
Date: March 2, 2023

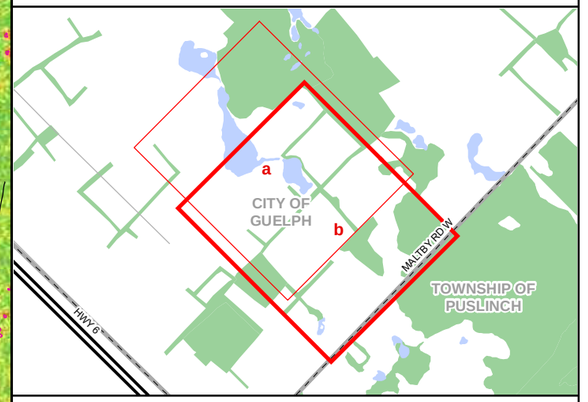
NAD83 - UTM Zone 17
Size: 11x17"
1:2,250

0 20 40 60 80 100 120 Metres

Map 2b

NewCold Guelph: Phase 1

Appendix VII: Significant Landform



Legend

- Subject Property
- Significant Landform (Confirmed by City of Guelph September 12, 2022)
- Significant Landform (preliminary)
- Significant Landform (City of Guelph)
- Topo Survey Contour (1m)
- Ontario DTM (Lidar) - MNRF (0.5m Contour)
- Confirmed Landform (1080 Southgate)
- Landform Flag

Slope Percent

- <5
- 5-10
- 10-15
- 15-20
- >20

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Project: 2778
Date: March 2, 2023

NAD83 - UTM Zone 17
Size: 11x17"
1:2,250

0 20 40 60 80 100 120 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_AppVIIb_LandformSlope_5K_2023_03_02_LEH.mxd

Subject: RE: Southgate Business Park Significant Landform (proj2778)
From: Leah Lefler <Leah.Lefler@guelph.ca>
Date: 9/12/2022, 12:23 PM
To: Laura Hockley <lhockley@nrsi.on.ca>, Nyssa Hardie <nhardie@nrsi.on.ca>
CC: Jason Elliott <Jason.Elliott@guelph.ca>

Hi Laura,

Thank you for providing the revised maps showing Significant Landform on the subject property. I am supportive of the lines shown on these maps – lets proceed with the Significant Landform lines as shown on these maps as "field confirmed".

Thank you,
Leah

Leah Lefler (she/her)
Environmental Planner
Planning and Building Services
City of Guelph
519-822-1260 extension 2362
TTY 519-826-9771
leah.lefler@guelph.ca

From: Laura Hockley <lhockley@nrsi.on.ca>
Sent: Monday, September 12, 2022 10:48 AM
To: Nyssa Hardie <nhardie@nrsi.on.ca>
Cc: Leah Lefler <Leah.Lefler@guelph.ca>; Jason Elliott <Jason.Elliott@guelph.ca>
Subject: Re: Southgate Business Park Significant Landform (proj2778)

Hi Leah,

Please find attached the revised maps as per your mark up below.

Thanks,
Laura

Laura Hockley B.E.S.
Ecologist and Project Manager
Natural Resource Solutions Inc.
415 Phillip Street, Unit C
Waterloo, ON N2L 3X2
(p) 519-725-2227 Ext. 288 (f) 519-725-2575
(w)www.nrsi.on.ca (e) lhockley@nrsi.on.ca
@nrsinews Natural Resource Solutions Inc.
Over 20 years of environmental consulting excellence

On 9/8/2022 3:24 PM, Nyssa Hardie wrote:

> Hi Leah,

Thanks for the mark up. Laura and I were trying to do a bit of smoothing in our version, but I can see how yours is more true to the contours.

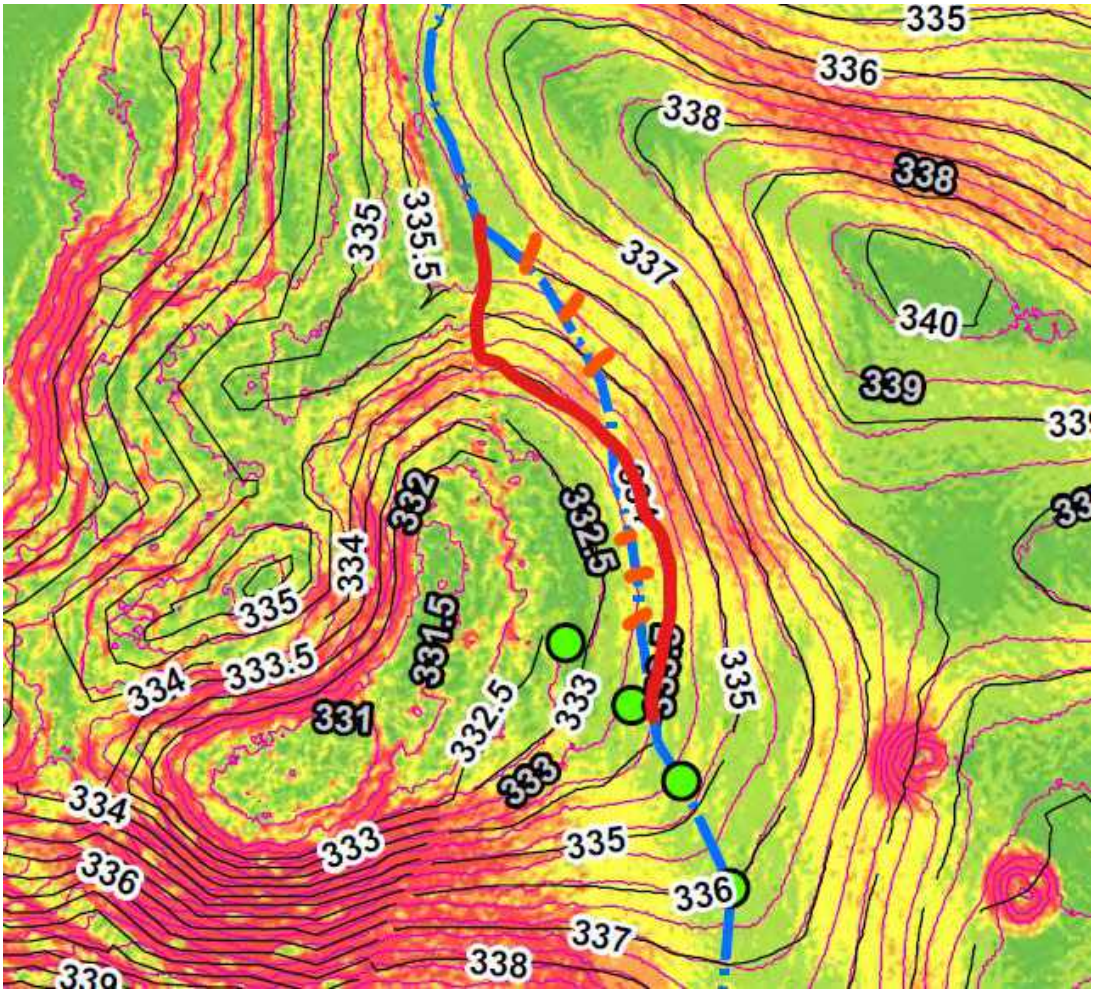
I am happy with the mark up you sent. As long as Laura agrees, we will make those edits and send revised maps back to you.

Nyssa

Nyssa Hardie M.Sc. (she/her/hers)
Ecohydrologist
Natural Resource Solutions Inc.
415 Phillip Street, Unit C
Waterloo, ON N2L 3X2
(p) 519-725-2227 Ext. 231 (f) 519-725-2575
(m) 519-577-2003
(w) www.nrsi.on.ca (e) nhardie@nrsi.on.ca
@nrsinews Natural Resource Solutions Inc.
Over 20 years of environmental consulting excellence

On 2022-09-08 3:14 p.m., Leah Lefler wrote:

> Hi Nyssa and Laura,
>
> The adjustments made to the Significant Landform were not quite what Jason and I were envisioning. Our thinking was that it would make sense to following a contour around the closed depression and then link up with the existing OP mapping. In the mark-up below, I have tried to illustrate what we are thinking, using the 333.5 m contour. Please review the mark-up below and let me know if you have any questions or comments.



Thank you,
Leah

Leah Lefler (she/her)
Environmental Planner
Planning and Building Services
City of Guelph
519-822-1260 extension 2362
TTY 519-826-9771
leah.lefler@guelph.ca

From: Nyssa Hardie <nhardie@nrsi.on.ca>
Sent: Thursday, September 8, 2022 11:13 AM
To: Leah Lefler <Leah.Lefler@guelph.ca>; Jason Elliott <Jason.Elliott@guelph.ca>
Cc: Laura Hockley <lhockley@nrsi.on.ca>
Subject: Re: Southgate Business Park Significant Landform (proj2778)

Hi Leah and Jason,

Please find attached 2 maps showing the discussed revisions to the Significant Landform limits for the Southgate Business Park. We have also updated our mapping for the OP Significant Landform using the more detailed map you sent us yesterday. Interestingly the more detailed map is a lot closer to what I had preliminarily walked and reviewed for the east side of the wetland string.

The more detailed mapping was very helpful and will come in handy for future projects with Significant Landform. I expect when we get to that stage for other south Guelph projects we will request the detailed mapping as well.

Please let Laura and I know if any further revisions are required to the attached maps.
Nyssa

Nyssa Hardie M.Sc. (she/her/hers)
Ecohydrologist
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415 Phillip Street, Unit C
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(p) 519-725-2227 Ext. 231 (f) 519-725-2575
(m) 519-577-2003
(w) www.nrsi.on.ca (e) nhardie@nrsi.on.ca
@nrsinews Natural Resource Solutions Inc.
Over 20 years of environmental consulting excellence

On 2022-09-07 10:11 a.m., Leah Lefler wrote:

> Hi Nyssa and Laura,
>
> Please see the attached map showing the extent of Significant Landform on the subject property as currently mapped in our Official Plan.
>
> See you this afternoon.
>
> Leah
>
> **Leah Lefler** (she/her)
> Environmental Planner
> Planning and Building Services
> **City of Guelph**
> 519-822-1260 extension 2362
> TTY 519-826-9771
> leah.lefler@guelph.ca
>
> ---
>
> **From:** Nyssa Hardie <nhardie@nrsi.on.ca>
> **Sent:** Tuesday, September 6, 2022 12:20 PM
> **To:** Leah Lefler <Leah.Lefler@guelph.ca>; Jason Elliott <Jason.Elliott@guelph.ca>
> **Cc:** Laura Hockley <lhockley@nrsi.on.ca>
> **Subject:** Re: Southgate Business Park Significant Landform (proj2778)
>
> Hi Leah,
>
> Yes that time still works for Laura and I. I will send a calendar invite with the zoom link shortly.
>
> Nyssa

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Over 20 years of environmental consulting excellence

On 2022-09-06 10:41 a.m., Leah Lefler wrote:

> Hi Nyssa,
>
> Thanks very much for this through overview. I've held tomorrow, September 7 from 2:30-4:00pm in Jason and my calendars. If that time still works for you and Laura, please send along a Zoom meeting invite (we have Teams at the City otherwise I would send the meeting invite).
>
> Before the meeting, I will send along a close up the Significant Landform OP mapping with the road network showing.
>
> Leah
>
> **Leah Lefler** (she/her)
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>
> **From:** Nyssa Hardie <nhardie@nrsi.on.ca>
> **Sent:** Wednesday, August 31, 2022 2:52 PM
> **To:** Leah Lefler <Leah.Lefler@guelph.ca>; Jason Elliott <Jason.Elliott@guelph.ca>
> **Cc:** Laura Hockley <lhockley@nrsi.on.ca>
> **Subject:** Southgate Business Park Significant Landform (proj2778)
>
> **[EXTERNAL EMAIL]** Do not click links or attachments unless you recognize the sender and know the content is safe.
>
> Hi Leah and Jason
>
> Thanks for meeting Laura and I on site last week to review the Significant Landform for the Southgate

Business Park (384 Crawly Road). Now that we have a couple of these site walks under our belts I think I'm getting the hang of it and how to ensure we're addressing the City's policies and EIS guidelines.

During our site walk we all agreed that some areas would need a desktop refinement to ensure we are capturing some clusters/lines of steep slopes that were less easy to identify in the field. We also discussed picking a specific contour to follow for one of the field corners. I have reviewed the Digital Terrain Model and slope class analysis created from this model (MNRF 2019) and created a proposed line that we should review together. The line takes into account the specifics of what we discussed in the field, which lines to follow or which areas to include/exclude.

Since we still don't have a specific direction for the eastern side of what I am calling the wetland string, I attempted to complete a desktop review of this area as well. That way we have something for this area, if the area of developable land becomes a question/concern. So this area is included in the maps attached.

Based on my field notes, and my understanding of our conversations in the field there were 3 areas that required desktop refinement. The first was a corner of field between 2 large wetlands on top of a hill. We debated which contour to follow and how to connect the low area (bottom of the hill) to the line that we agreed upon in the field (see #1 on attached map).

The second area was along the string of wetlands where we agreed that the line should follow the outer edge of a cluster of steep slopes (red on the slop class analysis) that were at a fine scale and difficult to read on our maps in the field or pinpoint in the field. This section connects 2 sections of the landform where we agreed to follow the City's mapping and then NRSI's mapping (see notes on attached map). I used the slope class map we reviewed in the field and zoomed in closely to determine where the Significant landform line should be placed (see #2 on attached map).

The final area was near Maltby Road at the tip of the wetland string. In this location we agreed to follow the outer edge of the steepest slopes (red on the slope

class map) to connect a section of the Significant Landform that will follow NRSI's line (mapped in the field in April 2022). We agreed to where the line would be located between the 2 treed areas through the farm vehicle access (see #3 on the attached map).

Also attached to this email are some zoomed in maps showing the desktop refinements and the areas we agreed upon in the field. We have included a shapefile for the Significant Landform as well, so you can review it in closer detail with GIS. Laura and I also took a look at a slope class map created based on the site specific contours. This map was a lot less detailed than the DTM slope class map and we quickly dismissed it for this type of exercise.

Would it be possible for you to send us a more detailed version of the Significant Landform from the OP for us to integrate with these maps? Currently, our Significant Landform (City) is digitized from the Official Plan maps, which are zoomed way out. I realize that the City doesn't typical supply shapefiles for items that are in the OP Schedules, but perhaps you can send a PDF of the Southgate BP area with the roads and Significant Landform on it? That way we can geo-reference and digitize the line more accurately for our maps. This is especially important for sections of the City's line that we are proposing to follow.

Let's set up a time to chat about the desktop refinements so we can come to an agreement on the line that will be incorporated into our EIS and the development limits.

Laura's and my availability for next week is below. Please let us know what works for you for a zoom call. Laura figured out an interesting way for us to take control of each other screens using zoom, so we can control a mouse that everyone can see and point to specific areas or draw lines. This should be useful for our discussion.

September 7 - 8:30-4pm
September 13 - 8:30-4pm
September 14 - 8:30-4pm

Thanks,

Nyssa

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Appendix VIII
Vascular Flora and Wildlife Species Lists

Plant Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

BACKGROUND SOURCES

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	Southgate Business Park Environm-ental Study	NRSI EIS	NRSI EIR	Pre-Construction Terrestrial & Wetland Monitoring Report	NHIC Data*	NRSI Observed	NRSI Tree Inventory Data
		Oldham et al. 1995	Oldham et al. 1995	Oldham et al. 1995	NDMNRF 2022	MECP 2022	Government of Canada 2021	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	NRSI 2012	NRSI 2010	NDMNRF 2021b	NRSI Results From 2022	
Pteridophytes	**Ferns & Allies**																
Dennstaedtiaceae	**Bracken Fern Family**																
Pteridium aquilinum	Bracken Fern	2	3		S5											X	
Dryopteridaceae	**Wood Fern Family**																
Athyrium filix-femina	Common Lady Fern	4	0		S5							X				X	
Athyrium filix-femina var. angustum	Northeastern Lady Fern	4	0		S5						X					X	
Cystopteris bulbifera	Bulblet Fern	5	-3		S5							X				X	
Cystopteris fragilis	Fragile Fern	7	3		S4											X	
Dryopteris carthusiana	Spinulose Wood Fern	5	-3		S5						X	X		X		X	
Dryopteris cristata	Crested Wood Fern	7	-5		S5							X				X	
Matteuccia struthiopteris	Ostrich Fern	5	0		S5							X				X	
Onoclea sensibilis	Sensitive Fern	4	-3		S5						X	X		X		X	
Equisetaceae	**Horsetail Family**																
Equisetum arvense	Field Horsetail	0	0		S5						X	X		X		X	
Equisetum fluviatile	Water Horsetail	7	-5		S5											X	
Equisetum hyemale	Common Scouring-rush	2	0		S5											X	
Equisetum palustre	Marsh Horsetail	10	-3		S5					X		X				X	
Equisetum pratense	Meadow Horsetail	8	-3		S5					X		X					
Osmundaceae	**Royal Fern Family**																
Claytosmunda claytoniana	Interrupted Fern	7	0		S5					X		X					
Osmunda regalis	Royal Fern	7	-5		S5							X				X	
Osmundastrum cinnamomeum	Cinnamon Fern	7	-3		S5							X				X	
Thelypteridaceae	**Beech Fern Family**																
Thelypteris palustris	Marsh Fern	5	-3		S5							X		X		X	
Gymnosperms	**Conifers**																
Cupressaceae	**Cypress Family**																
Juniperus communis	Common Juniper	4	3		S5											X	
Juniperus virginiana	Eastern Red Cedar	4	3		S5											X	X
Thuja occidentalis	Eastern White Cedar	4	-3		S5						X	X	X			X	X
Pinaceae	**Pine Family**																
Abies balsamea	Balsam Fir	5	-3		S5							X					
Larix decidua	European Larch	0	5	-1	SE2						X	X				X	X
Larix laricina	Tamarack	7	-3		S5							X	X			X	X
Picea abies	Norway Spruce	0	5	-1	SE3						X		X			X	X
Picea glauca	White Spruce	6	3		S5						X	X	X			X	X
Picea pungens	Blue Spruce	0	3		SE1						X	X	X			X	X
Pinus banksiana	Jack Pine	5	3		S5							X					

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Pinus nigra	Black Pine	0	5	-1	SE3								X			X	X
Pinus resinosa	Red Pine	8	3		S5						X	X	X			X	X
Pinus strobus	Eastern White Pine	4	3		S5						X	X	X			X	X
Pinus sylvestris	Scots Pine	0	3	-3	SE5						X	X	X			X	X
Tsuga canadensis	Eastern Hemlock	7	3		S5							X				X	
Dicotyledons	**Dicots**																
Aceraceae	**Maple Family**																
Acer ginnala	Amur Maple	0	5		SE1								X			X	X
Acer negundo	Manitoba Maple	0	0		S5						X	X	X			X	X
Acer nigrum	Black Maple	7	3		S4?					X		X				X	
Acer platanoides	Norway Maple	0	5	-3	SE5						X		X			X	X
Acer rubrum	Red Maple	4	0		S5						X	X	X			X	
Acer saccharinum	Silver Maple	5	-3		S5						X	X	X	X		X	X
Acer saccharum	Sugar Maple	4	3		S5						X	X	X	X		X	X
Acer spicatum	Mountain Maple	6	3		S5											X	X
Acer x freemanii	Freeman's Maple	6	-5		SNA						X					X	X
Anacardiaceae	**Sumac or Cashew Family**																
Rhus typhina	Staghorn Sumac	1	3		S5							X					
Toxicodendron radicans var. radicans	Eastern Poison Ivy	2	0		S5						X						
Apiaceae	**Carrot or Parsley Family**																
Cicuta bulbifera	Bulb-bearing Water-hemlock	5	-5		S5							X		X		X	
Cicuta maculata	Spotted Water-hemlock	6	-5		S5									X		X	
Daucus carota	Wild Carrot	0	5	-2	SE5						X	X		X		X	
Sanicula canadensis	Canada Sanicle	7	3		S4											X	
Sium suave	Hemlock Water-parsnip	4	-5		S5						X	X		X		X	
Torilis japonica	Erect Hedge-parsley	0	3	-3	SE4											X	
Apocynaceae	**Dogbane Family**																
Apocynum androsaemifolium	Spreading Dogbane	3	5		S5						X	X				X	
Apocynum cannabinum	Hemp Dogbane	3	0		S5											X	
Vinca minor	Periwinkle	0	5	-2	SE5											X	
Aquifoliaceae	**Holly Family**																
Ilex verticillata	Common Winterberry	5	-3		S5							X		X		X	
Araliaceae	**Ginseng Family**																
Aralia nudicaulis	Wild Sarsaparilla	4	3		S5						X	X					
Aristolochiaceae	**Duchman's-pipe Family**																
Asarum canadense	Canada Wild-ginger	6	5		S5											X	
Asclepiadaceae	**Milkweed Family**																
Asclepias incarnata	Swamp Milkweed	6	-5		S5						X	X		X		X	
Asclepias syriaca	Common Milkweed	0	5		S5						X	X				X	

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Asteraceae	**Composite or Aster Family**																
Achillea borealis	Woolly Yarrow	0	3		S5											X	
Achillea millefolium	Common Yarrow	0	3	-1	SE5?						X			X		X	
Ambrosia artemisiifolia	Common Ragweed	0	3		S5							X				X	
Antennaria howellii ssp. neodioica	Northern Pussytoes	2	5		S5?									X			
Antennaria neglecta	Field Pussytoes	3	5		S5									X		X	
Arctium lappa	Great Burdock	0	3		SE5											X	
Arctium minus	Common Burdock	0	3	-2	SE5						X	X				X	
Artemisia absinthium	Absinthe Wormwood	0	5	-1	SE5?											X	
Bidens cernua	Nodding Beggarticks	2	-5		S5											X	
Bidens connata	Purple-stemmed Beggarticks	5	-3		S4?							X				X	
Bidens frondosa	Devil's Beggarticks	3	-3		S5						X					X	
Bidens tripartita	Three-parted Beggarticks	5	-3		S5							X					
Bidens vulgata	Tall Beggarticks	5	0		S5											X	
Centaurea calcitrapa	Purple Starthistle	0	5		SE1											X	
Centaurea jacea	Brown Knapweed	0	5	-1	SE5						X					X	
Centaurea stoebe	Spotted Knapweed	0	5	-3	SE5											X	
Cirsium arvense	Creeping Thistle	0	3	-1	SE5						X	X		X		X	
Cirsium vulgare	Bull Thistle	0	3	-1	SE5						X	X				X	
Crepis capillaris	Smooth Hawksbeard	0	5	-1	SE1						X						
Erigeron annuus	Annual Fleabane	0	3		S5						X	X				X	
Erigeron canadensis	Canada Horseweed	0	3		S5						X					X	
Erigeron hyssopifolius	Daisy Fleabane	10	-3		S5											X	
Erigeron philadelphicus	Philadelphia Fleabane	1	-3		S5							X				X	
Erigeron philadelphicus var. philadelphicus	Philadelphia Fleabane	1	-3		S5									X			
Erigeron pulchellus	Robin's-plantain Fleabane	7	3		S5						X					X	
Eupatorium perfoliatum	Common Boneset	2	-3		S5						X					X	
Eurybia macrophylla	Large-leaved Aster	5	5		S5							X				X	
Euthamia graminifolia	Grass-leaved Goldenrod	2	0		S5						X	X		X		X	
Eutrochium maculatum	Spotted Joe Pye Weed	3	-5		S5											X	
Hieracium vulgatum	Common Hawkweed	0	5	-1	SE2?						X						
Inula helenium	Elecampane	0	3	-2	SE5							X					
Lactuca serriola	Prickly Lettuce	0	3	-1	SE5						X						
Lapsana communis	Common Nipplewort	0	3	-2	SE5											X	
Leucanthemum vulgare	Oxeye Daisy	0	5	-1	SE5						X			X		X	
Matricaria discoidea	Pineappleweed	0	3		SE5						X						
Picris hieracioides	Hawkweed Oxtongue	0	5	-1	SE5											X	
Pilosella aurantiaca	Orange Hawkweed	0	5	-2	SE5							X				X	
Pilosella caespitosa	Meadow Hawkweed	0	5	-2	SE5						X						

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Pilosella piloselloides	Tall Hawkweed	0	5		SE5											X	
Pilosella piloselloides ssp. praealta	King Devil Hawkweed	0	5		SE1							X					
Solidago altissima	Tall Goldenrod	1	3		S5							X				X	
Solidago altissima var. altissima	Eastern Tall Goldenrod	1	3		S5						X			X		X	
Solidago arguta	Cut-leaved Goldenrod	8	3		S4											X	
Solidago caesia	Blue-stemmed Goldenrod	5	3		S5						X					X	
Solidago canadensis	Canada Goldenrod	1	3		S5						X	X				X	
Solidago flexicaulis	Zigzag Goldenrod	6	3		S5						X	X				X	
Solidago nemoralis	Gray-stemmed Goldenrod	2	5		S5											X	
Solidago patula	Round-leaved Goldenrod	8	-5		S4					X		X					
Solidago rugosa	Rough-stemmed Goldenrod	4	0		S5											X	
Sonchus arvensis	Field Sow-thistle	0	3		SE5							X				X	
Sonchus arvensis ssp. uliginosus	Smooth Sow-thistle	0	3	-1	SE5						X						
Sonchus oleraceus	Common Sow-thistle	0	3	-1	SE5						X	X					
Symphyotrichum ciliolatum	Lindley's Aster	6	5		S5											X	
Symphyotrichum cordifolium	Heart-leaved Aster	5	5		S5					X						X	
Symphyotrichum ericoides	White Heath Aster	4	3		S5						X					X	
Symphyotrichum lanceolatum	Panicled Aster	3	-3		S5						X					X	
Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	3	-3		S5											X	
Symphyotrichum lanceolatum ssp. lanceolatum var. lanceolatum	White Panicled Aster	3	-3		S5											X	
Symphyotrichum lateriflorum	Calico Aster	3	0		S5											X	
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	0		S5						X	X					
Symphyotrichum novae-angliae	New England Aster	2	-3		S5						X	X		X		X	
Symphyotrichum ontarionis	Ontario Aster	6	0		S5					X						X	
Symphyotrichum oolentangiense	Sky-blue Aster	9	5		S4					X						X	
Symphyotrichum pilosum	Old Field Aster	0	3		S5											X	
Symphyotrichum urophyllum	Arrow-leaved Aster	6	5		S4						X						
Taraxacum officinale	Common Dandelion	0	3	-2	SE5						X	X		X		X	
Tragopogon dubius	Yellow Goat's-beard	0	5	-1	SE5						X					X	
Tragopogon pratensis	Meadow Goat's-beard	0	5	-1	SE5						X	X					
Tussilago farfara	Colt's-foot	0	3	-2	SE5							X					
Balsaminaceae	**Touch-me-not Family**																
Impatiens capensis	Spotted Jewelweed	4	-3		S5						X	X		X		X	
Impatiens glandulifera	Purple Jewelweed	0	-3	-2	SE4											X	
Berberidaceae	**Barberry Family**																
Caulophyllum giganteum	Giant Blue Cohosh	5	5		S5						X					X	
Caulophyllum thalictroides	Blue Cohosh	5	5		S5							X					

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Podophyllum peltatum	May-apple	5	3		S5							X					
Betulaceae	**Birch Family**																
Betula alleghaniensis	Yellow Birch	6	0		S5						X	X				X	
Betula papyrifera	Paper Birch	2	3		S5						X	X				X	X
Carpinus caroliniana	Blue-beech	6	0		S5							X	X				
Carpinus caroliniana ssp. virginiana	Blue-beech	6	0		S5											X	X
Ostrya virginiana	Eastern Hop-hornbeam	4	3		S5						X	X	X			X	X
Boraginaceae	**Borage Family**																
Echium plantagineum	Purple Viper's Bugloss	0	0		SEH											X	
Echium vulgare	Common Viper's Bugloss	0	5	-2	SE5						X	X				X	
Brassicaceae	**Mustard Family**																
Alliaria petiolata	Garlic Mustard	0	0	-3	SE5						X	X				X	
Barbarea vulgaris	Bitter Wintercress	0	0	-1	SE5							X					
Cardamine concatenata	Cut-leaved Toothwort	6	3		S5											X	
Cardamine hirsuta	Hairy Bittercress	0	3	-1	SE4											X	
Cardamine pensylvanica	Pennsylvania Bittercress	6	-3		S5							X					
Erucastrum gallicum	Common Dogmustard	0	5	-1	SE5											X	
Erysimum cheiranthoides	Wormseed Wallflower	0	3	-1	S5?							X					
Hesperis matronalis	Dame's Rocket	0	3	-3	SE5							X				X	
Lepidium campestre	Field Peppergrass	0	5	-1	SE5							X					
Rorippa palustris	Marsh Yellowcress	3	-5		S5											X	
Thlaspi arvense	Field Penny-cress	0	5	-1	SE5							X					
Callitrichaceae	**Water-starwort Family**																
Callitriche palustris	Vernal Water-starwort	6	-5		S5									X			
Campanulaceae	**Bellflower Family**																
Campanulastrum americanum	Tall Bellflower	8	0		S4					X	X						
Caprifoliaceae	**Honeysuckle Family**																
Lonicera canadensis	Canada Fly Honeysuckle	6	3		S5											X	
Lonicera morrowii	Morrow's Honeysuckle	0	3	-1	SE3											X	
Lonicera tatarica	Tatarian Honeysuckle	0	3	-3	SE5						X	X				X	
Lonicera x bella	*(Lonicera morrowii X Lonicera tatarica)*	0	3	-3	SNA											X	
Sambucus canadensis	Common Elderberry	5	-3		S5							X				X	
Sambucus racemosa	Red Elderberry	5	3		S5						X					X	
Viburnum acerifolium	Maple-leaved Viburnum	6	5		S5							X					
Viburnum lantanoides	Hobblebush	8	0		S5											X	
Viburnum lentago	Nannyberry	4	0		S5						X	X				X	
Viburnum opulus	Cranberry Viburnum	5	-3	-1	S5						X	X				X	
Viburnum opulus var. opulus	Cranberry Viburnum	0	-3		SE4?											X	
Viburnum opulus var. americanum	Highbush Cranberry	5	-3		S5							X					

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Caryophyllaceae	**Pink Family**																
Cerastium arvense ssp. arvense	Field Chickweed	0	3		SE2							X					
Cerastium fontanum	Common Mouse-ear Chickweed	0	3	-1	SE5						X	X					
Dianthus armeria	Deptford Pink	0	5	-1	SE5							X					
Silene noctiflora	Night-flowering Catchfly	0	5	-1	SE5							X					
Silene vulgaris	Bladder Campion	0	5	-1	SE5						X	X				X	
Stellaria graminea	Grass-leaved Starwort	0	5	-2	SE5							X				X	
Celastraceae	**Staff-tree Family**																
Euonymus obovatus	Running Strawberry Bush	6	5		S4											X	
Chenopodiaceae	**Goosefoot Family**																
Chenopodiastrum simplex	Maple-leaved Goosefoot	0	5		S5							X					
Chenopodium album	White Goosefoot	0	3	-1	SE5						X	X				X	
Clusiaceae	**St. John's-wort Family**																
Hypericum perforatum	Common St. John's-wort	0	5	-3	SE5						X	X				X	
Convolvulaceae	**Morning-glory Family**																
Convolvulus arvensis	Field Bindweed	0	5	-1	SE5						X	X				X	
Cornaceae	**Dogwood Family**																
Cornus alternifolia	Alternate-leaved Dogwood	6	3		S5							X				X	
Cornus obliqua	Pale Dogwood	2	-3		S5											X	
Cornus racemosa	Gray Dogwood	2	0		S5							X				X	
Cornus sericea	Red-osier Dogwood	2	-3		S5						X	X				X	
Cornus x slavinii	*(Cornus rugosa X Cornus stolonifera)*	0	0		SNA									X			
Crassulaceae	**Stonecrop Family**																
Penthorum sedoides	Ditch-stonecrop	4	-5		S5											X	
Cucurbitaceae	**Gourd Family**																
Echinocystis lobata	Wild Mock-cucumber	3	-3		S5						X	X				X	
Dipsacaceae	**Teasel Family**																
Dipsacus fullonum	Common Teasel	0	3	-1	SE5						X	X					
Elaeagnaceae	**Oleaster Family**																
Elaeagnus angustifolia	Russian Olive	0	3	-1	SE3						X						
Elaeagnus umbellata	Autumn Olive	0	3	-3	SE3						X					X	
Ericaceae	**Heath Family**																
Vaccinium corymbosum	Highbush Blueberry	8	-3		S4					X		X					
Fabaceae	**Pea Family**																
Desmodium canadense	Showy Tick-trefoil	5	0		S4							X					
Lotus corniculatus	Garden Bird's-foot Trefoil	0	3	-2	SE5							X		X		X	
Medicago lupulina	Black Medic	0	3	-1	SE5						X	X		X		X	
Medicago sativa	Alfalfa	0	5		SE5							X					
Melilotus albus	White Sweet-clover	0	3	-3	SE5						X						
Robinia pseudoacacia	Black Locust	0	3	-3	SE5						X	X	X			X	X

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Trifolium aureum	Yellow Clover	0	5	-1	SE5							X				X	
Trifolium hybridum	Alsike Clover	0	3	-1	SE5							X					
Trifolium pratense	Red Clover	0	3	-2	SE5							X		X		X	
Trifolium repens	White Clover	0	3	-1	SE5							X				X	
Vicia cracca	Tufted Vetch	0	5	-1	SE5						X	X				X	
Fagaceae	**Beech Family**																
Fagus grandifolia	American Beech	6	3		S4							X	X			X	X
Quercus macrocarpa	Bur Oak	5	3		S5								X				
Quercus rubra	Northern Red Oak	6	3		S5							X				X	
Geraniaceae	**Geranium Family**																
Geranium bicknellii	Bicknell's Geranium	5	5		S5									X			
Geranium carolinianum	Carolina Geranium	7	5		S4											X	
Geranium robertianum	Herb-Robert	2	3	-2	S5						X	X				X	
Grossulariaceae	**Currant Family**																
Ribes cynosbati	Prickly Gooseberry	4	3		S5						X					X	
Ribes hirtellum	Smooth Gooseberry	6	-3		S5					X	X						
Ribes rubrum	Northern Red Currant	0	5	-2	SE5											X	
Hydrophyllaceae	**Water-leaf Family**																
Hydrophyllum virginianum	Virginia Waterleaf	6	0		S5						X					X	
Juglandaceae	**Walnut Family**																
Carya cordiformis	Bitternut Hickory	6	0		S5						X	X	X			X	X
Juglans cinerea	Butternut	6	3		S2?	END	E	E	Schedule 1	X					X		
Juglans nigra	Black Walnut	5	3		S4?						X	X	X			X	X
Juglans regia	English Walnut	0	5	-1	SE1						X						
Lamiaceae	**Mint Family**																
Clinopodium vulgare	Field Basil	4	5		S5							X				X	
Leonurus cardiaca	Common Motherwort	0	5		SE5						X	X				X	
Lycopus americanus	American Water-horehound	4	-5		S5						X	X				X	
Lycopus uniflorus	Northern Water-horehound	5	-5		S5							X		X		X	
Mentha canadensis	Canada Mint	3	-3		S5											X	
Mentha spicata	Spearmint	0	-3	-1	SE4						X						
Mentha x piperita	*(Mentha aquatica X Mentha spicata)*	0	-5	-1	SNA											X	
Mentha x villosa	*(Mentha spicata X Mentha suaveolens)*	0	0	-1	SNA											X	
Nepeta cataria	Catnip	0	3	-2	SE5						X					X	
Prunella vulgaris	Self-heal	0	0		S5						X					X	
Prunella vulgaris ssp. vulgaris	Common Self-heal	0	0	-1	SE3											X	
Scutellaria galericulata	Hooded Skullcap	6	-5		S5							X		X			
Scutellaria galericulata var. pubescens	Marsh Skullcap	6	-5		S5											X	
Scutellaria lateriflora	Mad Dog Skullcap	5	-5		S5									X		X	

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Lythraceae	**Loosestrife Family**																
Decodon verticillatus	Swamp Loosestrife	7	-5		S5					X		X					
Magnoliaceae	**Magnolia Family**																
Liriodendron tulipifera	Tulip Tree	8	3		S4								X			X	X
Malvaceae	**Mallow Family**																
Abutilon theophrasti	Velvetleaf	0	3	-1	SE5											X	
Moraceae	**Mulberry Family**																
Morus alba	White Mulberry	0	0	-3	SE5						X		X			X	X
Nymphaeaceae	**Water-lily Family**																
Nuphar variegata	Variegated Pond-lily	7	-5		S5							X		X		X	
Oleaceae	**Olive Family**																
Fraxinus americana	White Ash	4	3		S4						X	X	X			X	X
Fraxinus nigra	Black Ash	7	-3		S4		T	NS	No schedule			X					
Fraxinus pennsylvanica	Green Ash	3	-3		S4						X	X	X			X	
Syringa vulgaris	Common Lilac	0	5	-2	SE5						X	X				X	
Onagraceae	**Evening-primrose Family**																
Circaea alpina	Small Enchanter's Nightshade	6	-3		S5						X	X					
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3		S5						X					X	
Epilobium ciliatum ssp. glandulosum	Glandular Willowherb	3	-3		SU							X					
Epilobium coloratum	Purple-veined Willowherb	3	-5		S5											X	
Epilobium hirsutum	Hairy Willowherb	0	-3	-2	SE5							X					
Oxalidaceae	**Wood Sorrel Family**																
Oxalis stricta	Upright Yellow Wood-sorrel	0	3		SE5						X	X					
Papaveraceae	**Poppy Family**																
Sanguinaria canadensis	Bloodroot	5	3		S5						X	X				X	
Plantaginaceae	**Plantain Family**																
Plantago lanceolata	English Plantain	0	3	-1	SE5						X	X		X		X	
Plantago major	Common Plantain	0	3	-1	SE5							X					
Polygonaceae	**Smartweed Family**																
Persicaria amphibia	Water Smartweed	5	-5		S5							X					
Persicaria careyi	Carey's Smartweed	10	-3		S4									X			
Persicaria lapathifolia	Pale Smartweed	2	-3		S5											X	
Rumex crispus	Curly Dock	0	0	-2	SE5						X	X		X		X	
Primulaceae	**Primrose Family**																
Lysimachia ciliata	Fringed Loosestrife	4	-3		S5						X	X					
Lysimachia nummularia	Creeping Jennie	0	-3	-3	SE5							X					
Lysimachia quadrifolia	Whorled Loosestrife	8	3		S4							X					
Lysimachia thyrsiflora	Water Loosestrife	7	-5		S5									X			
Ranunculaceae	**Buttercup Family**																

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Actaea pachypoda	White Baneberry	6	5		S5											X	
Anemonastrum canadense	Canada Anemone	3	-3		S5						X	X				X	
Anemone virginiana	Tall Anemone	4	3		S5											X	
Aquilegia canadensis	Red Columbine	5	3		S5							X				X	
Coptis trifolia	Goldthread	7	-3		S5							X				X	
Hepatica acutiloba	Sharp-lobed Hepatica	8	5		S5											X	
Hepatica americana	Round-lobed Hepatica	6	5		S5						X	X					
Ranunculus abortivus	Kidney-leaved Buttercup	2	0		S5							X				X	
Ranunculus acris	Tall Buttercup	0	0	-2	SE5						X	X				X	
Ranunculus hispidus	Bristly Buttercup	8	0		S3											X	
Ranunculus pensylvanicus	Pennsylvania Buttercup	3	-5		S5							X					
Ranunculus recurvatus	Hooked Buttercup	4	-3		S5							X					
Ranunculus repens	Creeping Buttercup	0	0	-1	SE5											X	
Thalictrum dioicum	Early Meadow-rue	6	3		S5							X					
Rhamnaceae	**Buckthorn Family**																
Frangula alnus	Glossy Buckthorn	0	0	-3	SE5						X	X				X	
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5						X	X		X		X	
Rosaceae	**Rose Family**																
Aruncus dioicus	Common Goatsbeard	0	3	-1	SE1						X					X	
Crataegus sp.	Hawthorn sp.															X	X
Crataegus monogyna	English Hawthorn	0	3	-1	SE4											X	
Fragaria vesca	Woodland Strawberry	4	3		S5						X	X				X	
Fragaria vesca ssp. americana	American Woodland Strawberry	4	3		S5											X	
Fragaria virginiana	Wild Strawberry	2	3		S5							X				X	
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	3		S5									X		X	
Geum aleppicum	Yellow Avens	2	0		S5						X	X		X		X	
Geum canadense	White Avens	3	0		S5						X	X					
Geum laciniatum	Rough Avens	4	-3		S4					X		X					
Geum rivale	Purple Avens	7	-5		S5							X					
Geum urbanum	Wood Avens	0	5	-1	SE3						X					X	
Malus pumila	Common Apple	0	5	-1	SE4						X		X			X	X
Potentilla argentea	Silvery Cinquefoil	0	3	-2	SE5						X	X				X	
Potentilla indica	Mock-strawberry	0	3		SE2											X	
Potentilla norvegica	Norwegian Cinquefoil	0	0		S5							X				X	
Potentilla recta	Sulphur Cinquefoil	0	5	-2	SE5						X	X		X		X	
Potentilla reptans	Creeping Cinquefoil	0	0		SE2											X	
Prunus avium	Sweet Cherry	0	5	-2	SE4								X			X	X
Prunus mahaleb	Perfumed Cherry	0	5	-1	SE2											X	
Prunus nigra	Canada Plum	4	3		S4							X	X	X			
Prunus serotina	Black Cherry	3	3		S5						X	X	X			X	X

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Prunus virginiana	Choke Cherry	2	3		S5							X	X			X	
Pyrus communis	Common Pear	0	5	-1	SE4						X	X				X	X
Rubus allegheniensis	Allegheny Blackberry	2	3		S5							X					
Rubus idaeus	Common Red Raspberry	2	3		S5						X	X				X	
Rubus idaeus ssp. strigosus	Wild Red Raspberry	2	3		S5									X		X	
Rubus occidentalis	Black Raspberry	2	5		S5						X						
Rubus pubescens	Dewberry	4	-3		S5							X				X	
Sorbus aucuparia	European Mountain-ash	0	5	-2	SE4						X	X	X			X	X
Spiraea alba	White Meadowsweet	3	-3		S5							X				X	
Rubiaceae	**Madder Family**																
Cephalanthus occidentalis	Eastern Buttonbush	7	-5		S5					X		X		X		X	
Galium aparine	Cleavers	4	3		S5											X	
Galium asprellum	Rough Bedstraw	6	-5		S5							X					
Galium mollugo	Smooth Bedstraw	0	5	-2	SE5						X	X				X	
Galium palustre	Marsh Bedstraw	5	-5		S5							X		X			
Galium triflorum	Three-flowered Bedstraw	4	3		S5							X					
Salicaceae	**Willow Family**																
Populus balsamifera	Balsam Poplar	4	-3		S5							X	X				
Populus deltoides	Eastern Cottonwood	4	0		S5						X	X	X			X	X
Populus grandidentata	Large-toothed Aspen	5	5		S5						X					X	
Populus tremuloides	Trembling Aspen	2	0		S5						X	X	X			X	X
Salix alba	White Willow	0	-3	-2	SE4											X	
Salix amygdaloides	Peach-leaved Willow	6	-3		S5							X				X	
Salix bebbiana	Bebb's Willow	4	-3		S5							X				X	
Salix candida	Hoary Willow	10	-5		S5							X					
Salix discolor	Pussy Willow	3	-3		S5											X	
Salix eriocephala	Heart-leaved Willow	4	-3		S5											X	
Salix euxina	Crack Willow	0	0		SE							X				X	
Salix interior	Sandbar Willow	1	-3		S5											X	
Salix lucida	Shining Willow	5	-3		S5							X		X			
Salix nigra	Black Willow	6	-5		S4							X				X	
Salix petiolaris	Meadow Willow	3	-3		S5						X	X				X	
Salix purpurea	Purple Willow	0	-3	-1	SE4											X	
Salix x fragilis	*(Salix alba X Salix euxina)*	0	0	-3	SNA						X					X	
Salix x pendulina	*(Salix babylonica X Salix euxina)*	0	0		SNA											X	
Salix x sepulcralis	*(Salix alba X Salix babylonica)*	0	0		SNA											X	X
Scrophulariaceae	**Figwort Family**																
Aureolaria flava	Smooth Yellow False Foxglove	10	5		S2?		T	NS	No schedule	X					X		
Chelone glabra	White Turtlehead	7	-5		S5							X					

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Linaria vulgaris	Butter-and-eggs	0	5	-1	SE5						X	X		X		X	
Verbascum thapsus	Common Mullein	0	5	-2	SE5						X	X				X	
Veronica officinalis	Common Speedwell	0	5	-2	SE5						X	X				X	
Veronica serpyllifolia	Thyme-leaved Speedwell	0	0		SU											X	
Simaroubaceae	**Ailanthus Family**																
Ailanthus altissima	Tree-of-heaven	0	5	-1	SE5						X						
Solanaceae	**Nightshade Family**																
Physalis heterophylla	Clammy Ground-cherry	3	5		S4											X	
Physalis virginiana	Virginia Ground-cherry	8	5		SU											X	
Solanum dulcamara	Bittersweet Nightshade	0	0	-2	SE5						X	X		X		X	
Solanum emulans	Eastern Black Nightshade	1	3		S5							X					
Thymelaeaceae	**Mezereum Family**																
Dirca palustris	Eastern Leatherwood	7	0		S4							X					
Tiliaceae	**Linden Family**																
Tilia americana	American Basswood	4	3		S5						X	X	X			X	X
Tilia cordata	Little-leaf Linden	0	5		SE1											X	X
Ulmaceae	**Elm Family**																
Celtis occidentalis	Common Hackberry	8	0		S4					X						X	X
Ulmus americana	American Elm	3	-3		S5						X	X	X	X		X	X
Ulmus pumila	Siberian Elm	0	3	-1	SE3							X					
Ulmus rubra	Slippery Elm	6	0		S5							X	X			X	X
Urticaceae	**Nettle Family**																
Boehmeria cylindrica	False Nettle	4	-5		S5							X		X		X	
Laportea canadensis	Wood Nettle	6	-3		S5						X						
Pilea fontana	Lesser Clearweed	5	-3		S4					X	X						
Urtica dioica ssp. dioica	European Stinging Nettle	0	0	-1	SE2						X						
Valerianaceae	**Valerian Family**																
Valeriana officinalis	Common Valerian	0	3	-1	SE3											X	
Violaceae	**Violet Family**																
Viola affinis	LeConte's Violet	6	-3		S4S5							X					
Viola labradorica	Labrador Violet	3	0		S5											X	
Viola macloskeyi	Smooth White Violet	6	-5		S5							X					
Viola pubescens	Yellow Violet	5	3		S5							X					
Viola sororia	Woolly Blue Violet	4	0		S5						X					X	
Vitaceae	**Grape Family**																
Parthenocissus quinquefolia	Virginia Creeper	6	3		S4?						X	X				X	
Parthenocissus vitacea	Thicket Creeper	4	3		S5						X					X	
Vitis riparia	Riverbank Grape	0	0		S5						X	X		X		X	
Monocotyledons	**Monocots**																
Alismataceae	**Water-plantain Family**																
Alisma subcordatum	Southern Water-plantain	1	-5		S4?							X				X	

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Alisma triviale	Northern Water-plantain	1	-5		S5						X					X	
Sagittaria cuneata	Northern Arrowhead	7	-5		S5					X		X		X			
Sagittaria latifolia	Broad-leaved Arrowhead	4	-5		S5							X		X		X	
Araceae	**Arum Family**																
Arisaema triphyllum	Jack-in-the-pulpit	5	-3		S5						X	X				X	
Cyperaceae	**Sedge Family**																
Carex albursina	White Bear Sedge	7	5		S5											X	
Carex bebbii	Bebb's Sedge	3	-5		S5							X		X		X	
Carex blanda	Woodland Sedge	3	0		S5											X	
Carex bromoides	Brome-like Sedge	7	-3		S5						X						
Carex comosa	Bristly Sedge	5	-5		S5											X	
Carex crinita	Fringed Sedge	6	-5		S5									X		X	
Carex deweyana	Dewey's Sedge	6	3		S5						X					X	
Carex disperma	Two-seeded Sedge	8	-5		S5							X					
Carex gracillima	Graceful Sedge	4	3		S5						X						
Carex granularis	Limestone Meadow Sedge	3	-3		S5											X	
Carex hirtifolia	Pubescent Sedge	5	5		S4S5											X	
Carex intumescens	Bladder Sedge	6	-3		S5							X		X			
Carex lacustris	Lake Sedge	5	-5		S5							X					
Carex leersii	Leers' Sedge	0	0		SE2						S						
Carex lupulina	Hop Sedge	6	-5		S5					X						X	
Carex pedunculata	Long-stalked Sedge	5	3		S5											X	
Carex pellita	Woolly Sedge	2	-5		S5											X	
Carex pensylvanica	Pennsylvania Sedge	5	5		S5											X	
Carex radiata	Eastern Star Sedge	4	0		S5							X					
Carex retrorsa	Retrorse Sedge	5	-5		S5							X		X		X	
Carex rosea	Rosy Sedge	2	5		S5						X					X	
Carex sparganioides	Burreed Sedge	5	3		S4S5											X	
Carex spicata	Spiked Sedge	0	3	-1	SE5											X	
Carex stipata	Awl-fruited Sedge	3	-5		S5							X				X	
Carex stricta	Tussock Sedge	4	-5		S5							X				X	
Carex tuckermanii	Tuckerman's Sedge	7	-5		S5											X	
Carex utriculata	Northern Beaked Sedge	7	-5		S5											X	
Carex vulpinoidea	Fox Sedge	3	-5		S5							X				X	
Eleocharis erythropoda	Red-stemmed Spikerush	4	-5		S5							X					
Eleocharis mamillata	Soft-stemmed Spikerush	0	-5		S1?						X						
Eleocharis obtusa	Blunt Spikerush	5	-5		S5											X	
Eleocharis ovata	Ovate Spikerush	8	-5		S4S5							X					
Schoenoplectiella mucronata	Bog Bulrush	0	-5		SE1											X	
Schoenoplectiella smithii var. smithii	Smith's Bulrush	9	-5		S1S3										X		

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Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	5	-5		S5											X	
Scirpus cyperinus	Cottongrass Bulrush	4	-5		S5						X	X				X	
Hydrocharitaceae	**Frog's-bit Family**																
Vallisneria americana	Eel-grass	6	-5		S5							X					
Iridaceae	**Iris Family**																
Iris pseudacorus	Yellow Iris	0	-5	-2	SE4							X					
Iris versicolor	Harlequin Blue Flag	5	-5		S5									X			
Juncaceae	**Rush Family**																
Juncus effusus	Soft Rush	4	-5		S5							X					
Juncus torreyi	Torrey's Rush	3	-3		S5											X	
Lemnaceae	**Duckweed Family**																
Lemna minor	Lesser Duckweed	5	-5		S5						X	X					
Liliaceae	**Lily Family**																
Allium tricoccum	Wild Leek	7	3		S4						X	X				X	
Asparagus officinalis	Garden Asparagus	0	3	-1	SE5											X	
Clintonia borealis	Blue Bead-lily	7	0		S5							X					
Convallaria majalis	European Lily-of-the-valley	0	5	-2	SE5						X						
Erythronium americanum	Yellow Trout-lily	5	5		S5						X	X				X	
Hemerocallis fulva	Orange Daylily	0	5	-3	SE5						X						
Maianthemum canadense	Wild Lily-of-the-valley	5	3		S5							X		X		X	
Maianthemum racemosum	Large False Solomon's Seal	4	3		S5						X	X				X	
Maianthemum stellatum	Star-flowered False Solomon's Seal	6	0		S5							X					
Polygonatum pubescens	Hairy Solomon's Seal	5	5		S5											X	
Trillium erectum	Red Trillium	6	3		S5											X	
Trillium grandiflorum	White Trillium	5	3		S5							X					
Orchidaceae	**Orchid Family**																
Epipactis helleborine	Eastern Helleborine	0	3	-2	SE5							X					
Poaceae	**Grass Family**																
Agrostis stolonifera	Creeping Bentgrass	0	-3		SE5							X					
Bromus inermis	Smooth Brome	0	5	-3	SE5						X	X				X	
Dactylis glomerata	Orchard Grass	0	3	-1	SE5						X					X	
Echinochloa crus-galli	Large Barnyard Grass	0	-3	-1	SE5							X				X	
Elymus repens	Creeping Wildrye	0	3	-3	SE5						X						
Glyceria borealis	Boreal Mannagrass	8	-5		S5					X						X	
Glyceria grandis	Tall Mannagrass	5	-5		S5											X	
Glyceria septentrionalis var. septentrionalis	Eastern Mannagrass	7	-5		S4											X	
Glyceria striata	Fowl Mannagrass	3	-5		S5											X	
Leersia oryzoides	Rice Cutgrass	3	-5		S5											X	
Lolium pratense	Meadow Fescue	0	3	-1	SE5							X				X	

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	Southgate Business Park Environm-ental Study	NRSI EIS	NRSI EIR	Pre-Construction Terrestrial & Wetland Monitoring Report	NHIC Data*	NRSI Observed	NRSI Tree Inventory Data
Panicum capillare	Common Panicgrass	0	0		S5							X				X	
Phalaris arundinacea	Reed Canary Grass	0	-3		S5						X	X		X		X	
Phalaris arundinacea var. arundinacea	Reed Canary Grass	0	-3		S5											X	
Phalaris arundinacea var. picta	Ornamental Canary Grass	0	-3		SE2											X	
Phleum pratense	Common Timothy	0	3	-1	SE5						X	X				X	
Phragmites australis ssp. australis	European Reed	0	-3		SE5											X	
Poa compressa	Canada Bluegrass	0	3		SE5						X	X					
Poa palustris	Fowl Bluegrass	5	-3		S5							X		X		X	
Poa pratensis	Kentucky Bluegrass	0	3		S5						X					X	
Setaria pumila	Yellow Foxtail	0	0	-1	SE5											X	
Setaria viridis	Green Foxtail	0	5	-1	SE5							X					
Potamogetonaceae	**Pondweed Family**																
Potamogeton natans	Floating Pondweed	5	-5		S5									X			
Sparganiaceae	**Bur-reed Family**																
Sparganium americanum	American Burreed	6	-5		S5						X						

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	Southgate Business Park Environm-ental Study	NRSI EIS	NRSI EIR	Pre-Construction Terrestrial & Wetland Monitoring Report	NHIC Data*	NRSI Observed	NRSI Tree Inventory Data
Typhaceae	**Cattail Family**																
Typha angustifolia	Narrow-leaved Cattail	0	-5		SE5						X					X	
Typha latifolia	Broad-leaved Cattail	1	-5		S5						X	X				X	
TOTAL											**168**	**237**	**38**	**62**	**3**	**314**	**42**

*NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Plant Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

WETLAND COMMUNITIES

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	SWD3-3 (#1)	SWT2-4 (#3)	MAM2-2 (#10)	MAM2-2 (#16)	MAM2-2/MAS3-2/SWT2-2(#20)	MAS3-10/MAM2-2/SWT2-5 (#23)	MAM2-2 (#25)	SWD4-1 (#27)	MAM2-2/SWT2-5 (#34)	SWD3-3 (#42)	MAM2-2 (#46)	MAM2-2 (#48)
		Oldham et al. 1995	Oldham et al. 1995	Oldham et al. 1995	NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	NRSI Results from 2022											
Pteridophytes	**Ferns & Allies**																					
Dryopteridaceae	**Wood Fern Family**																					
Athyrium filix-femina var. angustum	Northeastern Lady Fern	4	0		S5						X											
Cystopteris bulbifera	Bulblet Fern	5	-3		S5						X											
Dryopteris carthusiana	Spinulose Wood Fern	5	-3		S5						X											
Dryopteris cristata	Crested Wood Fern	7	-5		S5						X											
Matteuccia struthiopteris	Ostrich Fern	5	0		S5						X											
Onoclea sensibilis	Sensitive Fern	4	-3		S5						X	X				X		X			X	
Equisetaceae	**Horsetail Family**																					
Equisetum arvense	Field Horsetail	0	0		S5											X			X			
Equisetum fluviatile	Water Horsetail	7	-5		S5							X										
Equisetum hyemale	Common Scouring-rush	2	0		S5											X						
Equisetum palustre	Marsh Horsetail	10	-3		S5					X										X		
Osmundaceae	**Royal Fern Family**																					
Osmunda regalis	Royal Fern	7	-5		S5						X											
Osmundastrum cinnamomeum	Cinnamon Fern	7	-3		S5						X	X										
Thelypteridaceae	**Beech Fern Family**																					
Thelypteris palustris	Marsh Fern	5	-3		S5							X										
Gymnosperms	**Conifers**																					
Cupressaceae	**Cypress Family**																					
Thuja occidentalis	Eastern White Cedar	4	-3		S5						X											
Pinaceae	**Pine Family**																					
Larix laricina	Tamarack	7	-3		S5						X											
Dicotyledons	**Dicots**																					
Aceraceae	**Maple Family**																					
Acer negundo	Manitoba Maple	0	0		S5												X	X	X			
Acer nigrum	Black Maple	7	3		S4?					X								X				
Acer platanoides	Norway Maple	0	5	-3	SE5													X				
Acer rubrum	Red Maple	4	0		S5						X											
Acer saccharinum	Silver Maple	5	-3		S5														X	X		
Acer saccharum	Sugar Maple	4	3		S5															X		
Acer x freemanii	Freeman's Maple	6	-5		SNA						X	X						X		X	X	
Apiaceae	**Carrot or Parsley Family**																					
Cicuta bulbifera	Bulb-bearing Water-hemlock	5	-5		S5											X						
Cicuta maculata	Spotted Water-hemlock	6	-5		S5													X				
Daucus carota	Wild Carrot	0	5	-2	SE5												X		X	X		
Sium suave	Hemlock Water-parsnip	4	-5		S5								X				X					
Apocynaceae	**Dogbane Family**																					
Vinca minor	Periwinkle	0	5	-2	SE5														X			
Aquifoliaceae	**Holly Family**																					
Ilex verticillata	Common Winterberry	5	-3		S5						X	X						X				
Asclepiadaceae	**Milkweed Family**																					
Asclepias incarnata	Swamp Milkweed	6	-5		S5										X				X			
Asclepias syriaca	Common Milkweed	0	5		S5												X	X		X		

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Asteraceae	**Composite or Aster Family**																					
Achillea millefolium	Common Yarrow	0	3	-1	SE5?																	X
Arctium lappa	Great Burdock	0	3		SE5														X			
Bidens cernua	Nodding Beggarticks	2	-5		S5								X			X						
Bidens connata	Purple-stemmed Beggarticks	5	-3		S4?						X	X										
Bidens frondosa	Devil's Beggarticks	3	-3		S5						X											
Bidens vulgata	Tall Beggarticks	5	0		S5												X	X				
Cirsium arvense	Creeping Thistle	0	3	-1	SE5										X		X		X			X
Cirsium vulgare	Bull Thistle	0	3	-1	SE5														X			X
Crepis capillaris	Smooth Hawksbeard	0	5	-1	SE1																	
Erigeron annuus	Annual Fleabane	0	3		S5															X	X	
Erigeron philadelphicus	Philadelphia Fleabane	1	-3		S5									X	X				X			
Eupatorium perfoliatum	Common Boneset	2	-3		S5									X	X	X						
Euthamia graminifolia	Grass-leaved Goldenrod	2	0		S5								X		X	X		X			X	X
Eutrochium maculatum	Spotted Joe Pye Weed	3	-5		S5										X		X					
Lapsana communis	Common Nipplewort	0	3	-2	SE5													X				
Leucanthemum vulgare	Oxeye Daisy	0	5	-1	SE5														X			
Solidago altissima	Tall Goldenrod	1	3		S5										X	X	X	X	X	X	X	X
Solidago canadensis	Canada Goldenrod	1	3		S5											X		X				
Solidago patula	Round-leaved Goldenrod	8	-5		S4					X												
Solidago rugosa	Rough-stemmed Goldenrod	4	0		S5						X											
Sonchus arvensis	Field Sow-thistle	0	3		SE5												X					
Symphyotrichum cordifolium	Heart-leaved Aster	5	5		S5					X												
Symphyotrichum lanceolatum	Panicled Aster	3	-3		S5										X	X	X	X	X	X	X	X
Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	3	-3		S5													X				
Symphyotrichum lanceolatum ssp. lanceolatum var. lanceolatum	White Panicled Aster	3	-3		S5								X									
Symphyotrichum novae-angliae	New England Aster	2	-3		S5										X	X		X	X		X	X
Symphyotrichum ontarionis	Ontario Aster	6	0		S5					X								X				
Symphyotrichum pilosum	Old Field Aster	0	3		S5											X						
Taraxacum officinale	Common Dandelion	0	3	-2	SE5						X								X			
Balsaminaceae	**Touch-me-not Family**																					
Impatiens capensis	Spotted Jewelweed	4	-3		S5															X		
Betulaceae	**Birch Family**																					
Betula papyrifera	Paper Birch	2	3		S5						X	X						X				
Brassicaceae	**Mustard Family**																					
Alliaria petiolata	Garlic Mustard	0	0	-3	SE5														X	X		
Cardamine hirsuta	Hairy Bittercress	0	3	-1	SE4														X			
Rorippa palustris	Marsh Yellowcress	3	-5		S5								X		X	X	X					
Caprifoliaceae	**Honeysuckle Family**																					
Lonicera morrowii	Morrow's Honeysuckle	0	3	-1	SE3											X						
Lonicera x bella	*(Lonicera morrowii X Lonicera tatarica)*	0	3	-3	SNA														X			
Sambucus canadensis	Common Elderberry	5	-3		S5													X				
Sambucus racemosa	Red Elderberry	5	3		S5													X				
Viburnum lantanoides	Hobblebush	8	0		S5													X				
Viburnum lentago	Nannyberry	4	0		S5										X	X			X		X	
Viburnum opulus	Cranberry Viburnum	5	-3	-1	S5													X				

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Viburnum opulus var. opulus	Cranberry Viburnum	0	-3		SE4?						X											
Celastraceae	**Staff-tree Family**																					
Euonymus obovatus	Running Strawberry Bush	6	5		S4						X											
Cornaceae	**Dogwood Family**																					
Cornus obliqua	Pale Dogwood	2	-3		S5							X										
Cornus racemosa	Gray Dogwood	2	0		S5												X					
Cornus sericea	Red-osier Dogwood	2	-3		S5										X	X	X	X	X			
Crassulaceae	**Stonecrop Family**																					
Penthorum sedoides	Ditch-stonecrop	4	-5		S5													X				
Cucurbitaceae	**Gourd Family**																					
Echinocystis lobata	Wild Mock-cucumber	3	-3		S5						X						X	X	X			
Elaeagnaceae	**Oleaster Family**																					
Elaeagnus umbellata	Autumn Olive	0	3	-3	SE3										X							
Ericaceae	**Heath Family**																					
Vaccinium corymbosum	Highbush Blueberry	8	-3		S4					X												
Fabaceae	**Pea Family**																					
Lotus corniculatus	Garden Bird's-foot Trefoil	0	3	-2	SE5										X							
Vicia cracca	Tufted Vetch	0	5	-1	SE5												X					X
Geraniaceae	**Geranium Family**																					
Geranium robertianum	Herb-Robert	2	3	-2	S5													X				
Grossulariaceae	**Currant Family**																					
Ribes cynosbati	Prickly Gooseberry	4	3		S5													X				
Ribes hirtellum	Smooth Gooseberry	6	-3		S5					X												
Lamiaceae	**Mint Family**																					
Leonurus cardiaca	Common Motherwort	0	5		SE5												X					
Lycopus americanus	American Water-horehound	4	-5		S5								X			X						
Lycopus uniflorus	Northern Water-horehound	5	-5		S5						X				X							
Mentha canadensis	Canada Mint	3	-3		S5																	X
Mentha x piperita	*(Mentha aquatica X Mentha spicata)*	0	-5	-1	SNA										X							
Mentha x villosa	*(Mentha spicata X Mentha suaveolens)*	0	0	-1	SNA												X					
Scutellaria galericulata var. pubescens	Marsh Skullcap	6	-5		S5									X								
Scutellaria lateriflora	Mad Dog Skullcap	5	-5		S5						X											
Nymphaeaceae	**Water-lily Family**																					
Nuphar variegata	Variegated Pond-lily	7	-5		S5									X	X	X						
Oleaceae	**Olive Family**																					
Fraxinus americana	White Ash	4	3		S4						X			X								
Fraxinus pennsylvanica	Green Ash	3	-3		S4						X											
Onagraceae	**Evening-primrose Family**																					
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3		S5															X	X	
Epilobium coloratum	Purple-veined Willowherb	3	-5		S5										X							
Papaveraceae	**Poppy Family**																					
Sanguinaria canadensis	Bloodroot	5	3		S5															X		
Polygonaceae	**Smartweed Family**																					
Persicaria lapathifolia	Pale Smartweed	2	-3		S5											X						
Rumex crispus	Curly Dock	0	0	-2	SE5														X			

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Ranunculaceae	**Buttercup Family**																					
Anemonastrum canadense	Canada Anemone	3	-3		S5						X			X		X		X				
Coptis trifolia	Goldthread	7	-3		S5						X	X										
Ranunculus abortivus	Kidney-leaved Buttercup	2	0		S5						X											
Ranunculus acris	Tall Buttercup	0	0	-2	SE5							X			X			X				
Rhamnaceae	**Buckthorn Family**																					
Frangula alnus	Glossy Buckthorn	0	0	-3	SE5						X	X		X		X		X		X		
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5													X				
Rosaceae	**Rose Family**																					
Crataegus monogyna	English Hawthorn	0	3	-1	SE4													X				
Fragaria vesca	Woodland Strawberry	4	3		S5						X											
Fragaria virginiana	Wild Strawberry	2	3		S5														X			
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	3		S5						X											
Geum aleppicum	Yellow Avens	2	0		S5															X		
Geum laciniatum	Rough Avens	4	-3		S4					X												
Geum urbanum	Wood Avens	0	5	-1	SE3													X				
Malus pumila	Common Apple	0	5	-1	SE4											X						
Potentilla indica	Mock-strawberry	0	3		SE2										X				X			
Prunus serotina	Black Cherry	3	3		S5																X	
Prunus virginiana	Choke Cherry	2	3		S5															X		
Rubus idaeus	Common Red Raspberry	2	3		S5															X		
Rubus idaeus ssp. strigosus	Wild Red Raspberry	2	3		S5						X							X	X			
Rubus pubescens	Dewberry	4	-3		S5						X											
Spiraea alba	White Meadowsweet	3	-3		S5												X					
Rubiaceae	**Madder Family**																					
Cephalanthus occidentalis	Eastern Buttonbush	7	-5		S5					X	X	X										
Salicaceae	**Willow Family**																					
Populus tremuloides	Trembling Aspen	2	0		S5													X				
Salix alba	White Willow	0	-3	-2	SE4									X				X				
Salix amygdaloides	Peach-leaved Willow	6	-3		S5									X	X			X	X			
Salix bebbiana	Bebb's Willow	4	-3		S5														X			
Salix discolor	Pussy Willow	3	-3		S5													X				
Salix eriocephala	Heart-leaved Willow	4	-3		S5										X							
Salix euxina	Crack Willow	0	0		SE													X			X	
Salix nigra	Black Willow	6	-5		S4													X			X	
Salix petiolaris	Meadow Willow	3	-3		S5										X							
Salix purpurea	Purple Willow	0	-3	-1	SE4										X							
Salix x fragilis	*(Salix alba X Salix euxina)*	0	0	-3	SNA										X			X				
Scrophulariaceae	**Figwort Family**																					
Veronica serpyllifolia	Thyme-leaved Speedwell	0	0		SU														X			
Solanaceae	**Nightshade Family**																					
Physalis virginiana	Virginia Ground-cherry	8	5		SU													X				
Solanum dulcamara	Bittersweet Nightshade	0	0	-2	SE5							X		X			X	X			X	X
Tiliaceae	**Linden Family**																					
Tilia americana	American Basswood	4	3		S5									X								
Ulmaceae	**Elm Family**																					
Celtis occidentalis	Common Hackberry	8	0		S4					X												
Ulmus americana	American Elm	3	-3		S5						X											

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Urticaceae	**Nettle Family**																					
Boehmeria cylindrica	False Nettle	4	-5		S5						X						X					
Pilea fontana	Lesser Clearweed	5	-3		S4					X												
Valerianaceae	**Valerian Family**																					
Valeriana officinalis	Common Valerian	0	3	-1	SE3												X					
Violaceae	**Violet Family**																					
Viola labradorica	Labrador Violet	3	0		S5						X											
Viola sororia	Woolly Blue Violet	4	0		S5														X			
Vitaceae	**Grape Family**																					
Parthenocissus quinquefolia	Virginia Creeper	6	3		S4?												X	X		X	X	
Parthenocissus vitacea	Thicket Creeper	4	3		S5							X										
Vitis riparia	Riverbank Grape	0	0		S5												X	X	X	X	X	
Monocotyledons	**Monocots**																					
Alismataceae	**Water-plantain Family**																					
Alisma subcordatum	Southern Water-plantain	1	-5		S4?											X						
Alisma triviale	Northern Water-plantain	1	-5		S5								X		X	X	X					
Sagittaria latifolia	Broad-leaved Arrowhead	4	-5		S5									X		X						
Araceae	**Arum Family**																					
Arisaema triphyllum	Jack-in-the-pulpit	5	-3		S5						X											
Cyperaceae	**Sedge Family**																					
Carex bebbii	Bebb's Sedge	3	-5		S5								X									
Carex comosa	Bristly Sedge	5	-5		S5											X						
Carex crinita	Fringed Sedge	6	-5		S5						X											
Carex lupulina	Hop Sedge	6	-5		S5					X	X											
Carex pellita	Woolly Sedge	2	-5		S5											X						
Carex retrorsa	Retrorse Sedge	5	-5		S5						X		X									
Carex rosea	Rosy Sedge	2	5		S5													X				
Carex stipata	Awl-fruited Sedge	3	-5		S5							X										
Carex stricta	Tussock Sedge	4	-5		S5						X											
Carex tuckermanii	Tuckerman's Sedge	7	-5		S5						X						X	X				
Carex utriculata	Northern Beaked Sedge	7	-5		S5								X									
Carex vulpinoidea	Fox Sedge	3	-5		S5								X									
Eleocharis obtusa	Blunt Spikerush	5	-5		S5								X			X						
Eleocharis ovata	Ovate Spikerush	8	-5		S4S5																	
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	5	-5		S5									X	X	X						
Scirpus cyperinus	Cottongrass Bulrush	4	-5		S5													X				
Juncaceae	**Rush Family**																					
Juncus torreyi	Torrey's Rush	3	-3		S5								X									
Liliaceae	**Lily Family**																					
Asparagus officinalis	Garden Asparagus	0	3	-1	SE5															X		
Maianthemum canadense	Wild Lily-of-the-valley	5	3		S5						X											
Polygonatum pubescens	Hairy Solomon's Seal	5	5		S5						X											
Poaceae	**Grass Family**																					
Bromus inermis	Smooth Brome	0	5	-3	SE5													X				
Echinochloa crus-galli	Large Barnyard Grass	0	-3	-1	SE5								X									
Glyceria borealis	Boreal Mannagrass	8	-5		S5					X						X						
Glyceria grandis	Tall Mannagrass	5	-5		S5											X		X				
Glyceria striata	Fowl Mannagrass	3	-5		S5						X							X				
Leersia oryzoides	Rice Cutgrass	3	-5		S5										X							
Panicum capillare	Common Panicgrass	0	0		S5								X									

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	SWD3-3 (#1)	SWT2-4 (#3)	MAM2-2 (#10)	MAM2-2 (#16)	MAM2-2/MAS3-2/SWT2-2(#20)	MAS3-10/MAM2-2/SWT2-5 (#23)	MAM2-2 (#25)	SWD4-1 (#27)	MAM2-2/SWT2-5 (#34)	SWD3-3 (#42)	MAM2-2 (#46)	MAM2-2 (#48)
Phalaris arundinacea	Reed Canary Grass	0	-3		S5									X	X	X	X	X	X		X	X
Phalaris arundinacea var. arundinacea	Reed Canary Grass	0	-3		S5							X	X									
Phragmites australis ssp. australis	European Reed	0	-3		SE5						X		X									
Poa palustris	Fowl Bluegrass	5	-3		S5																	X
Setaria pumila	Yellow Foxtail	0	0	-1	SE5												X		X			
Typhaceae	**Cattail Family**																					
Typha angustifolia	Narrow-leaved Cattail	0	-5		SE5										X	X	X					
Typha latifolia	Broad-leaved Cattail	1	-5		S5								X									
TOTAL											**47**	**17**	**18**	**14**	**30**	**33**	**28**	**52**	**32**	**20**	**17**	**12**

*NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Plant Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

WOODLAND COMMUNITIES

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	FOM6-1 (#2)	FOD3-1 (#4)	FOD5-1 (#11)	FOC3-1 (#12)	FOD4/H (#28)	FOD6-5 (#33)	FOD4 (#39)
		Oldham et al. 1995	Oldham et al. 1995	Oldham et al. 1995	NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	NRSI Results from 2022						
Pteridophytes	**Ferns & Allies**																
Dennstaedtiaceae	**Bracken Fern Family**																
Pteridium aquilinum	Bracken Fern	2	3		S5						X						
Dryopteridaceae	**Wood Fern Family**																
Athyrium filix-femina	Common Lady Fern	4	0		S5										X		
Athyrium filix-femina var. angustum	Northeastern Lady Fern	4	0		S5								X				
Cystopteris bulbifera	Bulblet Fern	5	-3		S5								X				
Cystopteris fragilis	Fragile Fern	7	3		S4								X				
Dryopteris carthusiana	Spinulose Wood Fern	5	-3		S5								X				X
Matteuccia struthiopteris	Ostrich Fern	5	0		S5											X	
Onoclea sensibilis	Sensitive Fern	4	-3		S5						X	X	X		X	X	
Equisetaceae	**Horsetail Family**																
Equisetum arvense	Field Horsetail	0	0		S5							X			X		
Equisetum palustre	Marsh Horsetail	10	-3		S5					X							
Equisetum pratense	Meadow Horsetail	8	-3		S5					X							
Gymnosperms	**Conifers**																
Cupressaceae	**Cypress Family**																
Thuja occidentalis	Eastern White Cedar	4	-3		S5						X						
Pinaceae	**Pine Family**																
Picea abies	Norway Spruce	0	5	-1	SE3							X					
Pinus strobus	Eastern White Pine	4	3		S5									X		X	
Tsuga canadensis	Eastern Hemlock	7	3		S5						X			X			
Dicotyledons	**Dicots**																
Aceraceae	**Maple Family**																
Acer negundo	Manitoba Maple	0	0		S5										X		X
Acer nigrum	Black Maple	7	3		S4?					X	X						
Acer platanoides	Norway Maple	0	5	-3	SE5										X		X
Acer saccharum	Sugar Maple	4	3		S5						X		X	X	X	X	X
Acer x freemanii	Freeman's Maple	6	-5		SNA						X						
Apiaceae	**Carrot or Parsley Family**																
Daucus carota	Wild Carrot	0	5	-2	SE5											X	
Sanicula canadensis	Canada Sanicle	7	3		S4								X				
Apocynaceae	**Dogbane Family**																
Apocynum cannabinum	Hemp Dogbane	3	0		S5								X				
Aristolochiaceae	**Duchman's-pipe Family**																
Asarum canadense	Canada Wild-ginger	6	5		S5								X				
Asteraceae	**Composite or Aster Family**																
Centaurea stoebe	Spotted Knapweed	0	5	-3	SE5											X	
Erigeron philadelphicus	Philadelphia Fleabane	1	-3		S5										X	X	

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	FOM6-1 (#2)	FOD3-1 (#4)	FOD5-1 (#11)	FOC3-1 (#12)	FOD4/H (#28)	FOD6-5 (#33)	FOD4 (#39)
Eurybia macrophylla	Large-leaved Aster	5	5		S5						X						
Euthamia graminifolia	Grass-leaved Goldenrod	2	0		S5										X		
Solidago altissima	Tall Goldenrod	1	3		S5										X		
Solidago caesia	Blue-stemmed Goldenrod	5	3		S5						X						
Solidago canadensis	Canada Goldenrod	1	3		S5						X				X	X	X
Solidago flexicaulis	Zigzag Goldenrod	6	3		S5								X			X	
Solidago patula	Round-leaved Goldenrod	8	-5		S4					X							
Solidago rugosa	Rough-stemmed Goldenrod	4	0		S5							X					
Sonchus arvensis	Field Sow-thistle	0	3		SE5										X		
Symphyotrichum ciliolatum	Lindley's Aster	6	5		S5									X			
Symphyotrichum cordifolium	Heart-leaved Aster	5	5		S5					X							
Symphyotrichum lanceolatum	Panicled Aster	3	-3		S5										X	X	X
Symphyotrichum lanceolatum ssp. lanceolatum var. lanceolatum	White Panicled Aster	3	-3		S5						X						
Symphyotrichum lateriflorum	Calico Aster	3	0		S5											X	
Symphyotrichum novae-angliae	New England Aster	2	-3		S5										X	X	
Symphyotrichum ontarionis	Ontario Aster	6	0		S5					X	X					X	
Symphyotrichum pilosum	Old Field Aster	0	3		S5										X	X	
Taraxacum officinale	Common Dandelion	0	3	-2	SE5							X	X	X	X	X	
Berberidaceae	**Barberry Family**																
Caulophyllum giganteum	Giant Blue Cohosh	5	5		S5								X			X	
Caulophyllum thalictroides	Blue Cohosh	5	5		S5												
Betulaceae	**Birch Family**																
Betula alleghaniensis	Yellow Birch	6	0		S5						X						
Betula papyrifera	Paper Birch	2	3		S5						X	X			X		
Ostrya virginiana	Eastern Hop-hornbeam	4	3		S5									X		X	
Brassicaceae	**Mustard Family**																
Alliaria petiolata	Garlic Mustard	0	0	-3	SE5												X
Cardamine concatenata	Cut-leaved Toothwort	6	3		S5								X			X	
Hesperis matronalis	Dame's Rocket	0	3	-3	SE5										X		
Caprifoliaceae	**Honeysuckle Family**																
Lonicera canadensis	Canada Fly Honeysuckle	6	3		S5											X	
Lonicera x bella	*(Lonicera morrowii X Lonicera tatarica)*	0	3	-3	SNA							X	X	X		X	
Sambucus canadensis	Common Elderberry	5	-3		S5											X	
Viburnum opulus	Cranberry Viburnum	5	-3	-1	S5										X	X	
Viburnum opulus var. opulus	Cranberry Viburnum	0	-3		SE4?							X	X				
Celastraceae	**Staff-tree Family**																
Euonymus obovatus	Running Strawberry Bush	6	5		S4								X			X	
Cornaceae	**Dogwood Family**																
Cornus alternifolia	Alternate-leaved Dogwood	6	3		S5							X	X		X	X	
Cornus obliqua	Pale Dogwood	2	-3		S5							X					
Cornus sericea	Red-osier Dogwood	2	-3		S5							X			X		

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	FOM6-1 (#2)	FOD3-1 (#4)	FOD5-1 (#11)	FOC3-1 (#12)	FOD4/H (#28)	FOD6-5 (#33)	FOD4 (#39)
Ericaceae	**Heath Family**																
Vaccinium corymbosum	Highbush Blueberry	8	-3		S4					X							
Fabaceae	**Pea Family**																
Robinia pseudoacacia	Black Locust	0	3	-3	SE5											X	
Fagaceae	**Beech Family**																
Fagus grandifolia	American Beech	6	3		S4								X	X			
Quercus rubra	Northern Red Oak	6	3		S5						X		X	X			
Geraniaceae	**Geranium Family**																
Geranium robertianum	Herb-Robert	2	3	-2	S5								X			X	X
Grossulariaceae	**Currant Family**																
Ribes cynosbati	Prickly Gooseberry	4	3		S5								X			X	X
Ribes rubrum	Northern Red Currant	0	5	-2	SE5								X				
Hydrophyllaceae	**Water-leaf Family**																
Hydrophyllum virginianum	Virginia Waterleaf	6	0		S5								X			X	
Juglandaceae	**Walnut Family**																
Carya cordiformis	Bitternut Hickory	6	0		S5						X		X			X	
Lamiaceae	**Mint Family**																
Clinopodium vulgare	Field Basil	4	5		S5											X	
Prunella vulgaris	Self-heal	0	0		S5									X			
Oleaceae	**Olive Family**																
Fraxinus americana	White Ash	4	3		S4									X			X
Fraxinus nigra	Black Ash	7	-3		S4		T	NS	No schedule								
Fraxinus pennsylvanica	Green Ash	3	-3		S4								X			X	
Onagraceae	**Evening-primrose Family**																
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3		S5						X				X		
Papaveraceae	**Poppy Family**																
Sanguinaria canadensis	Bloodroot	5	3		S5									X			
Ranunculaceae	**Buttercup Family**																
Actaea pachypoda	White Baneberry	6	5		S5								X				
Anemonastrum canadense	Canada Anemone	3	-3		S5							X			X		
Aquilegia canadensis	Red Columbine	5	3		S5								X				
Hepatica acutiloba	Sharp-lobed Hepatica	8	5		S5								X				
Ranunculus abortivus	Kidney-leaved Buttercup	2	0		S5								X			X	
Ranunculus acris	Tall Buttercup	0	0	-2	SE5							X			X		
Ranunculus hispidus	Bristly Buttercup	8	0		S3								X				
Ranunculus repens	Creeping Buttercup	0	0	-1	SE5							X				X	
Rhamnaceae	**Buckthorn Family**																
Frangula alnus	Glossy Buckthorn	0	0	-3	SE5						X				X		X
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5						X	X	X	X	X	X	
Rosaceae	**Rose Family**																
Fragaria vesca	Woodland Strawberry	4	3		S5						X	X			X		
Fragaria vesca ssp. americana	American Woodland Strawberry	4	3		S5											X	
Fragaria virginiana	Wild Strawberry	2	3		S5									X		X	

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	FOM6-1 (#2)	FOD3-1 (#4)	FOD5-1 (#11)	FOC3-1 (#12)	FOD4/H (#28)	FOD6-5 (#33)	FOD4 (#39)
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	3		S5							X					
Geum laciniatum	Rough Avens	4	-3		S4					X							
Geum urbanum	Wood Avens	0	5	-1	SE3										X		
Malus pumila	Common Apple	0	5	-1	SE4							X			X	X	
Potentilla recta	Sulphur Cinquefoil	0	5	-2	SE5											X	
Prunus serotina	Black Cherry	3	3		S5						X	X	X	X	X	X	X
Prunus virginiana	Choke Cherry	2	3		S5									X		X	
Rubus idaeus ssp. strigosus	Wild Red Raspberry	2	3		S5							X			X	X	
Rubiaceae	**Madder Family**																
Cephalanthus occidentalis	Eastern Buttonbush	7	-5		S5					X							
Galium aparine	Cleavers	4	3		S5											X	
Salicaceae	**Willow Family**																
Populus grandidentata	Large-toothed Aspen	5	5		S5						X						
Populus tremuloides	Trembling Aspen	2	0		S5							X	X	X	X		
Scrophulariaceae	**Figwort Family**																
Veronica officinalis	Common Speedwell	0	5	-2	SE5											X	
Tiliaceae	**Linden Family**																
Tilia americana	American Basswood	4	3		S5								X	X	X	X	X
Ulmaceae	**Elm Family**																
Ulmus americana	American Elm	3	-3		S5								X	X	X		
Violaceae	**Violet Family**																
Viola sororia	Woolly Blue Violet	4	0		S5							X	X			X	
Vitaceae	**Grape Family**																
Parthenocissus vitacea	Thicket Creeper	4	3		S5						X	X			X	X	X
Vitis riparia	Riverbank Grape	0	0		S5							X			X	X	X
Monocotyledons	**Monocots**																
Araceae	**Arum Family**																
Arisaema triphyllum	Jack-in-the-pulpit	5	-3		S5						X					X	
Cyperaceae	**Sedge Family**																
Carex albursina	White Bear Sedge	7	5		S5								X			X	
Carex deweyana	Dewey's Sedge	6	3		S5								X				
Carex hirtifolia	Pubescent Sedge	5	5		S4S5											X	
Carex pedunculata	Long-stalked Sedge	5	3		S5								X	X			
Carex pensylvanica	Pennsylvania Sedge	5	5		S5								X	X			
Carex spicata	Spiked Sedge	0	3	-1	SE5										X		
Liliaceae	**Lily Family**																
Allium tricoccum	Wild Leek	7	3		S4								X			X	
Erythronium americanum	Yellow Trout-lily	5	5		S5								X			X	
Maianthemum canadense	Wild Lily-of-the-valley	5	3		S5							X					
Maianthemum racemosum	Large False Solomon's Seal	4	3		S5								X				
Trillium erectum	Red Trillium	6	3		S5								X				
Poaceae	**Grass Family**																
Bromus inermis	Smooth Brome	0	5	-3	SE5										X		
Dactylis glomerata	Orchard Grass	0	3	-1	SE5							X			X	X	

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	FOM6-1 (#2)	FOD3-1 (#4)	FOD5-1 (#11)	FOC3-1 (#12)	FOD4/H (#28)	FOD6-5 (#33)	FOD4 (#39)
Poa pratensis	Kentucky Bluegrass	0	3		S5										X		
TOTAL											**25**	**26**	**44**	**21**	**39**	**53**	**15**

*NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Plant Species Reported from the Study Area - SNewCold Guelph: Phase 1 (Project #2778)
CULTURAL COMMUNITIES

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	H (#5)	CUT1 (#6)	H (#8)	H (#9)	CUM1 (#14)	CUP3-2 (#15)	CUS1 (#17)	CUT1 (#19)	CUT1 (#21)	CUW1 (#22)	CUS1 (#24)	CUW1 (#26)	CUW1 (#29)	H (#30)	H (#31)	H (#32)	H (#35)	H (#36)	H (#37)	CUP3-2 (#40)	H (#41)	CUS1/ CUW1 (#43)	CUW1 (#44)	CUT1 (#47)	CUM (#49)
		Oldham et al. 1995	Oldham et al. 1995	Oldham et al. 1995	NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	NRSI Results from 2022																								
Pteridophytes	**Ferns & Allies**																																	
Dryopteridaceae	**Wood Fern Family**																																	
Onoclea sensibilis	Sensitive Fern	4	-3		S5																	X												
Equisetaceae	**Horsetail Family**																																	
Equisetum arvense	Field Horsetail	0	0		S5						X																							X
Gymnosperms	**Conifers**																																	
Cupressaceae	**Cypress Family**																																	
Juniperus communis	Common Juniper	4	3		S5												X																
Juniperus virginiana	Eastern Red Cedar	4	3		S5							X																					
Thuja occidentalis	Eastern White Cedar	4	-3		S5							X											X						X				
Pinaceae	**Pine Family**																																	
Larix decidua	European Larch	0	5	-1	SE2																								X					
Picea abies	Norway Spruce	0	5	-1	SE3																								X			X		
Picea glauca	White Spruce	6	3		S5											X													X				
Pinus resinosa	Red Pine	8	3		S5																								X					
Pinus strobus	Eastern White Pine	4	3		S5											X	X						X						X				
Pinus sylvestris	Scots Pine	0	3	-3	SE5										X		X						X						X		X	X		
Dicotyledons	**Dicots**																																	
Aceraceae	**Maple Family**																																	
Acer negundo	Manitoba Maple	0	0		S5								X	X					X		X		X	X		X	X	X	X			X		X
Acer platanoides	Norway Maple	0	5	-3	SE5																						X			X	X		X	
Acer saccharinum	Silver Maple	5	-3		S5																										X			
Acer saccharum	Sugar Maple	4	3		S5						X	X	X	X		X	X	X		X			X	X		X	X	X			X			
Acer x freemanii	Freeman's Maple	6	-5		SNA																X										X			
Apiaceae	**Carrot or Parsley Family**																																	
Daucus carota	Wild Carrot	0	5	-2	SE5						X	X	X				X			X					X				X	X	X			X
Torilis japonica	Erect Hedge-parsley	0	3	-3	SE4									X													X							
Apocynaceae	**Dogbane Family**																																	
Apocynum androsaemifolium	Spreading Dogbane	3	5		S5												X																	
Apocynum cannabinum	Hemp Dogbane	3	0		S5																						X							
Asclepiadaceae	**Milkweed Family**																																	
Asclepias syriaca	Common Milkweed	0	5		S5								X				X						X								X			
Asteraceae	**Composite or Aster Family**																																	
Achillea borealis	Woolly Yarrow	0	3		S5						X	X	X				X		X		X		X	X										
Ambrosia artemisiifolia	Common Ragweed	0	3		S5																													X
Antennaria neglecta	Field Pussytoes	3	5		S5												X																	
Arctium lappa	Great Burdock	0	3		SE5						X		X								X					X		X			X			
Arctium minus	Common Burdock	0	3	-2	SE5																													X
Artemisia absinthium	Absinthe Wormwood	0	5	-1	SE5?																													X
Centaurea jacea	Brown Knapweed	0	5	-1	SE5														X															X
Cirsium arvense	Creeping Thistle	0	3	-1	SE5																											X		X
Cirsium vulgare	Bull Thistle	0	3	-1	SE5																						X	X						X
Erigeron annuus	Annual Fleabane	0	3		S5																						X							
Erigeron canadensis	Canada Horseweed	0	3		S5																													X
Erigeron hyssopifolius	Daisy Fleabane	10	-3		S5																												X	
Erigeron philadelphicus	Philadelphia Fleabane	1	-3		S5							X	X						X	X							X			X				
Erigeron pulchellus	Robin's-plantain Fleabane	7	3		S5										X		X																	
Euthamia graminifolia	Grass-leaved Goldenrod	2	0		S5																													X
Leucanthemum vulgare	Oxeye Daisy	0	5	-1	SE5							X	X	X	X		X		X	X	X				X	X	X	X	X		X	X	X		X
Picris hieracioides	Hawkweed Oxtongue	0	5	-1	SE5										X																			
Pilosella aurantiaca	Orange Hawkweed	0	5	-2	SE5							X																						
Pilosella piloselloides	Tall Hawkweed	0	5		SE5							X	X				X		X	X							X							
Solidago altissima	Tall Goldenrod	1	3		S5																		X											
Solidago arguta	Cut-leaved Goldenrod	8	3		S4																			X										
Solidago canadensis	Canada Goldenrod	1	3		S5						X		X							X		X	X										X	X
Solidago nemoralis	Gray-stemmed Goldenrod	2	5		S5												X		X				X											
Symphyotrichum cordifolium	Heart-leaved Aster	5	5		S5					X							X																	
Symphyotrichum ericoides	White Heath Aster	4	3		S5																		X											X
Symphyotrichum lanceolatum	Panicled Aster	3	-3		S5								X									X	X											
Symphyotrichum novae-angliae	New England Aster	2	-3		S5								X		X		X		X				X											X
Symphyotrichum ontarionis	Ontario Aster	6	0		S5					X																								
Symphyotrichum oolentangiense	Sky-blue Aster	9	5		S4					X																								

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	H (#5)	CUT1 (#6)	H (#8)	H (#9)	CUM1 (#14)	CUP3-2 (#15)	CUS1 (#17)	CUT1 (#19)	CUT1 (#21)	CUW1 (#22)	CUS1 (#24)	CUW1 (#26)	CUW1 (#29)	H (#30)	H (#31)	H (#32)	H (#35)	H (#36)	H (#37)	CUP3-2 (#40)	H (#41)	CUS1/ CUW1 (#43)	CUW1 (#44)	CUT1 (#47)	CUM (#49)
Symphyotrichum pilosum	Old Field Aster	0	3		S5						X											X	X										X	X
Taraxacum officinale	Common Dandelion	0	3	-2	SE5						X		X			X				X	X	X	X	X		X		X						
Tragopogon dubius	Yellow Goat's-beard	0	5	-1	SE5							X	X				X						X											
Betulaceae	**Birch Family**																																	
Ostrya virginiana	Eastern Hop-hornbeam	4	3		S5								X							X														
Boraginaceae	**Borage Family**																																	
Echium plantagineum	Purple Viper's Bugloss	0	0		SEH																													X
Echium vulgare	Common Viper's Bugloss	0	5	-2	SE5														X				X											
Brassicaceae	**Mustard Family**																																	
Alliaria petiolata	Garlic Mustard	0	0	-3	SE5									X						X	X		X		X	X	X	X	X	X	X			
Cardamine concatenata	Cut-leaved Toothwort	6	3		S5															X														
Erucastrum gallicum	Common Dogmustard	0	5	-1	SE5																													X
Caprifoliaceae	**Honeysuckle Family**																																	
Lonicera morrowii	Morrow's Honeysuckle	0	3	-1	SE3						X				X																			
Lonicera tatarica	Tatarian Honeysuckle	0	3	-3	SE5																									X	X	X		
Lonicera x bella	*(Lonicera morrowii X Lonicera tatarica)*	0	3	-3	SNA							X	X		X	X	X		X	X			X		X	X		X	X					
Viburnum lentago	Nannyberry	4	0		S5						X			X			X			X	X		X	X	X									
Viburnum opulus	Cranberry Viburnum	5	-3	-1	S5																			X			X							
Viburnum opulus var. opulus	Cranberry Viburnum	0	-3		SE4?						X		X									X												
Caryophyllaceae	**Pink Family**																																	
Silene vulgaris	Bladder Campion	0	5	-1	SE5							X	X				X		X						X		X	X						
Stellaria graminea	Grass-leaved Starwort	0	5	-2	SE5																						X							
Chenopodiaceae	**Goosefoot Family**																																	
Chenopodium album	White Goosefoot	0	3	-1	SE5																													X
Clusiaceae	**St. John's-wort Family**																																	
Hypericum perforatum	Common St. John's-wort	0	5	-3	SE5								X										X								X		
Convolvulaceae	**Morning-glory Family**																																	
Convolvulus arvensis	Field Bindweed	0	5	-1	SE5																										X			
Cornaceae	**Dogwood Family**																																	
Cornus alternifolia	Alternate-leaved Dogwood	6	3		S5						X											X		X	X								
Cornus racemosa	Gray Dogwood	2	0		S5															X													
Cornus sericea	Red-osier Dogwood	2	-3		S5						X										X		X	X	X								
Elaeagnaceae	**Oleaster Family**																																	
Elaeagnus umbellata	Autumn Olive	0	3	-3	SE3							X					X																	
Ericaceae	**Heath Family**																																	
Vaccinium corymbosum	Highbush Blueberry	8	-3		S4					X																								
Fabaceae	**Pea Family**																																	
Lotus corniculatus	Garden Bird's-foot Trefoil	0	3	-2	SE5														X				X											
Medicago lupulina	Black Medic	0	3	-1	SE5							X	X		X																			X
Robinia pseudoacacia	Black Locust	0	3	-3	SE5																					X			X	X	X	X		
Trifolium aureum	Yellow Clover	0	5	-1	SE5																										X			
Trifolium pratense	Red Clover	0	3	-2	SE5												X			X			X	X										
Trifolium repens	White Clover	0	3	-1	SE5						X												X											
Vicia cracca	Tufted Vetch	0	5	-1	SE5							X			X		X							X					X			X		X
Fagaceae	**Beech Family**																																	
Fagus grandifolia	American Beech	6	3		S4															X														
Quercus rubra	Northern Red Oak	6	3		S5											X																		
Geraniaceae	**Geranium Family**																																	
Geranium carolinianum	Carolina Geranium	7	5		S4																			X										
Geranium robertianum	Herb-Robert	2	3	-2	S5									X				X	X								X							
Grossulariaceae	**Currant Family**																																	
Ribes cynosbati	Prickly Gooseberry	4	3		S5																			X										
Ribes hirtellum	Smooth Gooseberry	6	-3		S5					X																								
Juglandaceae	**Walnut Family**																																	
Carya cordiformis	Bitternut Hickory	6	0		S5													X																
Juglans nigra	Black Walnut	5	3		S4?							X														X			X					
Lamiaceae	**Mint Family**																																	
Clinopodium vulgare	Field Basil	4	5		S5																				X									
Leonurus cardiaca	Common Motherwort	0	5		SE5																		X	X	X	X		X	X					
Nepeta cataria	Catnip	0	3	-2	SE5																		X	X		X			X					
Scutellaria galericulata var. pubescens	Marsh Skullcap	6	-5		S5																X													
Lythraceae	**Loosestrife Family**																																	
Decodon verticillatus	Swamp Loosestrife	7	-5		S5					X																								
Malvaceae	**Mallow Family**																																	
Abutilon theophrasti	Velvetleaf	0	3	-1	SE5																													X

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph	H (#5)	CUT1 (#6)	H (#8)	H (#9)	CUM1 (#14)	CUP3-2 (#15)	CUS1 (#17)	CUT1 (#19)	CUT1 (#21)	CUW1 (#22)	CUS1 (#24)	CUW1 (#26)	CUW1 (#29)	H (#30)	H (#31)	H (#32)	H (#35)	H (#36)	H (#37)	CUP3-2 (#40)	H (#41)	CUS1/ CUW1 (#43)	CUW1 (#44)	CUT1 (#47)	CUM (#49)
Moraceae	**Mulberry Family**																																	
Morus alba	White Mulberry	0	0	-3	SE5																						X	X						
Oleaceae	**Olive Family**																																	
Fraxinus americana	White Ash	4	3		S4																					X			X		X			
Fraxinus pennsylvanica	Green Ash	3	-3		S4										X		X	X		X														
Syringa vulgaris	Common Lilac	0	5	-2	SE5																		X									X		
Onagraceae	**Evening-primrose Family**																																	
Circaea canadensis	Broad-leaved Enchanter's Nightshade	2	3		S5															X							X		X					
Plantaginaceae	**Plantain Family**																																	
Plantago lanceolata	English Plantain	0	3	-1	SE5								X				X																	
Polygonaceae	**Smartweed Family**																																	
Persicaria lapathifolia	Pale Smartweed	2	-3		S5																													X
Rumex crispus	Curly Dock	0	0	-2	SE5																							X						X
Ranunculaceae	**Buttercup Family**																																	
Anemonastrum canadense	Canada Anemone	3	-3		S5										X		X		X		X													
Anemone virginiana	Tall Anemone	4	3		S5																		X											
Aquilegia canadensis	Red Columbine	5	3		S5								X				X																	
Ranunculus acris	Tall Buttercup	0	0	-2	SE5												X		X	X														
Rhamnaceae	**Buckthorn Family**																																	
Frangula alnus	Glossy Buckthorn	0	0	-3	SE5																	X							X	X	X	X		
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5						X	X	X	X	X		X	X	X	X	X	X	X	X		X	X							X
Rosaceae	**Rose Family**																																	
Aruncus dioicus	Common Goatsbeard	0	3	-1	SE1																										X			
Crataegus monogyna	English Hawthorn	0	3	-1	SE4							X																						
Fragaria vesca	Woodland Strawberry	4	3		S5															X														
Fragaria virginiana	Wild Strawberry	2	3		S5												X		X				X	X	X	X								
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	3		S5						X		X																					
Geum aleppicum	Yellow Avens	2	0		S5																					X				X				
Geum urbanum	Wood Avens	0	5	-1	SE3														X	X		X					X							
Malus pumila	Common Apple	0	5	-1	SE4						X	X			X		X		X	X			X	X	X	X			X					
Potentilla argentea	Silvery Cinquefoil	0	3	-2	SE5								X						X		X													
Potentilla norvegica	Norwegian Cinquefoil	0	0		S5																													X
Potentilla recta	Sulphur Cinquefoil	0	5	-2	SE5						X		X										X						X					
Potentilla reptans	Creeping Cinquefoil	0	0		SE2																X		X	X	X									
Prunus avium	Sweet Cherry	0	5	-2	SE4								X																					
Prunus mahaleb	Perfumed Cherry	0	5	-1	SE2																													X
Prunus serotina	Black Cherry	3	3		S5						X	X	X				X	X	X	X	X				X		X		X	X	X	X	X		
Prunus virginiana	Choke Cherry	2	3		S5						X						X					X			X									
Pyrus communis	Common Pear	0	5	-1	SE4																					X								
Rubus idaeus	Common Red Raspberry	2	3		S5																					X				X				
Rubus idaeus ssp. strigosus	Wild Red Raspberry	2	3		S5						X	X	X						X				X	X		X		X						
Rubiaceae	**Madder Family**																																	
Cephalanthus occidentalis	Eastern Buttonbush	7	-5		S5					X																								
Galium mollugo	Smooth Bedstraw	0	5	-2	SE5							X	X						X	X														
Salicaceae	**Willow Family**																																	
Populus tremuloides	Trembling Aspen	2	0		S5								X							X	X	X								X				
Salix alba	White Willow	0	-3	-2	SE4														X															
Salix amygdaloides	Peach-leaved Willow	6	-3		S5						X										X			X										
Salix bebbiana	Bebb's Willow	4	-3		S5												X																	
Salix interior	Sandbar Willow	1	-3		S5																													X
Salix x fragilis	*(Salix alba X Salix euxina)*	0	0	-3	SNA												X																	
Salix x pendulina	*(Salix babylonica X Salix euxina)*	0	0		SNA																												X	
Scrophulariaceae	**Figwort Family**																																	
Linaria vulgaris	Butter-and-eggs	0	5	-1	SE5																				X	X								
Verbascum thapsus	Common Mullein	0	5	-2	SE5						X		X								X		X	X				X	X		X			X
Veronica officinalis	Common Speedwell	0	5	-2	SE5						X					X				X											X			
Solanaceae	**Nightshade Family**																																	
Physalis heterophylla	Clammy Ground-cherry	3	5		S4																		X											
Solanum dulcamara	Bittersweet Nightshade	0	0	-2	SE5														X															
Tiliaceae	**Linden Family**																																	
Tilia americana	American Basswood	4	3		S5						X	X	X			X					X			X	X		X		X		X		
Ulmaceae	**Elm Family**																																	
Ulmus americana	American Elm	3	-3		S5							X	X						X										X	X	X			
Violaceae	**Violet Family**																																	
Viola sororia	Woolly Blue Violet	4	0		S5						X										X			X		X							

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Vitaceae	**Grape Family**																																	
Parthenocissus quinquefolia	Virginia Creeper	6	3		S4?								X					X									X			X				
Parthenocissus vitacea	Thicket Creeper	4	3		S5							X		X		X	X	X		X	X	X					X	X	X	X				
Vitis riparia	Riverbank Grape	0	0		S5							X	X	X				X	X	X						X	X	X	X		X	X		
Monocotyledons	**Monocots**																																	
Araceae	**Arum Family**																																	
Arisaema triphyllum	Jack-in-the-pulpit	5	-3		S5																	X							X					
Cyperaceae	**Sedge Family**																																	
Carex blanda	Woodland Sedge	3	0		S5														X															
Carex granularis	Limestone Meadow Sedge	3	-3		S5														X															
Carex pedunculata	Long-stalked Sedge	5	3		S5													X																
Carex rosea	Rosy Sedge	2	5		S5															X															
Carex sparganioides	Burreed Sedge	5	3		S4S5															X															
Carex spicata	Spiked Sedge	0	3	-1	SE5							X							X	X			X												
Liliaceae	**Lily Family**																																	
Asparagus officinalis	Garden Asparagus	0	3	-1	SE5								X																					
Maianthemum racemosum	Large False Solomon's Seal	4	3		S5											X											X							
Poaceae	**Grass Family**																																	
Bromus inermis	Smooth Brome	0	5	-3	SE5							X	X	X	X		X						X				X	X	X		X	X		X
Dactylis glomerata	Orchard Grass	0	3	-1	SE5						X	X	X		X		X	X	X	X			X		X	X	X	X	X			X		X
Glyceria borealis	Boreal Mannagrass	8	-5		S5					X																								
Lolium pratense	Meadow Fescue	0	3	-1	SE5												X																	
Panicum capillare	Common Panicgrass	0	0		S5																													X
Phalaris arundinacea	Reed Canary Grass	0	-3		S5														X		X		X	X										
Phleum pratense	Common Timothy	0	3	-1	SE5																											X		
Poa pratensis	Kentucky Bluegrass	0	3		S5										X				X								X							
Setaria pumila	Yellow Foxtail	0	0	-1	SE5																													X
TOTAL											**27**	**29**	**39**	**11**	**16**	**10**	**38**	**11**	**33**	**32**	**22**	**14**	**41**	**24**	**17**	**20**	**17**	**30**	**20**	**20**	**16**	**24**	**14**	**3**	**33**

*NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Bird Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring Report	OBBA*	NHIC Data**	NRSI Observed: Highest Level of Breeding Evidence	BMB-001	BMB-002	BMB-003	BMB-004	BMB-005	BMB-006	BMB-007	BMB-008	BMB-009	MBB-001	MBB-002	MBB-003	MBB-004	CONI-01	Other Observations
		MNRF 2022	MECP 2023	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	NRSI 2010	BSC et al. 2006	NDMNRF 2022	NRSI Results from 2022															
Anatidae	**Ducks, Geese & Swans**																											
Aix sponsa	Wood Duck	S5B, S3N							CO	CO	CO		**CO**						PR	CO	PO							
Anas platyrhynchos	Mallard	S5						X	PO	PO	CO		**PR**		OB					PO	PR				PO			OB
Anas rubripes	American Black Duck	S4									CO																	
Aythya collaris	Ring-necked Duck	S5B, S4N					X		OB	PO																		
Aythya marila	Greater Scaup	S4B, S4N, S5M								OB																		
Branta canadensis	Canada Goose	S5						X	PO	PR	CO		**PO**								PO							OB
Bucephala albeola	Bufflehead	S5							OB	PO																		
Cygnus buccinator	Trumpeter Swan	S4	NAR	NAR	NS	No schedule	X			PR																		
Cygnus columbianus	Tundra Swan	S2B, S4N, S3M								OB																		
Phasianidae	**Partridges, Grouse & Turkeys**																											
Bonasa umbellus	Ruffed Grouse	S5						X		PO	CO																	
Meleagris gallopavo	Wild Turkey	S5						X		PO	PO		**PO**					OB										PO
Podicipediformes	**Grebes**																											
Podilymbus podiceps	Pied-billed Grebe	S4B, S2N							CO	CO	PO																	
Columbidae	**Pigeons & Doves**																											
Columba livia	Rock Pigeon	SNA							PO	PO	CO																	
Zenaida macroura	Mourning Dove	S5							PO	PR	CO		**PO**		PO													
Cuculiformes	**Cuckoos & Anis**																											
Coccyzus americanus	Yellow-billed Cuckoo	S4B					X			CO																		
Coccyzus erythropthalmus	Black-billed Cuckoo	S4S5B					X		PO	PO	PO																	
Coccyzus sp.	Black/Yellow-billed Cuckoo	NP									PO																	
Caprimulgidae	**Goatsuckers**																											
Chordeiles minor	Common Nighthawk	S4B	SC	SC	T	Schedule 1	X				PO																	
Apodidae	**Swifts**																											
Chaetura pelagica	Chimney Swift	S3B	THR	T	T	Schedule 1	X	X			PO																	
Trochilidae	**Hummingbirds**																											
Archilochus colubris	Ruby-throated Hummingbird	S5B							PO	PO	CO																	
Rallidae	**Rails, Gallinules & Coots**																											
Porzana carolina	Sora	S5B							PO	PO	PR		**PO**							OB					PO			
Rallus limicola	Virginia Rail	S4S5B								PR	PR																	
Gruidae	**Cranes**																											
Antigone canadensis	Sandhill Crane	S5B, S3N		NAR	NS	No schedule	X			OB			**OB**															OB
Charadriidae	**Plovers & Lapwings**																											
Charadrius vociferus	Killdeer	S4B						X	CO	CO	CO		**PR**									OB		PR				PO
Scolopacidae	**Sandpipers & Allies**																											
Actitis macularia	Spotted Sandpiper	S5B								PO	PR		**OB**											OB				
Gallinago delicata	Wilson's Snipe	S5B									PO																	
Scolopax minor	American Woodcock	S4B							PO	PO	PR																	
Laridae	**Gulls, Terns & Skimmers**																											
Larus delawarensis	Ring-billed Gull	S5					X		OB	OB			**OB**		OB			OB										
Ardeidae	**Herons & Bitterns**																											
Ardea herodias	Great Blue Heron	S4					X				PO																	
Botaurus lentiginosus	American Bittern	S5B					X				PR																	
Butorides virescens	Green Heron	S4B					X				PR		**OB**															OB
Cathartidae	**Vultures**																											
Cathartes aura	Turkey Vulture	S5B, S3N							OB	OB	PR		**OB**							OB		OB						OB
Pandionidae	**Osprey**																											
Pandion haliaetus	Osprey	S5B							OB	OB			**PO**									OB				PO		OB
Accipitridae	**Hawks, Kites, Eagles & Allies**																											
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR	NS	No schedule	X				CO		**OB**															OB
Accipiter gentilis	Northern Goshawk	S4	NAR	NAR	NS	No schedule	X			OB																		
Accipiter striatus	Sharp-shinned Hawk	S5	NAR	NAR	NS	No schedule	X	X	OB	OB	PO																	
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR	NS	No schedule		X	PO	PO	CO		**PO**		OB	PO						PO						OB
Buteo platypterus	Broad-winged Hawk	S5B					X	X	PO	OB	PR																	
Circus hudsonius	Northern Harrier	S5B, S4N	NAR	NAR	NS	No schedule	X		OB	OB																		
Strigidae	**Typical Owls**																											
Asio otus	Long-eared Owl	S4					X				PR																	
Bubo virginianus	Great Horned Owl	S4									CO																	
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR	NS	No schedule					PR																	
Alcedinidae	**Kingfishers**																											
Megaceryle alcyon	Belted Kingfisher	S5B, S4N					X			PO	PR																	

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring Report	OBBA*	NHIC Data**	NRSI Observed: Highest Level of Breeding Evidence	BMB-001	BMB-002	BMB-003	BMB-004	BMB-005	BMB-006	BMB-007	BMB-008	BMB-009	MBB-001	MBB-002	MBB-003	MBB-004	CONI-01	Other Observations
Picidae	**Woodpeckers**																											
Colaptes auratus	Northern Flicker	S5					X	X	PO	PO	CO		**PO**	PO					PO		PO	PO						OB
Dryobates pubescens	Downy Woodpecker	S5						X	PO	PO	CO		**PO**			PO			PO	PO		PO						PO
Dryobates villosus	Hairy Woodpecker	S5					X	X	PO	PO	PR		**OB**															OB
Dryocopus pileatus	Pileated Woodpecker	S5					X		OB	PO	CO		**OB**															OB
Melanerpes carolinus	Red-bellied Woodpecker	S5					X	X		PO	PR		**PR**				PR											OB
Melanerpes erythrocephalus	Red-headed Woodpecker	S3	END	E	E	Schedule 1	X				PR																	
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B, S3N					X		PO	PO			**OB**															OB
Falconidae	**Caracaras & Falcons**																											
Falco sparverius	American Kestrel	S4					X				CO		**OB**										OB					
Tyrannidae	**Tyrant Flycatchers**																											
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1	X	X	PR		PR		**PR**	PO			PR								OB	PO		
Empidonax alnorum	Alder Flycatcher	S5B							PO		PR																	
Empidonax minimus	Least Flycatcher	S5B					X		PO		PO																	
Empidonax traillii	Willow Flycatcher	S4B					X		PO		PR																	
Myiarchus crinitus	Great Crested Flycatcher	S5B						X	PO		CO		**PR**			PO	PR	OB		PR								
Sayornis phoebe	Eastern Phoebe	S5B						X	PO		CO		**PO**	PO														
Tyrannus tyrannus	Eastern Kingbird	S4B					X	X	CO		CO		**PR**	PO	PO				PR	PR	PR			PO	PO		OB	OB
Laniidae	**Shrikes**																											
Lanius borealis	Northern Shrike	S4B, S5N											**OB**															OB
Vireonidae	**Vireos**																											
Vireo gilvus	Warbling Vireo	S5B							PO		CO		**PR**						PO	PR		PR						
Vireo olivaceus	Red-eyed Vireo	S5B						X	PO		CO		**PR**	PR	PO	PO	PR	PO	OB	PO		PO						
Vireo solitarius	Blue-headed Vireo	S5B					X				PR																	
Corvidae	**Crows & Jays**																											
Corvus brachyrhynchos	American Crow	S5						X	PR		CO		**CO**	PR	OB	PR	PO	OB	PO	PO			PO	OB				CO
Corvus corax	Common Raven	S5					X		PO				**OB**					OB										
Cyanocitta cristata	Blue Jay	S5						X	CO		CO		**PR**		PO		OB	OB	PR	PR				PO				PO
Alaudidae	**Larks**																											
Eremophila alpestris	Horned Lark	S4						X			PR		**PO**		PO													PO
Hirundinidae	**Swallows**																											
Hirundo rustica	Barn Swallow	S4B	SC	SC	T	Schedule 1	X	X	PO		CO		**PR**					OB	OB	OB			PO	PO	PO			PR
Petrochelidon pyrrhonota	Cliff Swallow	S4S5B					X				PR																	
Riparia riparia	Bank Swallow	S4B	THR	T	T	Schedule 1	X				CO																	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B									PR																	
Tachycineta bicolor	Tree Swallow	S4S5B							CO		CO		**PR**		PO				PO		PR			PO			OB	
Paridae	**Chickadees & Titmice**																											
Poecile atricapillus	Black-capped Chickadee	S5						X	PR		CO		**PR**	PR		PO	PO		PO		PO	PO						PO
Sittidae	**Nuthatches**																											
Sitta canadensis	Red-breasted Nuthatch	S5					X	X			CO		**OB**															OB
Sitta carolinensis	White-breasted Nuthatch	S5							PO		PO		**PR**				PR											OB
Certhiidae	**Creepers**																											
Certhia americana	Brown Creeper	S5					X				PO																	
Troglodytidae	**Wrens**																											
Cistothorus palustris	Marsh Wren	S4B, S3N									PO																	
Cistothorus platensis	Sedge Wren	S4B	NAR	NAR	NS	No schedule	X				PO																	
Troglodytes aedon	House Wren	S5B						X	PR		CO		**PR**			PR		PR	PO			PR			PO			PO
Troglodytes hiemalis	Winter Wren	S5B, S4N					X				CO																	
Turdidae	**Thrushes**																											
Catharus fuscescens	Veery	S5B					X				CO		**PO**			OB	PO							PO				
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	X				CO																	
Sialia sialis	Eastern Bluebird	S5B, S4N	NAR	NAR	NS	No schedule					CO		**OB**															OB
Turdus migratorius	American Robin	S5						X	PR		CO		**PR**	PR	PO	PR	PO	PR	PR	PR	PO	PO	PO	PO		PR	OB	PO
Mimidae	**Mockingbirds, Thrashers & Allies**																											
Dumetella carolinensis	Gray Catbird	S5B, S3N							PO		CO		**PR**		PR	PO		PO	PO	PO	PO							OB
Mimus polyglottos	Northern Mockingbird	S4					X				PR																	
Toxostoma rufum	Brown Thrasher	S4B					X		PR		PR		**PO**						PO									OB
Sturnidae	**Starlings**																											
Sturnus vulgaris	European Starling	SNA						X	PO		CO		**PO**			PO				OB								OB
Bombycillidae	**Waxwings**																											
Bombycilla cedrorum	Cedar Waxwing	S5						X	PO		PR		**PR**	PO	PR	PO		PO	PR	PR	PR						OB	
Passeridae	**Old World Sparrows**																											
Passer domesticus	House Sparrow	SNA						X			CO																	
Fringillidae	**Finches & Allies**																											
Haemorhous mexicanus	House Finch	SNA									CO		**OB**															OB
Haemorhous purpureus	Purple Finch	S5									PO																	

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring Report	OBBA*	NHIC Data**	NRSI Observed: Highest Level of Breeding Evidence	BMB-001	BMB-002	BMB-003	BMB-004	BMB-005	BMB-006	BMB-007	BMB-008	BMB-009	MBB-001	MBB-002	MBB-003	MBB-004	CONI-01	Other Observations
Spinus pinus	Pine Siskin	S5					X				CO		**OB**															OB
Spinus tristis	American Goldfinch	S5						X	PR		PR		**PR**		PR	OB	PO	PO	PR	PR		PR		PO				PO
Emberizidae	**New World Sparrows & Allies**																											
Ammodramus savannarum	Grasshopper Sparrow	S4B	SC	SC	SC	Schedule 1	X				PR																	
Junco hyemalis	Dark-eyed Junco	S5					X	X	PO				**OB**															OB
Melospiza georgiana	Swamp Sparrow	S5B, S4N							PO		CO																	
Melospiza melodia	Song Sparrow	S5						X	PR		CO		**PR**	PR	PR	PR	PO	PR	PR	PR	PR	PR		PO	PO	PO		PO
Passerculus sandwichensis	Savannah Sparrow	S5B, S3N					X				CO		**OB**									OB			OB			
Pipilo erythrophthalmus	Eastern Towhee	S4B, S3N					X		PO		PR		**PO**					PO				PO						
Pooecetes gramineus	Vesper Sparrow	S4B					X		PO		PO																	
Spizella arborea	American Tree Sparrow	S5						X	PO																			
Spizella pallida	Clay-colored Sparrow	S4B									CO																	
Spizella passerina	Chipping Sparrow	S5B, S3N					X	X	PO		CO		**PO**		PO	PO			PO									PO
Spizella pusilla	Field Sparrow	S4B, S3N						X	PR		CO		**PR**	PO	PR	PO		PO	PR	PR	PR	PR			PO	PO	OB	PO
Zonotrichia albicollis	White-throated Sparrow	S5							PO		PR		**PO**															PO
Zonotrichia leucophrys	White-crowned Sparrow	S5B, S3N											**OB**															OB
Icteriidae	**Chats**																											
Icteria virens	Yellow-breasted Chat	S1B	END	E	E	Schedule 1	X			PO																		
Icteridae	**Troupials & Allies**																											
Agelaius phoeniceus	Red-winged Blackbird	S5						X	PR		CO		**PR**	PR	PR	PR	PR	OB	PR	PR	PR	PR	PO	PO	PR	PR	OB	OB
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	X				CO	X																
Icterus galbula	Baltimore Oriole	S4B					X	X	CO		CO		**PR**	PO		PR			PO	PR	PO	PR		PO				
Icterus spurius	Orchard Oriole	S4B					X				CO																	
Molothrus ater	Brown-headed Cowbird	S5							PR		CO		**PR**	PO				OB	PR									OB
Quiscalus quiscula	Common Grackle	S5						X	CO		CO		**PR**	OB		PO			PO	OB	PO	PR	PO					
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	X		CO		CO	X	**PO**												PO			PO
Parulidae	**Wood Warblers**																											
Geothlypis philadelphia	Mourning Warbler	S5B									PO																	
Geothlypis trichas	Common Yellowthroat	S5B, S3N							CO		PR		**PR**	PR	PO		PO		PR		PR	PR			PO			
Leiothlypis ruficapilla	Nashville Warbler	S5B									PO																	
Mniotilta varia	Black-and-white Warbler	S5B					X				PR		**OB**															OB
Parkesia noveboracensis	Northern Waterthrush	S5B									PR																	
Seiurus aurocapilla	Ovenbird	S5B					X		PO		PR																	
Setophaga coronata	Yellow-rumped Warbler	S5B, S4N									PO																	
Setophaga fusca	Blackburnian Warbler	S5B					X						**PO**											PO				
Setophaga pensylvanica	Chestnut-sided Warbler	S5B							PO		PR																	
Setophaga petechia	Yellow Warbler	S5B						X	PR		CO		**PR**		PR	PR		PO	PR	PR	PO	PO	PO	PO	PO	PO		
Setophaga pinus	Pine Warbler	S5B, S3N					X	X	PO		CO		**PO**		PO													
Setophaga ruticilla	American Redstart	S5B					X				PO		**PR**		PO	PR	PO	PO	PO	PO	PO							
Setophaga virens	Black-throated Green Warbler	S5B					X				CO																	
Vermivora cyanoptera	Blue-winged Warbler	S4B					X				CO																	
Vermivora sp.	Blue-winged/Golden-winged Warbler	NP					X				PR																	
Cardinalidae	**Cardinals, Grosbeaks & Allies**																											
Cardinalis cardinalis	Northern Cardinal	S5						X	PO		CO		**PO**			PO	PO		PO	PO				PO				PO
Passerina cyanea	Indigo Bunting	S5B						X	PR		CO		**PR**	PR	PR	PR		PO	PO	PO			OB					
Pheucticus ludovicianus	Rose-breasted Grosbeak	S5B					X		PO		CO		**PO**						PO		PO							
Piranga olivacea	Scarlet Tanager	S5B					X				PO																	
Total								**42**	**70**	**38**	**114**	**2**	**71**	**17**	**23**	**23**	**16**	**21**	**30**	**26**	**19**	**21**	**8**	**16**	**13**	**7**	**6**	**45**

*OBBA Atlas Square: 17NJ61

**NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Herpetofauna Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environmental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring	ORAA*	NHIC Data**	NRSI Observed	Incidentals	Anuran Call Survey	Turtle Basking Survey	Snake Cover Board Survey	Salamander Trapping	Snake Visual Encounter Surveys
		NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	NRSI 2010	Ontario Nature 2020	NDMNRF 2022	NRSI Results from 2022						
Turtles																			
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1				X	X	X	**X**			X			X
Chrysemys picta marginata	Midland Painted Turtle	S4		SC	SC	Schedule 1			X	X	X	X	**X**	X		X			
Emydoidea blandingii	Blanding's Turtle (Great Lakes / St. Lawrence population)	S3	THR	E	E	Schedule 1					X								
Graptemys geographica	Northern Map Turtle	S3	SC	SC	SC	Schedule 1					X	X							
Trachemys scripta	Pond Slider	SNA									X								
Snakes																			
Pantherophis gloydi pop. 1	Eastern Foxsnake (Georgian Bay population)	S3	THR	E	E	Schedule 1					X								
Lampropeltis triangulum	Milksnake	S4	NAR	SC	SC	Schedule 1				X	X	X	**X**	X					
Nerodia sipedon sipedon	Northern Watersnake	S5	NAR	NAR	NS	No schedule	X				X								
Storeria dekayi	Dekay's Brownsnake	S5	NAR	NAR	NS	No schedule	X			X	X		**X**				X		
Storeria occipitomaculata	Red-bellied Snake	S5					X			X	X		**X**						X
Thamnophis sauritus septentrionalis	Northern Ribbonsnake	S4	SC	SC	SC	Schedule 1		X		X			**X**	X			X		X
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5						X	X	X	X		**X**	X			X		X
Salamanders																			
Ambystoma sp.	Jefferson/Blue-spotted Salamander Complex	NP								X			**X**	X					
Ambystoma jeffersonianum	Jefferson Salamander	S2	END	E	E	Schedule 1					X	X							
Ambystoma laterale - (2) jeffersonianum	Unisexual *Ambystoma* (Jefferson Salamander-dependent population)	S2	END	E	E	Schedule 1						X							
Ambystoma (2) laterale - jeffersonianum	Unisexual *Ambystoma* (Blue-spotted Salamander-dependent population)	S4	NAR	NAR	NS	No schedule				X			**X**					X	
Ambystoma laterale	Blue-spotted Salamander	S4					X		X	X	X								
Ambystoma maculatum	Spotted Salamander	S4					X		X		X		**X**	X					
Hemidactylium scutatum	Four-toed Salamander	S4	NAR	NAR	NS	No schedule	X				X								
Notophthalmus viridescens viridescens	Red-spotted Newt	S5					X	X		X	X		**X**	X				X	
Plethodon cinereus	Eastern Red-backed Salamander	S5									X								
Frogs and Toads																			
Anaxyrus americanus	American Toad	S5						X	X	X	X		**X**					X	
Hyla versicolor	Gray Treefrog	S5						X	X	X	X		**X**	X	X			X	X
Pseudacris triseriata pop. 2	Western Chorus Frog (Great Lakes / St. Lawrence - Canadian Shield population)	S4	NAR	T	T	Schedule 1			X	X	X								
Pseudacris crucifer	Spring Peeper	S5						X	X	X	X		**X**	X	X			X	
Lithobates catesbeianus	American Bullfrog	S4					X		X	X	X								
Lithobates clamitans	Green Frog	S5						X	X	X	X		**X**	X	X			X	X
Lithobates palustris	Pickerel Frog	S4	NAR	NAR	NS	No schedule	X				X								
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR	NS	No schedule		X	X	X	X		**X**	X	X			X	X
Lithobates septentrionalis	Mink Frog	S5					X				X								
Lithobates sylvaticus	Wood Frog	S5						X	X	X	X		**X**	X	X			X	
Total								**9**	**12**	**19**	**27**	**6**	**17**	**12**	**5**	**2**	**3**	**8**	**7**

*ORAA Atlas Square: 17NJ61

**NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Mammal Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring Report	Ontario Mammal Atlas	NRSI Observed	Winter Wildlife Movement Surveys	Wildlife Camera Observations	Bat Acoustic Monitoring
		NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	NRSI 2010	Dobbyn 1994	NRSI Results from 2022			
Didelphimorphia	**Opossums**														
Didelphis virginiana	Virginia Opossum	S4									X				
Eulipotyphla	**Shrews, Moles, Hedgehogs, and Allies**														
Blarina brevicauda	Northern Short-tailed Shrew	S5						X			X				
Condylura cristata	Star-nosed Mole	S5						X			X				
Parascalops breweri	Hairy-tailed Mole	S4					X				X				
Sorex cinereus	Masked Shrew	S5									X				
Sorex fumeus	Smoky Shrew	S5									X				
Sorex palustris	Water Shrew	S5					X				X				
Chiroptera	**Bats**														
Eptesicus fuscus	Big Brown Bat	S4									X	**X**			X
Lasionycteris noctivagans	Silver-haired Bat	S4									X	**X**			X
Lasiurus borealis	Eastern Red Bat	S4									X	**X**			X
Lasiurus cinereus	Hoary Bat	S4									X	**X**			X
Myotis leibii	Eastern Small-footed Myotis	S2S3	END								X	**X**			X
Myotis lucifugus	Little Brown Myotis	S3	END	E	E	Schedule 1					X	**X**			X
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1					X				
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	E	Schedule 1					X	**X**			X
Lagomorpha	**Rabbits and Hares**														
Lepus americanus	Snowshoe Hare	S5					X				X				
Lepus europaeus	European Hare	SNA									X				
Sylvilagus floridanus	Eastern Cottontail	S5						X	X		X	**X**	X	X	
Rodentia	**Rodents**														
Castor canadensis	Beaver	S5									X				
Erethizon dorsatum	Porcupine	S5						X	X		X	**X**			
Glaucomys sabrinus	Northern Flying Squirrel	S5					X				X				
Marmota monax	Woodchuck	S5									X				
Microtus pennsylvanicus	Meadow Vole	S5						X	X	X	X				
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1					X				
Mus musculus	House Mouse	SNA									X				
Napaeozapus insignis	Woodland Jumping Mouse	S5					X				X				
Ondatra zibethicus	Muskrat	S5						X	X		X				
Peromyscus leucopus	White-footed Mouse	S5									X				
Peromyscus maniculatus	Deer Mouse	S5									X	**X**	X		
Rattus norvegicus	Norway Rat	SNA									X				
Sciurus carolinensis	Eastern Gray Squirrel	S5						X	X		X	**X**	X		
Synaptomys cooperi	Southern Bog Lemming	S4					X				X				
Tamias striatus	Eastern Chipmunk	S5						X	X		X	**X**			
Tamiasciurus hudsonicus	Red Squirrel	S5						X			X	**X**	X		
Zapus hudsonius	Meadow Jumping Mouse	S5						X			X				
Canidae	**Canines**														
Canis latrans	Coyote	S5						X			X	**X**	X	X	
Vulpes vulpes	Red Fox	S5						X	X		X	**X**	X	X	
Felidae	**Felines**														
Lynx rufus	Bobcat	S4					X				X				

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Pre-Construction Terrestrial & Wetland Monitoring Report	Ontario Mammal Atlas	NRSI Observed	Winter Wildlife Movement Surveys	Wildlife Camera Observations	Bat Acoustic Monitoring
Mephitidae	**Skunks and Stink Badgers**														
Mephitis mephitis	Striped Skunk	S5						X			X	**X**		X	
Mustelidae	**Weasels and Allies**														
Mustela erminea	Ermine	S5									X				
Mustela frenata	Long-tailed Weasel	S4					X		X		X				
Neovison vison	American Mink	S4							X		X				
Taxidea taxus jacksoni	American Badger (Southweste	S1	END	E	E	Schedule 1					X				
Procyonidae	**Raccoons and Allies**														
Procyon lotor	Northern Raccoon	S5									X	**X**	X	X	
Ursidae	**Bears**														
Ursus americanus	American Black Bear	S5	NAR	NAR	NS	No schedule	X				X				
Artiodactyla	**Deer and Bison**														
Odocoileus virginianus	White-tailed Deer	S5						X	X		X	**X**	X	X	
Total								**14**	**10**	**1**	**46**	**18**	**8**	**6**	**7**

*Mammal Atlas Square Numbers: 17NJ61
**NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Butterfly Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Report	NRSI EIS	Ontario Butterfly Atlas*	NRSI Observed	Agricultural	Hedgerow	CUM	CUS1	CUT1	CUW1	FOD3-1	FOD4	FOD5-1	FOD6-5	MAM2-2	SWT2-5
		NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	Macnaughton et al. 2022	NRSI Results from 2022												
Hesperiidae	**Skippers**																						
Anatrytone logan	Delaware Skipper	S4					X	X		X													
Ancyloxypha numitor	Least Skipper	S5							X	X													
Carterocephalus palaemon	Arctic Skipper	S5								X													
Epargyreus clarus	Silver-spotted Skipper	S4									X		X										
Erynnis baptisiae	Wild Indigo Duskywing	S4					X			X													
Erynnis juvenalis	Juvenal's Duskywing	S5								X													
Euphyes vestris	Dun Skipper	S5								X	X												X
Pholisora catullus	Common Sootywing	S4					X			X													
Poanes hobomok	Hobomok Skipper	S5								X													
Poanes viator	Broad-winged Skipper	S4								X													
Polites mystic	Long Dash Skipper	S5								X													
Polites peckius	Peck's Skipper	S5								X													
Polites themistocles	Tawny-edged Skipper	S5								X													
Pompeius verna	Little Glassywing	S4					X			X													
Thymelicus lineola	European Skipper	SNA								X	X	X										X	
Wallengrenia egeremet	Northern Broken Dash	S5								X													
Papilionidae	**Swallowtails**																						
Papilio canadensis	Canadian Tiger Swallowtail	S5								X													
Papilio cresphontes	Giant Swallowtail	S4					X			X													
Papilio glaucus	Eastern Tiger Swallowtail	S5						X	X	X	X						X					X	
Papilio polyxenes	Black Swallowtail	S5								X	X					X							
Pieridae	**Whites and Sulphurs**																						
Colias eurytheme	Orange Sulphur	S5								X	X												X
Colias philodice	Clouded Sulphur	S5								X	X	X		X	X	X						X	
Pieris oleracea	Mustard White	S4								X													
Pieris rapae	Cabbage White	SNA						X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**																						
Callophrys augustinus	Brown Elfin	S5								X													
Celastrina ladon	Spring Azure	SU							X														
Celastrina lucia	Northern Spring Azure	S5								X													
Celastrina sp.	Azure species	SNA								X													
Cupido comyntas	Eastern Tailed Blue	S5								X	X			X	X	X	X					X	
Feniseca tarquinius	Harvester	S4								X													
Glaucopsyche lygdamus	Silvery Blue	S5								X													
Lycaena hyllus	Bronze Copper	S5								X													
Satyrium acadica	Acadian Hairstreak	S4								X	X					X							
Satyrium calanus	Banded Hairstreak	S4								X													
Nymphalidae	**Brush-footed Butterflies**																						
Aglais milberti	Milbert's Tortoiseshell	S5								X													
Asterocampa clyton	Tawny Emperor	S3					X			X													
Boloria bellona	Meadow Fritillary	S5								X													
Boloria selene	Silver-bordered Fritillary	S5								X													
Cercyonis pegala	Common Wood-Nymph	S5						X	X	X	X		X			X	X						
Coenonympha tullia	Common Ringlet	S5								X	X	X			X	X	X						X
Danaus plexippus	Monarch	S2N,S4B	SC	E	SC	Schedule 1	X	X	X	X	X	X	X	X	X	X	X	X				X	
Euphydryas phaeton	Baltimore Checkerspot	S4								X	X											X	
Lethe anthedon	Northern Pearly-Eye	S5						X		X	X				X								
Lethe appalachia	Appalachian Brown	S4								X													
Lethe eurydice	Eyed Brown	S5								X													
Limenitis archippus	Viceroy	S5								X	X		X			X	X						
Limenitis arthemis arthemis	White Admiral	S5								X													

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Report	NRSI EIS	Ontario Butterfly Atlas*	NRSI Observed	Agricultural	Hedgerow	CUM	CUS1	CUT1	CUW1	FOD3-1	FOD4	FOD5-1	FOD6-5	MAM2-2	SWT2-5
Limenitis arthemis astyanax	Red-spotted Purple	S5						X		X	X											X	
Megisto cymela	Little Wood-Satyr	S5						X	X	X	X					X	X					X	
Nymphalis antiopa	Mourning Cloak	S5						X	X	X	X					X							
Nymphalis l-album	Compton Tortoiseshell	S5								X													
Phyciodes cocyta	Northern Crescent	S5							X	X	X			X									
Phyciodes tharos	Pearl Crescent	S4								X													
Polygonia comma	Eastern Comma	S5								X	X	X	X		X								
Polygonia interrogationis	Question Mark	S5								X													
Polygonia progne	Gray Comma	S5								X													
Speyeria cybele	Great Spangled Fritillary	S5								X	X		X		X	X			X		X		
Vanessa atalanta	Red Admiral	S5B						X		X	X	X				X							
Vanessa cardui	Painted Lady	S5B								X													
Vanessa virginiensis	American Lady	S5								X													
Total								**10**	**9**	**58**	**23**	**7**	**7**	**5**	**8**	**13**	**8**	**1**	**2**	**1**	**2**	**9**	**4**

*TEA Atlas Square: 17NJ61
**NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414

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Odonate Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Odonate Atlas*	NRSI Observed	Agricultural	Hedgerow	CUM	CUS1	CUT1	CUW1	FOD4	FOD6-5	MAM2-2	SWT2-5
		NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	Government of Canada 2022	City of Guelph 2012	Aboud 2020	NRSI 2007	OOAD 2021	NRSI Results from 2022										
Calopterygidae	**Broadwinged Damselflies**																				
Calopteryx aequabilis	River Jewelwing	S5								X											
Calopteryx maculata	Ebony Jewelwing	S5								X											
Hetaerina americana	American Rubyspot	S4								X											
Lestidae	**Spreadwings**																				
Lestes congener	Spotted Spreadwing	S5						X		X	X									X	
Lestes disjunctus	Northern Spreadwing	S5								X											
Lestes dryas	Emerald Spreadwing	S5								X											
Lestes eurinus	Amber-winged Spreadwing	S4								X											
Lestes inaequalis	Elegant Spreadwing	S4						X													
Lestes rectangularis	Slender Spreadwing	S5						X	X	X	X					X	X			X	
Lestes unguiculatus	Lyre-tipped Spreadwing	S5								X	X	X	X	X	X	X	X	X		X	
Coenagrionidae	**Narrow-winged Damselflies**																				
Argia apicalis	Blue-fronted Dancer	S4								X											
Argia fumipennis violacea	Violet Dancer	S5								X											
Argia moesta	Powdered Dancer	S5								X											
Enallagma annexum	Northern Bluet	S4								X											
Enallagma antennatum	Rainbow Bluet	S4								X											
Enallagma aspersum	Azure Bluet	S4								X											
Enallagma carunculatum	Tule Bluet	S5								X											
Enallagma civile	Familiar Bluet	S5								X											
Enallagma ebrium	Marsh Bluet	S5								X											
Enallagma exsulans	Stream Bluet	S5								X											
Enallagma signatum	Orange Bluet	S4								X											
Ischnura posita	Fragile Forktail	S4								X											
Ischnura verticalis	Eastern Forktail	S5								X	X		X		X	X	X			X	
Nehalennia irene	Sedge Sprite	S5								X	X						X			X	
Aeshnidae	**Darners**																				
Aeshna canadensis	Canada Darner	S5						X		X	X			X						X	
Aeshna constricta	Lance-tipped Darner	S5								X											
Aeshna interrupta interrupta	Variable (Interrupted) Darner	S5								X	X					X	X			X	
Aeshna tuberculifera	Black-tipped Darner	S4								X											
Aeshna umbrosa	Shadow Darner	S5								X											
Aeshna verticalis	Green-striped Darner	S4								X											
Anax junius	Common Green Darner	S5							X	X	X	X		X	X					X	
Boyeria vinosa	Fawn Darner	S5								X											
Rhionaeschna mutata	Spatterdock Darner	S3								X											
Gomphidae	**Clubtails**																				
Arigomphus villosipes	Unicorn Clubtail	S3								X											
Ophiogomphus rupinsulensis	Rusty Snaketail	S4								X											
Phanogomphus exilis	Lancet Clubtail	S5								X											
Phanogomphus graslinellus	Pronghorn Clubtail	S3								X											
Phanogomphus lividus	Ashy Clubtail	S4								X											
Phanogomphus spicatus	Dusky Clubtail	S5								X											
Corduliidae	**Emeralds**																				
Cordulia shurtleffii	American Emerald	S5								X											
Dorocordulia libera	Racket-tailed Emerald	S5								X											
Epitheca canis	Beaverpond Baskettail	S5								X											
Epitheca cynosura	Common Baskettail	S5								X											

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	City of Guelph Status	Southgate Business Park Environ-mental Study	NRSI EIS	Odonate Atlas*	NRSI Observed	Agricultural	Hedgerow	CUM	CUS1	CUT1	CUW1	FOD4	FOD6-5	MAM2-2	SWT2-5
Epitheca princeps	Prince Baskettail	S5								X											
Epitheca spinigera	Spiny Baskettail	S5								X											
Somatochlora tenebrosa	Clamp-tipped Emerald	S3								X											
Somatochlora williamsoni	Williamson's Emerald	S4					X			X											
Libellulidae	**Skimmers**																				
Celithemis elisa	Calico Pennant	S5						X		X	X	X									
Erythemis simplicicollis	Eastern Pondhawk	S5						X		X											
Ladona julia	Chalk-fronted Corporal	S5					X			X											
Leucorrhinia frigida	Frosted Whiteface	S5					X			X											
Leucorrhinia intacta	Dot-tailed Whiteface	S5								X	X									X	
Leucorrhinia proxima	Belted Whiteface	S5					X			X											
Libellula luctuosa	Widow Skimmer	S5						X		X	X	X			X			X			
Libellula pulchella	Twelve-spotted Skimmer	S5						X	X	X	X	X	X		X			X		X	
Libellula quadrimaculata	Four-spotted Skimmer	S5								X	X									X	
Pachydiplax longipennis	Blue Dasher	S5						X		X	X		X		X					X	
Pantala flavescens	Wandering Glider	S4								X											
Perithemis tenera	Eastern Amberwing	S4					X			X											
Plathemis lydia	Common Whitetail	S5						X	X	X	X	X	X		X			X		X	
Sympetrum internum	Cherry-faced Meadowhawk	S5						X													
Sympetrum obtrusum	White-faced Meadowhawk	S5							X	X	X		X		X					X	
Sympetrum semicinctum	Band-winged Meadowhawk	S4								X											
Sympetrum vicinum	Autumn Meadowhawk	S5								X	X		X	X	X				X	X	X
Tramea lacerata	Black Saddlebags	S4						X		X	X				X						
Total								**12**	**5**	**63**	**18**	**6**	**7**	**4**	**10**	**4**	**5**	**4**	**1**	**15**	**1**

**Odonate Atlas Square Numbers: 17NJ61*
***NHIC Atlas Squares: 17NJ6415, 17NJ6515,17NJ6615, 17NJ6514, 17NJ6513, 17NJ6614,17NJ6613, 17NJ6413,17NJ6414*

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Other Insect Species Reported from the Study Area - NewCold Guelph: Phase 1 EIS (Project #2778)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA Schedule	NRSI Observed	Agricultural	Hedgerow	CUM	CUS1	CUT1	CUW1	FOD4	FOD5-6	MAM2-2	SWT2-5
		NDMNRF 2022	MECP 2022	Government of Canada 2022	Government of Canada 2022	NRSI Results from 2022										
Apidae	**Honey Bees, Bumble Bees and Allies**															
Bombus bimaculatus	Two-spotted Bumble Bee	S5				**X**		X			X					
Bombus citrinus	Lemon Cuckoo Bumble Bee	S3S4				**X**			X							
Bombus griseocollis	Brown-belted Bumblebee	S5				**X**			X							
Bombus impatiens	Common Eastern Bumblebee	S5				**X**	X		X	X	X	X	X	X	X	X
Bombus perplexus	Confusing Bumble Bee	S5				**X**	X									
Bombus vagans	Half-black Bumble Bee	S5				**X**	X									
Total						**6**	**3**	**1**	**3**	**1**	**2**	**1**	**1**	**1**	**1**	**1**

References

Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). 2022. Natural Heritage Information Centre (NHIC): Species List for Ontario. Published: 2014-07-17. All Species List Updated: 2022-04-11. Available:

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Legend: Wildlife Species Lists

Provincial Ranks

SRANK

S1	Critically Imperiled	**S4**	Apparently Secure	**S#?**	Uncertain Rank	**SNR**	Unranked	**NP**	Not Provided
S2	Imperiled	**S5**	Secure	**SX**	Presumed Extirpated	**SU**	Unrankable		
S3	Vulnerable	**S#S#**	Status is Between Ranks	**SH**	Possibly Extirpated (Historical)	**SNA**	Not Applicable		

Breeding Status Qualifiers

B	Breeding	**N**	Non-breeding	**M**	Migrant

SARO

END	Endangered	**SC**	Special Concern	**DD**	Data Deficient
THR	Threatened	**NAR**	Not at Risk	**EXP**	Extirpated

Federal Ranks

COSEWIC and SARA

E	Endangered	**SC**	Special Concern	**NS**	No Status	**N-A**	Non-Active	**EX**	Extirpated
T	Threatened	**NAR**	Not at Risk	**DD**	Data Defficient	**X**	Extinct		

SARA Schedule

Schedule 1	Extirpated, Endangered, Threatened, Special Concern Species officially protected under SARA
Schedule 2	Endangered, Threatened species not yet re-assessed using revised criteria; may be considered for inclusion to Schedule 1
Schedule 3	Special Concern species not yet re-assessed using revised criteria; may be considered for inclusion to Schedule 1

Regional Status

City of Guelph Status

X	Regionally Significant

Other

Bird Breeding Evidence Codes

OB **Observed**

- Species observed (no evidence of breeding)

PO **Possible**

- Species observed in its breeding season in suitable nesting habitat
- Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season

PR **Probable**

- ≥ 7 individuals singing or producing other sounds associated with breeding (e.g. drumming) heard during the same visit in suitable nesting habitat during the species' breeding season
- Pair observed in their breeding season in suitable nesting habitat
- Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, during its breeding season, on at least 2 days a week or more apart.
- Courtship or display, including interaction between a male and female or 2 males including courtship feeding or copulation
- Visiting probable nest site
- Agitated behaviour or anxiety calls of an adult
- Brood patch on adult female or cloacal protuberance on adult male
- Nest-building or excavation of nest hole, except by a wren of woodpecker

CO **Confirmed**

- Distraction display or injury feigning
- Used nest or egg shells found (occupied or laid within the period of the survey)
- Recently fledged young or downy young
- Adults leaving or entering nest site in circumstances indicating occupied nest
- Adult carrying fecal sac
- Adult carrying food for young
- Nest containing eggs
- Nest with young seen or heard

Appendix IX
Pitfall Trapping Results

#2778 - NewCold Guelph: Phase 1 EIS
2022 Pitfall Trap Observations

Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
April 7, 2022	4	11	109	Unisexual Ambystoma		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	30	306	Shrew sp.		1			Unknown	Dead	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	306	Unisexual Ambystoma	LLJ	1	7.5	13	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	American Toad		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	Wood Frog		1			Female	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	Unisexual Ambystoma		1	8	15.9	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	Unisexual Ambystoma		1	7.5	13.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	Unisexual Ambystoma		1	7.5	14	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	304	Unisexual Ambystoma		1	6.5	15	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	301	Wood Frog		1			Unknown	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 7, 2022	4	30	302	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	302	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	302	Unisexual Ambystoma	LLJ	1	8	15.7	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	302	Unisexual Ambystoma		1	7.5	14.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	300	Wood Frog		2			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	300	Unisexual Ambystoma		1	7.5	19	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	300	Unisexual Ambystoma		1	8	15.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	298	Unisexual Ambystoma		1	7.6	11.7	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	298	Unisexual Ambystoma		1	7.5	14	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	30	295	Wood Frog		1			Unknown	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 7, 2022	4	31	310	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	31	310	Red-spotted Newt		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	31	310	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	31	310	Red-spotted Newt		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	31	312	Shrew sp.		2			Unknown	Dead	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	31	312	Spring Peeper		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	4	2	14	Wood Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 7, 2022	4	3	18	Wood Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 7, 2022	4	3	22	Wood Frog		2			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 7, 2022	4	3	23	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 7, 2022	4	4	32	Wood Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 7, 2022	4	4	36	Wood Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 7, 2022	4	6	43	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 7, 2022	4	6	45	Wood Frog		5			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 7, 2022	4	6	47	Unisexual Ambystoma	LLJ	1	8	16	Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 7, 2022	4	6	47	Wood Frog		2			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 7, 2022	4	6	49	Wood Frog		13			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 7, 2022	4	8	67	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 7, 2022	4	8	71	Wood Frog		4			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 7, 2022	4	8	73	Wood Frog		2			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 7, 2022	4	11	105	Unisexual Ambystoma	LLJ	1	7.5	14	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	11	105	Unisexual Ambystoma	LLJ	1	7.2	13	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	11	105	Unisexual Ambystoma	LLJ	1	7	13	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	11	105	Unisexual Ambystoma	LLJ	1	7	14	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	11	105	Unisexual Ambystoma	LLJ	1	6.5	13.5	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	4	11	108	Unisexual Ambystoma		1			Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block

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2022 Pitfall Trap Observations

Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
April 7, 2022	4	11	107	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	31	313	Unisexual Ambystoma		1	6.5	13	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 7, 2022	8	31	315	Unisexual Ambystoma		1	6.5	11.2	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 7, 2022	8	31	316	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	8	31	316	Unisexual Ambystoma		1	7.3	12.3	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	8	31	316	Unisexual Ambystoma		1	7	12.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	8	31	316	Unisexual Ambystoma		1	7.5	13	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 7, 2022	8	31	317	Unisexual Ambystoma		1	8	14	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 7, 2022	8	12	113	Unisexual Ambystoma		1	7	13.5	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	114	Unisexual Ambystoma		1	9	14	Female	Injured	Adult	Towards field/woodlands	WET-06	Compensation Block
April 7, 2022	8	12	119	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	121	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	121	Unisexual Ambystoma		1	7	14	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	121	Unisexual Ambystoma		1	7.5	13.5	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	121	Unisexual Ambystoma		1	6.5	12	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 7, 2022	8	12	124	Unisexual Ambystoma		1	6.5	12.5	Unknown	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 7, 2022	8	14	137	Unisexual Ambystoma		1	7	13.2	Female	Alive	Adult	Towards feature/wetland	WET-06	Development
April 7, 2022	8	14	139	Unisexual Ambystoma		1	7.5	14.5	Female	Alive	Adult	Towards feature/wetland	WET-06	Development
April 7, 2022	8	18	173	Unisexual Ambystoma		1	7	13	Female	Alive	Adult	Towards feature/wetland	WET-06	Development
April 7, 2022	8	19	184	Unisexual Ambystoma		1	5.5	11	Female	Alive	Adult	Towards field/woodlands	WET-05	Development
April 7, 2022	8	21	209	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-03	Development
April 7, 2022	8	23	235	American Toad		1			Unknown	Alive	Adult	Towards feature/wetland	WET-03	Development
April 7, 2022	8	23	235	American Toad		1			Unknown	Alive	Adult	Towards feature/wetland	WET-03	Development
April 7, 2022	8	23	237	Unisexual Ambystoma		1	6.5	8	Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 7, 2022	8	25	257	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-02	Development
April 7, 2022	8	29	293	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	29	291	Wood Frog		3			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	29	289	Wood Frog		3			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	29	287	Wood Frog		2			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	28	285	Wood Frog		2			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	28	281	Wood Frog		5			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	27	273	Wood Frog		17			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	27	275	Wood Frog		2			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 7, 2022	8	27	271	Wood Frog		4			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 12, 2022	2	1	5	American Toad		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 12, 2022	2	4	27	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 12, 2022	2	4	32	Wood Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 12, 2022	2	6	43	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 12, 2022	2	8	69	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 12, 2022	2	8	71	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 12, 2022	2	10	97	Northern Leopard Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 12, 2022	2	10	99	Northern Leopard Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 12, 2022	2	11	103	Red-spotted Newt		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 12, 2022	2	11	105	Red-spotted Newt		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 12, 2022	2	31	311	American Toad		1			Unknown	Injured	Unknown	Towards field/woodlands	WET-09	Compensation Block

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2022 Pitfall Trap Observations

Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
April 12, 2022	2	30	295	American Toad		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-09	Compensation Block
April 12, 2022	2	30	297	American Toad		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-09	Compensation Block
April 12, 2022	2	30	298	Red-spotted Newt		2			Unknown	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	2	30	300	Red-spotted Newt		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	2	30	302	Red-spotted Newt		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	2	30	306	Unisexual Ambystoma		1	6	13	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	2	12	114	Unisexual Ambystoma		1	7	13	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 12, 2022	2	12	124	Northern Leopard Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-06	Compensation Block
April 12, 2022	2	20	199	Northern Leopard Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-05	Development
April 12, 2022	2	21	209	Red-spotted Newt		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 12, 2022	2	22	227	Unisexual Ambystoma		1	6.5	12.5	Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 12, 2022	2	23	240	Northern Leopard Frog		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-03	Development
April 12, 2022	2	23	241	Northern Leopard Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 12, 2022	2	25	255	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-02	Development
April 12, 2022	2	25	260	Unisexual Ambystoma	LLJ	1	6.5	12.5	Female	Alive	Adult	Towards field/woodlands	WET-02	Development
April 12, 2022	2	28	285	Wood Frog		2			Unknown	Alive	Unknown	Towards feature/wetland	WET-01	Development
April 12, 2022	2	27	275	Wood Frog		2			Unknown	Alive	Unknown	Towards feature/wetland	WET-01	Development
April 12, 2022	2	27	273	Wood Frog		3			Unknown	Alive	Unknown	Towards feature/wetland	WET-01	Development
April 13, 2022	10	8	67	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-05	Development
April 13, 2022	10	10	99	Spring Peeper		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	109	Spring Peeper		1			Male	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	109	Spring Peeper		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	109	Spring Peeper		1			Male	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	109	Spring Peeper		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	111	Unisexual Ambystoma		1	7.5	14	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	11	111	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 13, 2022	10	30	302	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 13, 2022	10	13	129	Spring Peeper		1			Unknown	Alive	Adult	Towards feature/wetland	WET-06	Development
April 13, 2022	10	21	213	Unisexual Ambystoma		1	6	13	Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 13, 2022	10	27	275	Wood Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-01	Development
April 14, 2022	15	1	3	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	1	5	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	1	5	Wood Frog		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-04	Development
April 14, 2022	15	1	5	Unisexual Ambystoma	LLJ	1	6.5	12.4	Female	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	2	11	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	2	11	Unisexual Ambystoma	LLJ	1	7.2	14	Female	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	2	13	Wood Frog		2			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	2	14	Unisexual Ambystoma	LLJ	1	7	14	Female	Alive	Adult	Towards field/woodlands	WET-04	Development
April 14, 2022	15	2	16	Unisexual Ambystoma		1	6.2	11.2	Female	Alive	Adult	Towards field/woodlands	WET-04	Development
April 14, 2022	15	3	21	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	3	21	American Toad		1			Female	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	3	23	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	4	27	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-04	Development
April 14, 2022	15	4	27	American Toad		1			Female	Alive	Juvenile	Towards feature/wetland	WET-04	Development
April 14, 2022	15	4	32	American Toad		1			Female	Alive	Adult	Towards field/woodlands	WET-04	Development
April 14, 2022	15	4	34	Wood Frog		1			Female	Alive	Juvenile	Towards field/woodlands	WET-04	Development

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Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
April 14, 2022	15	6	41	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	15	6	45	Wood Frog		2			Male	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	15	6	49	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	15	6	49	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	15	7	61	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-05	Development
April 14, 2022	15	8	67	Wood Frog		2			Female	Alive	Adult	Towards feature/wetland	WET-05	Development
April 14, 2022	15	8	67	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-05	Development
April 14, 2022	15	9	83	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	9	87	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	90	American Toad		1			Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	15	10	93	American Toad		2			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	93	Wood Frog		2			Male	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	93	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	95	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	95	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	10	100	Unisexual Ambystoma	LLJ	1	6.9	12.6	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	15	11	101	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	103	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	104	Unisexual Ambystoma		1	7	13.5	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	15	11	105	Unisexual Ambystoma		1	7	15.4	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	105	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	109	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	109	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	11	110	Unisexual Ambystoma		1	8	15.5	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	15	11	111	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	15	31	317	Red-spotted Newt		1			Male	Alive	Juvenile	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	317	American Toad		1			Male	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	317	American Toad		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	318	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	15	31	315	American Toad		1			Male	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	315	Red-spotted Newt		1			Male	Alive	Juvenile	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	315	Unisexual Ambystoma		1	6.5	11	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	315	Unisexual Ambystoma		1	7	13.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	315	Unisexual Ambystoma		1	6.5	12.1	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	15	31	316	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	15	31	316	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	316	American Toad		1			Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	316	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	313	Wood Frog		1			Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	31	313	Unisexual Ambystoma		1	7.5	14.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	31	314	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	314	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	314	Unisexual Ambystoma		1	7	12	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	311	American Toad		1			Male	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	31	311	Unisexual Ambystoma		1	7	13.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block

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Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
April 14, 2022	14	31	312	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	312	Unisexual Ambystoma		1	6.5	13	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	309	Wood Frog		1			Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	31	310	American Toad		1			Female	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	31	310	American Toad		1	6.1	12.3	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	296	Red-spotted Newt		2			Female	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	295	Wood Frog		1			Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	297	Unisexual Ambystoma		1	6.5	11.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	298	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	298	Unisexual Ambystoma		1	7	12.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	298	Unisexual Ambystoma		1	7	15.5	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	298	Red-spotted Newt		2			Female	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	298	Unisexual Ambystoma		1	7.5	15	Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	299	American Toad		1			Male	Injured	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	300	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	302	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	301	Unisexual Ambystoma		1	6	12.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	301	Unisexual Ambystoma		1	6.5	11	Female	Injured	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	301	Wood Frog		1			Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	304	Red-spotted Newt		2			Female	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	30	304	Red-spotted Newt		1			Male	Alive	Juvenile	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	303	Unisexual Ambystoma		1	6	10.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	304	Red-spotted Newt		1			Male	Alive	Juvenile	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	303	Unisexual Ambystoma		1	6	10.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 14, 2022	14	30	306	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 14, 2022	14	12	113	Red-spotted Newt		1			Female	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	14	12	113	Unisexual Ambystoma		1	7.5	14.5	Female	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	14	12	114	Unisexual Ambystoma		1	6	12	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	14	12	115	Red-spotted Newt		1			Male	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	14	12	115	Unisexual Ambystoma		1	4	7	Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Compensation Block
April 14, 2022	14	12	116	Unisexual Ambystoma		1	6	13	Unknown	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	14	12	120	Unisexual Ambystoma		1	7	15	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 14, 2022	14	13	132	Unisexual Ambystoma	LLJ	1	6.5	12.5	Female	Alive	Adult	Towards field/woodlands	WET-06	Development
April 14, 2022	14	14	137	Spring Peeper		1			Unknown	Alive	Adult	Towards feature/wetland	WET-06	Development
April 14, 2022	14	15	157	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Development
April 14, 2022	14	16	162	Red-spotted Newt		1			Male	Alive	Juvenile	Towards field/woodlands	Hedgerow (#32)	Linkage
April 14, 2022	14	21	214	American Toad		1			Female	Alive	Adult	Towards field/woodlands	WET-03	Development
April 14, 2022	14	21	215	American Toad		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	21	215	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	21	217	Wood Frog		3			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	21	217	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	22	221	American Toad		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-03	Development
April 14, 2022	14	22	227	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	23	233	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 14, 2022	14	23	238	American Toad		1			Female	Alive	Adult	Towards field/woodlands	WET-03	Development
April 14, 2022	14	24	243	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-03	Development

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April 14, 2022	14	24	248	Unisexual Ambystoma	LLJ	1	6.5	13	Female	Alive	Adult	Towards field/woodlands	WET-03	Development
April 14, 2022	14	26	263	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-02	Development
April 14, 2022	14	26	263	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-02	Development
April 14, 2022	14	26	267	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-02	Development
April 14, 2022	14	28	281	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-01	Development
April 14, 2022	14	27	277	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-01	Development
April 25, 2022	14	1	4	Wood Frog		1			Male	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 25, 2022	14	3	17	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 25, 2022	14	3	21	Wood Frog		1			Male	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 25, 2022	14	4	25	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 25, 2022	14	4	27	Wood Frog		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 25, 2022	14	4	33	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-04	Development
April 25, 2022	14	4	36	American Toad		1			Female	Alive	Unknown	Towards field/woodlands	WET-04	Development
April 25, 2022	14	6	47	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	6	47	Wood Frog		1			Male	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	6	49	Wood Frog		2			Male	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	6	51	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	7	56	Red-spotted Newt		1			Female	Alive	Unknown	Towards field/woodlands	WET-05	Development
April 25, 2022	14	7	62	Wood Frog		1			Female	Alive	Unknown	Towards field/woodlands	WET-05	Development
April 25, 2022	14	8	67	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 25, 2022	14	8	73	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-05	Development
April 25, 2022	14	9	85	Red-spotted Newt		1			Male	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 25, 2022	14	9	85	Red-spotted Newt		1			Male	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 25, 2022	14	11	103	American Toad		1			Male	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 25, 2022	14	11	103	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-06	Compensation Block
April 25, 2022	14	11	108	Unisexual Ambystoma		1	6	11	Female	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 25, 2022	14	31	318	Red-spotted Newt		1			Female	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	315	Unisexual Ambystoma		1	6.5	12.5	Female	Alive	Adult	Towards field/woodlands	WET-09	Compensation Block
April 25, 2022	14	31	316	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	316	Wood Frog		1			Male	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	316	Wood Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	313	Red-spotted Newt		1			Female	Alive	Unknown	Towards field/woodlands	WET-09	Compensation Block
April 25, 2022	14	31	314	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	312	American Toad		2			Male	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	31	312	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	30	302	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	30	306	American Toad		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	12	115	American Toad		1			Male	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
April 25, 2022	14	12	118	American Toad		1			Male	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
April 25, 2022	14	20	201	American Toad		1			Female	Alive	Adult	Towards feature/wetland	WET-03	Development
April 25, 2022	14	30	298	Gray Treefrog		1			Unknown	Dead	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 25, 2022	14	24	247	Wood Frog		1			Male	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	24	249	Wood Frog		1			Female	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	24	251	Wood Frog		1			Male	Alive	Unknown	Towards feature/wetland	WET-03	Development
April 25, 2022	14	25	261	Green Frog		1			Female	Alive	Adult	Towards feature/wetland	WET-02	Development

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April 25, 2022	14	29	288	Shrew sp.		1			Unknown	Dead	Unknown	Towards field/woodlands	WET-01	Development
April 12, 2022	18	6	45	Wood Frog		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-03	Development
April 12, 2022	18	7	61	Northern Leopard Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-05	Development
April 12, 2022	18	31	316	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	18	30	302	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	18	30	306	Anuran sp.		1			Unknown	Dead	Unknown	Towards feature/wetland	WET-09	Compensation Block
April 12, 2022	18	20	201	Northern Leopard Frog		1			Unknown	Alive	Adult	Towards feature/wetland	WET-05	Development
April 13, 2022	18	5	39	Red-spotted Newt		1			Unknown	Alive	Adult	Towards feature/wetland	Hedgerow (#5)	Development
May 27, 2022	18	1	3	American Toad		2			Female	Alive	Adult	Towards feature/wetland	WET-04	Development
May 27, 2022	18	1	5	American Toad		1			Unknown	Dead	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	1	5	Shrew sp.		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	1	6	Shrew sp.		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-04	Development
May 27, 2022	18	2	13	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	3	21	American Toad		3			Female	Alive	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	3	23	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	4	36	Caterpillar		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-04	Development
May 27, 2022	18	6	43	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-03	Development
May 27, 2022	18	9	83	American Toad		2			Unknown	Alive	Adult	Towards feature/wetland	WET-06	Compensation Block
May 27, 2022	18	31	318	American Toad		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-09	Compensation Block
May 27, 2022	18	31	317	American Toad		1			Unknown	Alive	Unknown	Towards field/woodlands	WET-09	Compensation Block
May 27, 2022	18	15	156	Shrew sp.		1			Unknown	Dead	Unknown	Towards field/woodlands	WET-06	Development
May 27, 2022	18	26	266	American Toad		1			Female	Alive	Unknown	Towards field/woodlands	WET-02	Development
May 27, 2022	18	29	291	American Toad		1			Female	Alive	Unknown	Towards feature/wetland	WET-01	Development
September 25, 2022	12	6	49	American Toad		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-03	Development
September 25, 2022	12	6	51	Red-spotted Newt		1			Male	Alive	Unknown	Towards feature/wetland	WET-03	Development
September 25, 2022	12	6	51	American Toad		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-03	Development
September 25, 2022	12	7	61	American Toad		1			Unknown	Alive	Unknown	Towards feature/wetland	WET-05	Development
September 25, 2022	12	9	86	Unisexual Ambystoma		1	6	10	Unknown	Alive	Adult	Towards field/woodlands	WET-06	Compensation Block
September 25, 2022	12	10	94	Unisexual Ambystoma		1	5.3	10	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 25, 2022	12	13	136	Unisexual Ambystoma		1	5	9.1	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Development
September 25, 2022	12	15	151	Unisexual Ambystoma		1	4.5	9	Unknown	Alive	Metamorph	Towards feature/wetland	WET-06	Development
September 25, 2022	12	18	181	Red-spotted Newt		1			Male	Alive	Unknown	Towards feature/wetland	WET-06	Development
September 25, 2022	15.5	11	104	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 25, 2022	15.5	11	106	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 25, 2022	15.5	13	127	Red-spotted Newt		2			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Development
September 26, 2022	9.5	10	96	Unisexual Ambystoma		1	4.4	9.8	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Compensation Block
September 26, 2022	9.5	10	98	Unisexual Ambystoma		1	5.2	10.2	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 26, 2022	9.5	11	106	Unisexual Ambystoma		1	4.7	9.2	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Compensation Block
September 26, 2022	9.5	11	109	Unisexual Ambystoma		1	4.3	8.2	Unknown	Alive	Metamorph	Towards feature/wetland	WET-06	Compensation Block
September 26, 2022	9.5	11	112	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 26, 2022	9.5	11	111	Unisexual Ambystoma		1	4.8	8.5	Unknown	Alive	Metamorph	Towards feature/wetland	WET-06	Compensation Block
September 26, 2022	9.5	12	116	Unisexual Ambystoma		1	5.5	10.4	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block
September 26, 2022	9.5	12	117	Unisexual Ambystoma		1	3.8	7.8	Unknown	Alive	Metamorph	Towards feature/wetland	WET-06	Compensation Block
September 26, 2022	9.5	12	124	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Compensation Block

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2022 Pitfall Trap Observations

Date	Air Temp (°C)	Fence #	Trap #	Species	Genome	# of Indviduals	Length (cm) to vent	Length (cm) to tip of tail	Sex	Cond.	Age	Direction	Feature	Development Location
September 26, 2022	9.5	13	127	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards feature/wetland	WET-06	Development
September 26, 2022	9.5	14	138	Unisexual Ambystoma		1	4.7	9.7	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	14	144	Unisexual Ambystoma		1	4.9	9.1	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	14	144	Unisexual Ambystoma		1	5.4	10	Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	15	160	Unisexual Ambystoma		1	4.6	9	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	18	172	Unisexual Ambystoma		1	4.9	9.3	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	18	178	Red-spotted Newt		1			Unknown	Alive	Juvenile	Towards field/woodlands	WET-06	Development
September 26, 2022	9.5	18	180	Unisexual Ambystoma		1	4.9	9.5	Unknown	Alive	Metamorph	Towards field/woodlands	WET-06	Development

Appendix X
Wildlife Camera Results

#2778 NewCold Guelph: Phase 1 EIS

Wildlife Camera Photo Observations (2022/2023)

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-001	2/27/2022	Red Fox	1	W
CAM-001	3/1/2022	White-tailed Deer	1	NW
CAM-001	3/15/2022	White-tailed Deer	1	W
CAM-001	3/16/2022	White-tailed Deer	3	NW
CAM-001	3/19/2022	White-tailed Deer	2	NW
CAM-001	3/24/2022	Dog	2	N
CAM-001	3/27/2022	Bird	2	N/A
CAM-001	3/28/2022	White-tailed Deer	2	NW
CAM-001	8/15/2022	White-tailed Deer	1	N
CAM-001	8/27/2022	White-tailed Deer	1	NW
CAM-001	8/27/2022	White-tailed Deer	3	W
CAM-001	8/28/2022	White-tailed Deer	1	N/A
CAM-001	9/1/2022	White-tailed Deer	2	NE
CAM-001	9/6/2022	White-tailed Deer	1	W
CAM-001	9/29/2022	White-tailed Deer	2	W
CAM-001	10/24/2022	White-tailed Deer	3	W
CAM-001	10/30/2022	White-tailed Deer	1	E
CAM-001	11/6/2022	White-tailed Deer	1	NE
CAM-001	11/11/2022	Mammal sp.	1	NE
CAM-001	11/12/2022	White-tailed Deer	1	SW
CAM-001	11/15/2022	White-tailed Deer	1	SE
CAM-001	11/16/2022	White-tailed Deer	1	SW
CAM-001	11/17/2022	White-tailed Deer	1	SW
CAM-001	11/18/2022	White-tailed Deer	1	SW
CAM-001	12/13/2022	White-tailed Deer	1	NW
CAM-001	12/15/2022	White-tailed Deer	2	NE
CAM-001	12/15/2022	White-tailed Deer	3	N/A
CAM-001	12/20/2022	White-tailed Deer	2	NE
CAM-001	1/2/2023	White-tailed Deer	2	SE
CAM-001	1/10/2023	White-tailed Deer	1	E
CAM-002	2/26/2022	Coyote	1	N
CAM-002	3/15/2022	Dog	1	N
CAM-002	4/16/2022	Bird	1	N
CAM-002	4/16/2022	Bird	1	SE
CAM-002	5/28/2022	Bird	2	N
CAM-002	8/27/2022	Dog	1	N/A
CAM-002	8/29/2022	Dog	1	N/A
CAM-002	10/15/2022	White-tailed Deer	1	E
CAM-002	11/2/2022	Squirrel	1	E
CAM-002	11/3/2022	Striped Skunk	1	N/A
CAM-002	12/9/2022	White-tailed Deer	1	NW
CAM-002	12/9/2022	White-tailed Deer	1	W
CAM-002	12/11/2022	White-tailed Deer	1	W
CAM-002	12/12/2022	White-tailed Deer	1	N
CAM-003	2/26/2022	White-tailed Deer	4	NW
CAM-003	2/26/2022	Coyote	1	E
CAM-003	2/27/2022	Coyote	1	E
CAM-003	4/12/2022	Bird	2	NW
CAM-003	4/12/2022	Dog	1	E
CAM-004	4/14/2022	Bird	1	N
CAM-004	4/15/2022	Northern Raccoon	1	N

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-004	4/17/2022	Northern Raccoon	1	N
CAM-004	4/17/2022	Bird	1	S
CAM-004	4/17/2022	Bird	1	N/A
CAM-004	4/17/2022	Northern Raccoon	1	NW
CAM-004	4/20/2022	Northern Raccoon	2	NW
CAM-004	4/20/2022	Northern Raccoon	1	SE
CAM-004	4/23/2022	Northern Raccoon	1	NW
CAM-004	4/24/2022	Northern Raccoon	1	E
CAM-004	4/25/2022	Coyote	1	N
CAM-004	4/27/2022	Coyote	1	S
CAM-004	4/28/2022	Bird	2	N/A
CAM-004	4/30/2022	Bird	1	N/A
CAM-004	5/1/2022	White-tailed Deer	3	E
CAM-004	5/6/2022	Bird	1	N/A
CAM-004	5/8/2022	Bird	2	N/A
CAM-004	5/9/2022	Bird	1	NW
CAM-004	5/11/2022	White-tailed Deer	1	E
CAM-004	5/12/2022	Bird	4	N/A
CAM-004	5/13/2022	Coyote	1	NW
CAM-004	5/13/2022	Bird	1	N/A
CAM-004	5/14/2022	Striped Skunk	1	NW
CAM-004	5/14/2022	Bird	1	S
CAM-004	5/14/2022	Bird	2	N/A
CAM-004	5/15/2022	Northern Raccoon	1	E
CAM-004	5/16/2022	Bird	1	N/A
CAM-004	5/18/2022	Bird	1	N/A
CAM-004	5/19/2022	White-tailed Deer	1	W
CAM-004	5/20/2022	Bird	1	N/A
CAM-004	5/21/2022	Wild Turkey	1	W
CAM-004	5/23/2022	Bird	1	NW
CAM-004	5/23/2022	Bird	1	N/A
CAM-004	5/24/2022	Bird	2	N/A
CAM-004	5/24/2022	Northern Raccoon	1	NW
CAM-004	5/29/2022	White-tailed Deer	1	SW
CAM-004	5/29/2022	Bird	1	W
CAM-004	5/30/2022	Bird	1	SE
CAM-004	5/31/2022	Bird	1	N/A
CAM-004	6/4/2022	White-tailed Deer	1	W
CAM-004	6/5/2022	Bird	2	N/A
CAM-004	6/6/2022	Bird	1	N/A
CAM-004	6/8/2022	White-tailed Deer	1	NW
CAM-004	6/8/2022	Bird	1	N/A
CAM-004	6/11/2022	Bird	1	N/A
CAM-004	6/12/2022	Bird	1	N/A
CAM-004	6/13/2022	Bird	2	N/A
CAM-004	6/13/2022	White-tailed Deer	1	SE
CAM-004	6/14/2022	Bird	1	N/A
CAM-004	6/22/2022	Bird	1	N/A
CAM-004	6/23/2022	Bird	2	N/A
CAM-004	7/22/2022	Bird	1	N/A
CAM-004	7/23/2022	Bird	1	N/A
CAM-004	7/24/2022	White-tailed Deer	1	N
CAM-004	7/24/2022	Bird	1	N/A

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-004	7/25/2022	Bird	1	N/A
CAM-004	7/25/2022	White-tailed Deer	1	S
CAM-004	7/27/2022	Bird	1	N/A
CAM-004	7/27/2022	White-tailed Deer	1	S
CAM-004	7/30/2022	Bird	1	N/A
CAM-004	8/1/2022	Bird	1	N/A
CAM-004	8/6/2022	Bird	1	N/A
CAM-004	8/10/2022	Bird	1	N/A
CAM-004	8/17/2022	Bird	1	N/A
CAM-004	8/19/2022	Bird	1	N/A
CAM-004	8/22/2022	Bird	2	N/A
CAM-004	8/25/2022	Bird	2	N/A
CAM-004	8/30/2022	Bird	1	N/A
CAM-004	9/3/2022	Bird	1	N/A
CAM-004	9/13/2022	Bird	1	N/A
CAM-004	9/26/2022	Bird	1	N/A
CAM-004	9/27/2022	Bird	1	N/A
CAM-004	9/27/2022	Bird	1	N/A
CAM-004	10/1/2022	Bird	1	N/A
CAM-004	10/1/2022	Bird	1	N/A
CAM-004	10/2/2022	Bird	1	N/A
CAM-004	10/3/2022	White-tailed Deer	1	W
CAM-004	10/3/2022	Bird	1	N/A
CAM-004	10/3/2022	Bird	1	N/A
CAM-004	10/3/2022	Bird	1	N/A
CAM-004	10/4/2022	Bird	1	N/A
CAM-004	10/5/2022	White-tailed Deer	1	W
CAM-004	10/6/2022	Bird	1	N/A
CAM-004	10/6/2022	Bird	1	N/A
CAM-004	10/8/2022	White-tailed Deer	1	W
CAM-004	10/8/2022	Bird	1	N/A
CAM-004	10/9/2022	Bird	1	N/A
CAM-004	10/9/2022	Bird	1	N/A
CAM-004	10/9/2022	Bird	1	N/A
CAM-004	10/9/2022	White-tailed Deer	1	W
CAM-004	10/10/2022	Bird	1	N/A
CAM-004	10/10/2022	White-tailed Deer	1	E
CAM-004	10/14/2022	Bird	1	N/A
CAM-004	10/15/2022	Bird	1	N/A
CAM-004	10/15/2022	Bird	1	N/A
CAM-004	10/16/2022	Bird	1	N/A
CAM-004	10/16/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	Bird	1	N/A
CAM-004	10/17/2022	White-tailed Deer	1	N/A
CAM-004	10/18/2022	Bird	1	N/A
CAM-004	10/18/2022	Bird	1	N/A
CAM-004	10/19/2022	Bird	1	N/A

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-004	10/20/2022	Coyote	1	E
CAM-004	11/2/2022	Bird	1	N/A
CAM-004	11/2/2022	Bird	1	N/A
CAM-004	11/3/2022	Wild Turkey	3	N
CAM-004	11/3/2022	Bird	2	N/A
CAM-004	11/4/2022	Bird	1	N/A
CAM-004	11/4/2022	White-tailed Deer	1	NE
CAM-004	11/5/2022	Bird	1	N/A
CAM-004	11/6/2022	White-tailed Deer	1	NW
CAM-004	11/6/2022	Coyote	1	S
CAM-004	11/6/2022	Bird	1	N/A
CAM-004	11/7/2022	Bird	1	N/A
CAM-004	11/7/2022	Northern Raccoon	1	N
CAM-004	11/8/2022	White-tailed Deer	1	S
CAM-004	11/9/2022	Bird	1	N/A
CAM-004	11/9/2022	White-tailed Deer	1	SE
CAM-004	11/10/2022	Bird	1	N/A
CAM-004	11/11/2022	Bird	1	N/A
CAM-004	11/11/2022	Bird	1	N/A
CAM-004	11/11/2022	Bird	1	N/A
CAM-004	11/11/2022	White-tailed Deer	1	E
CAM-004	11/12/2022	Bird	100	N/A
CAM-004	11/13/2022	Bird	1	N/A
CAM-004	11/14/2022	White-tailed Deer	1	NE
CAM-004	11/16/2022	Bird	1	N/A
CAM-004	11/17/2022	Bird	1	N/A
CAM-004	11/18/2022	White-tailed Deer	1	NE
CAM-004	11/23/2022	Bird	1	N/A
CAM-004	11/23/2022	Eastern Cottontail	1	N
CAM-004	11/25/2022	Bird	1	N/A
CAM-004	11/26/2022	Bird	1	N/A
CAM-004	12/2/2022	Bird	1	N/A
CAM-004	12/3/2022	Bird	1	N/A
CAM-004	12/6/2022	Bird	1	N/A
CAM-004	12/6/2022	White-tailed Deer	1	NE
CAM-004	12/7/2022	White-tailed Deer	1	N
CAM-004	12/8/2022	White-tailed Deer	3	E
CAM-004	12/15/2022	White-tailed Deer	1	N
CAM-004	1/7/2023	White-tailed Deer	1	W
CAM-005	3/7/2022	White-tailed Deer	1	W
CAM-005	4/14/2022	Bird	3	N/A
CAM-005	5/27/2022	Bird	2	SE
CAM-005	5/28/2022	Bird	1	N/A
CAM-005	5/28/2022	Bird	1	E
CAM-005	10/3/2022	White-tailed Deer	1	N/A
CAM-005	11/4/2022	White-tailed Deer	1	NE
CAM-005	11/6/2022	White-tailed Deer	1	SE
CAM-005	11/9/2022	Bird	1	S
CAM-005	11/14/2022	White-tailed Deer	1	S
CAM-005	12/5/2022	White-tailed Deer	1	S
CAM-006	3/16/2022	White-tailed Deer	1	SW
CAM-006	3/18/2022	White-tailed Deer	1	SW
CAM-006	3/18/2022	White-tailed Deer	2	SE

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-006	3/18/2022	Wild Turkey	2	NW
CAM-006	3/18/2022	White-tailed Deer	1	S
CAM-006	3/19/2022	Wild Turkey	2	SW
CAM-006	3/21/2022	Northern Raccoon	1	N
CAM-006	3/22/2022	Coyote	1	S
CAM-006	3/26/2022	Eastern Cottontail	1	N
CAM-006	3/29/2022	White-tailed Deer	1	S
CAM-006	3/31/2022	Coyote	1	NW
CAM-006	3/31/2022	Wild Turkey	7	N
CAM-006	4/2/2022	Coyote	1	S
CAM-006	4/5/2022	Northern Raccoon	1	S
CAM-006	4/5/2022	Coyote	1	S
CAM-006	4/7/2022	Bird	1	NW
CAM-006	4/8/2022	White-tailed Deer	2	N
CAM-006	4/9/2022	Eastern Cottontail	1	E
CAM-006	4/11/2022	Coyote	1	W
CAM-006	4/14/2022	Wild Turkey	1	E
CAM-006	5/28/2022	Bird	1	SW
CAM-006	5/28/2022	Bird	2	N
CAM-006	5/28/2022	Wild Turkey	1	NE
CAM-006	5/28/2022	Bird	1	S
CAM-006	5/29/2022	Bird	2	NW
CAM-006	5/29/2022	Wild Turkey	1	E
CAM-006	5/29/2022	Bird	2	SW
CAM-006	9/14/2022	Bird	1	N/A
CAM-006	9/25/2022	Bird	1	S
CAM-006	9/26/2022	Bird	2	S
CAM-006	10/3/2022	White-tailed Deer	1	S
CAM-006	10/9/2022	White-tailed Deer	1	N
CAM-006	10/16/2022	Bird	1	S
CAM-006	11/3/2022	Coyote	1	N
CAM-006	12/11/2022	Coyote	1	S
CAM-006	12/16/2022	White-tailed Deer	1	NE
CAM-006	12/16/2022	White-tailed Deer	1	E
CAM-006	12/18/2022	Coyote	1	S
CAM-006	12/18/2022	Wild Turkey	4	E
CAM-006	12/20/2022	Coyote	1	SE
CAM-006	12/22/2022	Wild Turkey	4	N/A
CAM-006	12/23/2022	Wild Turkey	8	N
CAM-006	12/25/2022	Wild Turkey	3	N/A
CAM-006	12/27/2022	White-tailed Deer	1	N
CAM-006	1/2/2023	White-tailed Deer	2	E
CAM-007	3/6/2022	Coyote	1	SE
CAM-007	3/6/2022	Squirrel	1	SE
CAM-007	3/6/2022	Squirrel	1	NW
CAM-007	3/17/2022	White-tailed Deer	4	NW
CAM-007	3/17/2022	White-tailed Deer	1	NE
CAM-007	3/18/2022	White-tailed Deer	3	SE
CAM-007	3/18/2022	White-tailed Deer	2	NW
CAM-007	3/22/2022	White-tailed Deer	1	SE
CAM-007	3/23/2022	Bird	3	SE
CAM-007	3/25/2022	White-tailed Deer	1	SE
CAM-007	3/25/2022	White-tailed Deer	2	NW

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-007	3/25/2022	Eastern Cottontail	1	N/A
CAM-007	3/28/2022	Bird	3	N/A
CAM-007	3/30/2022	Coyote	1	SE
CAM-007	3/31/2022	Dog	1	SE
CAM-007	4/1/2022	Coyote	1	SE
CAM-007	4/1/2022	White-tailed Deer	1	E
CAM-007	4/2/2022	White-tailed Deer	2	NW
CAM-007	4/3/2022	Dog	1	NW
CAM-007	4/6/2022	White-tailed Deer	2	NW
CAM-007	4/7/2022	Coyote	1	SE
CAM-007	4/7/2022	White-tailed Deer	3	NE
CAM-007	4/8/2022	Coyote	1	SE
CAM-007	4/8/2022	Eastern Cottontail	1	N/A
CAM-007	4/10/2022	Coyote	1	SE
CAM-007	4/10/2022	White-tailed Deer	2	NW
CAM-007	4/10/2022	Coyote	1	NE
CAM-007	4/11/2022	Coyote	1	N
CAM-007	4/13/2022	White-tailed Deer	1	N/A
CAM-007	4/14/2022	Bird	1	SE
CAM-007	4/14/2022	Wild Turkey	1	N
CAM-007	4/15/2022	White-tailed Deer	2	SE
CAM-007	4/16/2022	Bird	3	N/A
CAM-007	4/16/2022	Dog	1	N
CAM-007	4/16/2022	Eastern Cottontail	1	N/A
CAM-007	4/17/2022	White-tailed Deer	2	SE
CAM-007	4/19/2022	Bird	3	N/A
CAM-007	4/19/2022	White-tailed Deer	2	SE
CAM-007	4/19/2022	Squirrel	1	N/A
CAM-007	4/21/2022	Coyote	1	SE
CAM-007	4/22/2022	Dog	1	N
CAM-007	4/23/2022	Coyote	1	SE
CAM-007	4/26/2022	White-tailed Deer	2	N/A
CAM-007	4/26/2022	Coyote	1	SW
CAM-007	4/26/2022	Coyote	2	SE
CAM-007	4/26/2022	Coyote	1	NW
CAM-007	4/26/2022	Bird	1	N/A
CAM-007	4/27/2022	Bird	1	SE
CAM-007	4/27/2022	Bird	1	N/A
CAM-007	4/28/2022	Coyote	1	N/A
CAM-007	4/29/2022	Northern Raccoon	1	SE
CAM-007	5/5/2022	Northern Raccoon	1	SE
CAM-007	5/5/2022	Dog	1	NW
CAM-007	5/5/2022	Dog	1	SE
CAM-007	5/6/2022	Bird	1	N/A
CAM-007	9/2/2022	White-tailed Deer	1	S
CAM-007	9/7/2022	White-tailed Deer	1	SE
CAM-007	9/13/2022	Bird	2	S
CAM-007	9/16/2022	White-tailed Deer	1	SE
CAM-007	9/21/2022	Bird	1	SW
CAM-007	11/6/2022	White-tailed Deer	1	NE
CAM-007	11/7/2022	White-tailed Deer	1	NE
CAM-007	11/8/2022	White-tailed Deer	1	NW
CAM-007	11/11/2022	White-tailed Deer	1	NW

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-007	11/11/2022	White-tailed Deer	1	NE
CAM-007	11/11/2022	White-tailed Deer	1	N
CAM-007	11/13/2022	White-tailed Deer	1	NE
CAM-007	11/13/2022	Bird	50	N/A
CAM-007	11/13/2022	Bird	1	N/A
CAM-007	11/14/2022	White-tailed Deer	1	SE
CAM-007	11/19/2022	White-tailed Deer	1	NW
CAM-007	11/26/2022	White-tailed Deer	1	E
CAM-007	12/3/2022	White-tailed Deer	1	E
CAM-007	12/5/2022	White-tailed Deer	1	SE
CAM-007	12/9/2022	Bird	2	N
CAM-007	12/11/2022	White-tailed Deer	1	N
CAM-007	12/19/2022	White-tailed Deer	1	W
CAM-007	12/19/2022	White-tailed Deer	2	W
CAM-007	12/21/2022	White-tailed Deer	1	NE
CAM-007	12/21/2022	Bird	1	N
CAM-007	12/21/2022	White-tailed Deer	3	NE
CAM-007	12/26/2022	White-tailed Deer	2	N/A
CAM-007	12/29/2022	White-tailed Deer	1	E
CAM-007	1/6/2023	White-tailed Deer	3	N
CAM-007	1/7/2023	White-tailed Deer	1	E
CAM-008	3/4/2022	Dog	1	NE
CAM-008	3/18/2022	White-tailed Deer	3	SW
CAM-008	3/22/2022	White-tailed Deer	1	SW
CAM-008	4/2/2022	White-tailed Deer	5	N/A
CAM-008	4/8/2022	White-tailed Deer	3	SE
CAM-008	4/10/2022	White-tailed Deer	1	W
CAM-008	5/27/2022	Dog	1	S
CAM-008	5/28/2022	Wild Turkey	1	NE
CAM-008	5/28/2022	Bird	1	NE
CAM-008	5/29/2022	Bird	1	NE
CAM-008	5/29/2022	Bird	2	SW
CAM-008	5/30/2022	Dragonfly	1	SW
CAM-008	5/30/2022	Wild Turkey	1	SW
CAM-008	5/30/2022	Bird	1	SW
CAM-008	5/31/2022	Dragonfly	1	SW
CAM-008	5/31/2022	Bird	1	SW
CAM-008	5/31/2022	Bird	1	N
CAM-008	5/31/2022	Bird	1	W
CAM-008	5/31/2022	Insect	1	SW
CAM-008	5/31/2022	Dragonfly	2	W
CAM-008	5/31/2022	Dragonfly	1	SW
CAM-008	5/31/2022	Bird	1	NW
CAM-008	5/31/2022	Bird	2	N/A
CAM-008	5/31/2022	Bird	1	NW
CAM-008	6/1/2022	Dragonfly	1	SW
CAM-008	6/1/2022	Bird	1	SE
CAM-008	7/23/2022	Bird	1	N/A
CAM-008	7/28/2022	White-tailed Deer	1	E
CAM-008	7/29/2022	Bird	1	N/A
CAM-008	7/31/2022	White-tailed Deer	1	E
CAM-008	8/1/2022	Bird	1	S
CAM-008	8/5/2022	Bird	1	N/A

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-008	9/8/2022	Bird	1	N/A
CAM-008	9/9/2022	White-tailed Deer	1	N
CAM-008	9/20/2022	White-tailed Deer	1	W
CAM-008	9/20/2022	White-tailed Deer	1	SE
CAM-008	9/24/2022	Bird	2	S
CAM-008	9/29/2022	Bird	1	N/A
CAM-008	10/2/2022	Bird	2	E
CAM-008	10/3/2022	Bird	1	N/A
CAM-008	10/5/2022	White-tailed Deer	2	E
CAM-008	10/5/2022	Bird	1	N/A
CAM-008	10/8/2022	Bird	1	N/A
CAM-008	10/8/2022	White-tailed Deer	1	E
CAM-008	10/10/2022	Bird	1	E
CAM-008	10/11/2022	Bird	1	N/A
CAM-008	10/13/2022	Bird	1	N/A
CAM-008	10/19/2022	Bird	1	N/A
CAM-008	10/21/2022	White-tailed Deer	2	E
CAM-008	10/23/2022	White-tailed Deer	3	W
CAM-008	10/27/2022	Bird	1	NW
CAM-008	11/7/2022	Bird	1	S
CAM-008	11/15/2022	Bird	3	N/A
CAM-008	11/18/2022	Bird	1	N/A
CAM-008	12/12/2022	Bird	2	W
CAM-008	12/19/2022	White-tailed Deer	1	E
CAM-008	12/20/2022	White-tailed Deer	2	W
CAM-008	12/30/2022	White-tailed Deer	1	E
CAM-008	1/7/2023	White-tailed Deer	1	NW
CAM-009	2/2/2022	Coyote	1	SW
CAM-009	3/6/2022	Coyote	1	SW
CAM-009	3/21/2022	Eastern Cottontail	1	SW
CAM-009	3/21/2022	Squirrel	2	NE
CAM-009	3/22/2022	Eastern Cottontail	1	NE
CAM-009	3/22/2022	Coyote	1	SW
CAM-009	3/23/2022	Striped Skunk	1	NE
CAM-009	3/23/2022	Eastern Cottontail	1	SW
CAM-009	3/25/2022	Eastern Cottontail	1	NE
CAM-009	3/25/2022	Striped Skunk	1	N/A
CAM-009	3/26/2022	Squirrel	1	SW
CAM-009	4/12/2022	Bird	1	N/A
CAM-009	4/12/2022	Bird	1	N/A
CAM-009	4/12/2022	White-tailed Deer	1	NE
CAM-009	4/13/2022	Coyote	2	W
CAM-009	4/13/2022	Wild Turkey	1	SW
CAM-009	4/14/2022	Eastern Cottontail	1	SE
CAM-009	4/14/2022	Eastern Cottontail	1	NE
CAM-009	4/14/2022	Bird	3	N/A
CAM-009	4/14/2022	Wild Turkey	2	NW
CAM-009	5/27/2022	Squirrel	1	NW
CAM-009	5/29/2022	Eastern Cottontail	1	NE
CAM-009	5/29/2022	Bird	1	NE
CAM-009	5/29/2022	Bird	1	N
CAM-009	5/29/2022	White-tailed Deer	1	SW
CAM-009	8/2/2022	White-tailed Deer	2	E

Camera	Date	Species	Number of Individuals	Direction of Travel
CAM-009	8/7/2022	Wild Turkey	1	W
CAM-009	8/10/2022	Coyote	1	W
CAM-009	8/15/2022	Squirrel	1	E
CAM-009	8/15/2022	Wild Turkey	1	SE
CAM-009	8/15/2022	Northern Raccoon	1	SE
CAM-009	8/16/2022	Wild Turkey	2	N
CAM-009	8/16/2022	Bird	3	N/A
CAM-009	8/19/2022	Bird	10	E
CAM-009	8/20/2022	Wild Turkey	1	SE
CAM-009	8/20/2022	Wild Turkey	1	N
CAM-009	8/23/2022	Wild Turkey	2	N
CAM-009	8/28/2022	Coyote	1	E
CAM-009	8/30/2022	Wild Turkey	1	E
CAM-009	8/31/2022	Squirrel	1	NE
CAM-009	9/1/2022	Wild Turkey	2	N
CAM-009	9/1/2022	Squirrel	1	N
CAM-009	9/2/2022	Wild Turkey	1	E
CAM-009	9/6/2022	Coyote	1	N
CAM-009	9/7/2022	Coyote	1	N
CAM-009	9/7/2022	Wild Turkey	2	S
CAM-009	9/9/2022	Squirrel	1	SE
CAM-009	9/11/2022	Coyote	1	NW
CAM-009	9/13/2022	Coyote	2	SE
CAM-009	9/14/2022	Coyote	1	SE
CAM-009	9/16/2022	Wild Turkey	1	SE
CAM-009	9/16/2022	Coyote	1	NW
CAM-009	9/16/2022	Wild Turkey	1	S
CAM-009	9/18/2022	Wild Turkey	1	E
CAM-009	9/24/2022	White-tailed Deer	2	N
CAM-009	9/24/2022	Coyote	1	E
CAM-009	9/27/2022	Coyote	1	W
CAM-009	10/1/2022	Coyote	1	W
CAM-009	10/2/2022	White-tailed Deer	1	W
CAM-009	10/3/2022	Bird	2	E
CAM-009	10/3/2022	Coyote	1	W
CAM-009	10/4/2022	Wild Turkey	1	E
CAM-009	10/5/2022	Coyote	1	E
CAM-009	10/6/2022	Squirrel	1	E
CAM-009	10/6/2022	Striped Skunk	1	E
CAM-009	10/7/2022	Coyote	1	W
CAM-009	10/9/2022	Striped Skunk	1	SE
CAM-009	10/12/2022	Wild Turkey	2	SE
CAM-009	10/12/2022	White-tailed Deer	1	E
CAM-009	10/13/2022	White-tailed Deer	1	NE
CAM-009	10/14/2022	Wild Turkey	1	NW
CAM-009	10/16/2022	Mammal sp.	1	E
CAM-009	10/17/2022	Red Fox	1	SE
CAM-009	10/17/2022	Eastern Cottontail	1	NW
CAM-009	10/18/2022	Mammal sp.	1	W
CAM-009	10/20/2022	Coyote	1	SE
CAM-009	12/9/2022	Wild Turkey	4	N/A

Appendix XI
Wetland Complexing and Assessments

Subject: RE: Southgate Business Park (384 Crawley) - Wetland removal policy assessment (proj2778)
From: Ben Kissner <bkissner@grandriver.ca>
Date: 1/20/2023, 9:40 AM
To: Laura Hockley <lhockley@nrsi.on.ca>
CC: David Stephenson <dstephenson@nrsi.on.ca>, Matthew Midgley <mmidgley@cowiecapital.com>, John Aschenbrenner <John.Aschenbrenner@newcold.com>, Matt Long - GM BluePlan <Matt.Long@gmblueplan.ca>

Good afternoon Laura,

I have reviewed the document you sent over, and circulated it to my colleagues in Ecology.

The outcome of that review is:

- The January 10, 2023 NRSI policy assessment adequately addresses GRCA Policy 8.4.4 to allow for the interference with wetland feature WET-10 on the subject site.
- The developer/consultant should notify the GRCA when the alteration to the feature has been completed so that the feature and its regulation limit can be removed from the GIS system.

We would require a permit prior to initiating the work, and the application can be found here:
https://www.grandriver.ca/en/Planning-Development/Apply-for-a-permit.aspx

Regards,
Ben

Ben Kissner, M.Sc., MCIP, RPP
Resource Planner
Grand River Conservation Authority

400 Clyde Road, PO Box 729
Cambridge, ON N1R 5W6
Office: 519-621-2763 ext. 2237
Toll-free: 1-866-900-4722
Fax: 519-621-4844
www.grandriver.ca | Connect with us on social

From: Laura Hockley <lhockley@nrsi.on.ca>
Sent: January 10, 2023 8:37 AM
To: Ben Kissner <bkissner@grandriver.ca>
Cc: David Stephenson <dstephenson@nrsi.on.ca>; Matthew Midgley <mmidgley@cowiecapital.com>; John Aschenbrenner <John.Aschenbrenner@newcold.com>; Matt Long - GM BluePlan <Matt.Long@gmblueplan.ca>
Subject: Southgate Business Park (384 Crawley) - Wetland removal policy assessment (proj2778)

Hi Ben,

NRSI has been retained by Industrial Equities Guelph Limited Partnership to complete an assessment of one of the wetlands on the subject property of 384 Crawley Road, Guelph to determine whether it meets the policies for removal as outlined in 8.4.4 (Policies for Wetlands and Areas of Interference). Please find attached a letter that outlines the results of the assessment and concludes that the wetland in question (WET-10) meets the policies for removal.

We request that you review this assessment and confirm whether it meets the GRCA's policies for removal. Please let me know if you have any questions or require additional information.

Thanks,
Laura

--

Laura Hockley B.E.S.
Ecologist and Project Manager
Natural Resource Solutions Inc.
415 Phillip Street, Unit C
Waterloo, ON N2L 3X2
(p) 519-725-2227 Ext. 288 (f) 519-725-2575
(w)www.nrsi.on.ca (e) lhockley@nrsi.on.ca
@nrsinews Natural Resource Solutions Inc.
Over 20 years of environmental consulting excellence

Subject: Southgate Business Park Wetland Complexing (proj2778)
From: "Denyes, David (MNRF)" <David.Denyes@ontario.ca>
Date: 11/23/2022, 10:13 AM
To: "mmidgley@cowiecapital.com" <mmidgley@cowiecapital.com>
CC: Laura Hockley <lhockley@nrsi.on.ca>, Dave Stephenson <dstephenson@nrsi.on.ca>

Hello Mr. Midgley,

Please accept the attached Landowner Notification Letter advising that the Ministry has approved the changes recommended in the wetland assessment report (dated Sept 13, 2022) submitted by Natural Resource Solutions Inc.

WET-08 and WET-09 on the attached map will be complexed with the Mill Creek Puslinch PSW complex, but WET-10 will not be complexed.

If you have any questions or concerns, please don't hesitate to contact me.

Regards,

David

David Denyes
Management Biologist
Ministry of Natural Resources and Forestry
Vineland Field Office
4890 Victoria Avenue North
Vineland Station ON, L0R 2E0
Tel: (289) 241-6872
david.denyes@ontario.ca

Attachments:

Landowner Notification Letter- CrawleyRd-signed.pdf	392 KB

Ministry of Natural Resources and Forestry

Guelph District
1 Stone Road West
Guelph, Ontario
N1G 4Y2

Ministère des Richesses naturelles et des Forêts

Telephone: (519) 826-4955
Facsimile: (519) 826-4929

Ontario

November 22, 2022

Industrial Equities Guelph Corp.
(c/o Matthew Midgley)
mmidgley@cowiecapital.com

SUBJECT: Update to the Provincially Significant Mill Creek Puslinch Wetland Complex, 384-352 Crawley Road, City of Guelph, ON

Dear Mr. Midgley:

The Ministry of Natural Resources and Forestry (MNRF) is notifying you of an update to the above-named Provincially Significant Wetland (PSW) located on your property (MPAC Roll No. #23080600175400000000)**.** For your information, we have attached a map showing the changes to the wetland boundary. Note that the wetland boundary in its entirety will be made available for viewing through the MNRF's Natural Heritage "Make a Map" program https://www.ontario.ca/page/make-natural-heritage-area-map.

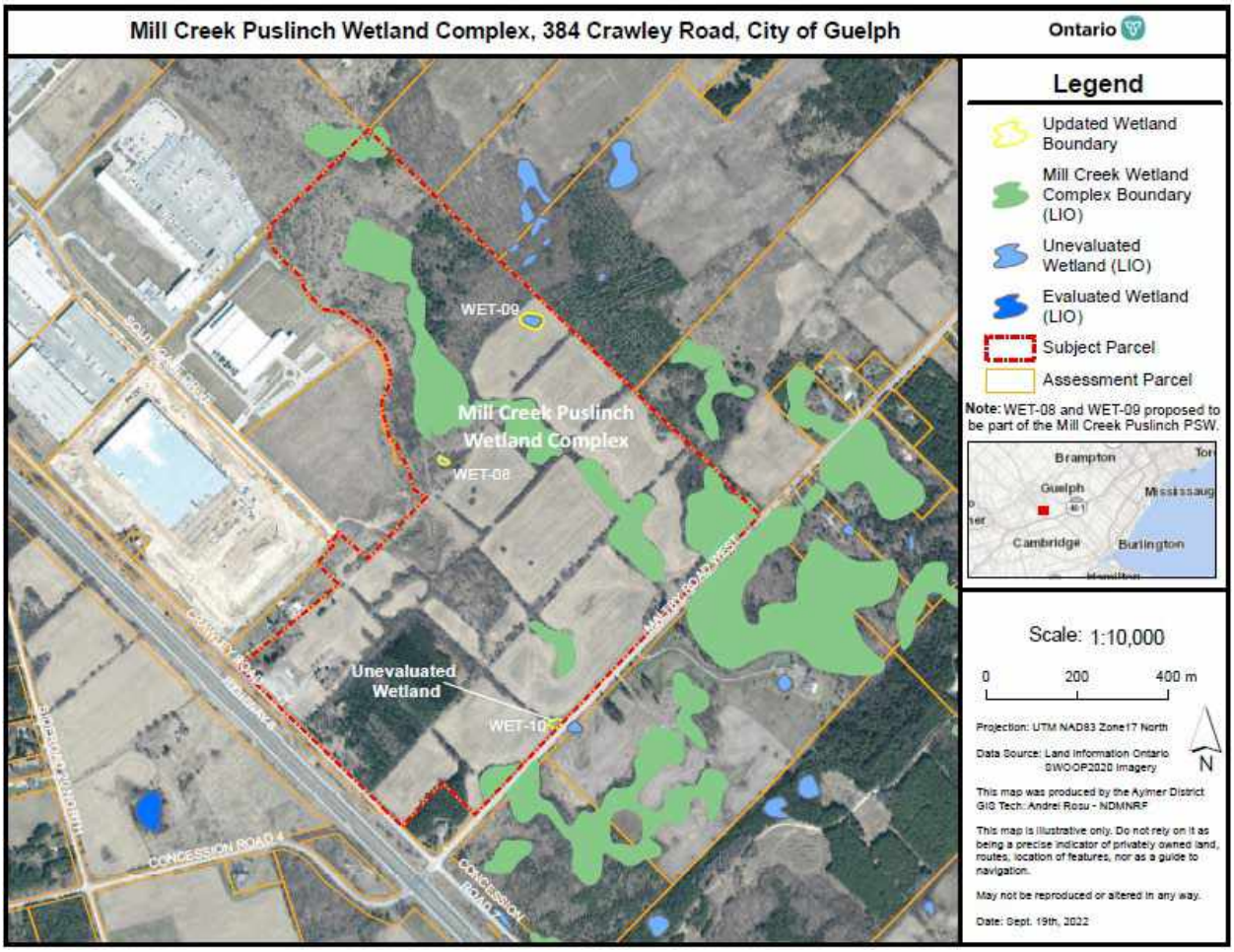
The Ministry's role in wetland evaluations is to review and confirm wetland boundary evaluations and to update information in the provincial Land Information Ontario, a mapping tool, which is used to inform planning decisions. Boundary refinements are completed in accordance with the provincial framework (Ontario Wetland Evaluation System (OWES)).

Wetland evaluation files are considered "open files" in that they may be updated from time to time as new information becomes available.

If you have any questions about this Notification Letter, please feel free to contact David Denyes, Management Biologist at 289-241-6872 or David.denyes@ontario.ca.

Sincerely,

Deanna Lindblad
District Supervisor


Mill Creek Puslinch Wetland Complex, 384 Crawley Road, City of Guelph
Ontario
Legend
Updated Wetland Boundary
Mill Creek Wetland Complex Boundary (LIO)
Unevaluated Wetland (LIO)
Evaluated Wetland (LIO)
Subject Parcel
Assessment Parcel
Note: WET-08 and WET-09 proposed to be part of the Mill Creek Puslinch PSW.
Brampton
Guelph
Mississaug
Cambridge
Burlington
Scale: 1:10,000
0
200
400 m
N
Projection: UTM NAD83 Zone17 North
Data Source: Land Information Ontario SWOOP2020 Imagery
This map was produced by the Aylmer District GIS Tech: Andrei Rosu - NDMNRF
This map is illustrative only. Do not rely on it as being a precise indicator of privately owned land, routes, location of features, nor as a guide to navigation.
May not be reproduced or altered in any way.
Date: Sept. 19th, 2022
WET-09
Mill Creek Puslinch Wetland Complex
WET-08
Unevaluated Wetland
WET-10
CONCESSION ROAD 4
CONCESSION ROAD 2
CRAWLEY ROAD
HALTBY ROAD WEST

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

January 10, 2023 Project No. 2778

Ben Kissner
Grand River Conservation Authority
400 Clyde Road, PO Box 729
Cambridge, ON N1R 5W6

RE: Southgate Business Park (384 Crawley Road, Guelph)
Wetland Removal Policy Assessment

Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Industrial Equities Guelph Limited Partnership to complete natural heritage studies to support the proposed development located at 384 Crawley Road, Guelph (Parts of Lot 13, 14, and 15 Concession 7) (Map 1). The proposed development will consist of industrial lands with associated roads, stormwater management facilities, parking, landscaped areas, and industrial buildings.

Ten distinct wetlands are located within the subject property (Map 1). Three of the wetlands (WET-08, -09, -10) were mapped by the Ministry of Natural Resources and Forestry (MNRF) as unevaluated, while the others are Provincially Significant Wetlands (PSW). On September 13, 2022, NRSI submitted a wetland evaluation memo to MNRF documenting the existing conditions of the three unevaluated wetlands, with the purpose of recommending that two of the wetlands (WET-08 and WET-09) be complexed into the Mill Creek Puslinch PSW complex based on their location within the broader landscape and natural heritage system. WET-10 was not recommended for complexing because of its isolated location, lack of rare or unusual species, and limited ecological value. MNRF agreed with this assessment, which makes WET-10 an “Other Wetland” (Non-PSW). The complexing letter and MNRF’s response are provided in Appendix I.

Based on the status change of WET-10, the landowners are wishing to expand their development area which will require the removal of this wetland.

Field Surveys

In addition to numerous environmental studies completed on the subject property over the past 10+ years, NRSI has completed the following field surveys within the subject property in 2022:

- Ecological Land Classification (ELC) (Lee et al. 1998);
- Wetland boundary flagging and delineation (MNRF 2014);
- GRCA wetland boundary review and approval;
- Spring, summer and fall vegetation inventories;
- Three early morning breeding bird surveys (OBBA 2021a, b);
- Two marsh breeding bird surveys (BSC 2009a);
- Two evening Common Nighthawk surveys (Hannah 2021);

- Winter wildlife movement surveys;
- Raptor wintering surveys (OMNR 2011);
- Comprehensive tree inventory;
- Five turtle basking surveys (MNRF 2015);
- Nine snake visual encounter surveys (MNRF 2016);
- Snake coverboard placement and checks during suitable weather (MNRF 2016);
- Salamander movement surveys;
- Three insect surveys (Colla & Taylor-Pindar 2011);
- Comprehensive leaf-off bat habitat assessments (MNRF 2017, MECP 2022);
- Bat acoustic monitoring (MECP 2022);
- Aquatic habitat assessments; and
- Three anuran call surveys (BSC 2009b).

WET-10 Description

WET-10 is a Reed Canary Grass Mineral Meadow Marsh (MAM2-2) that is located within and directly adjacent to the ditch along Maltby Road. It is 0.04ha in area and is naturally occurring, surrounded by agricultural fields. A culvert is present under Maltby Road which provides a connection between this wetland and the wetland on the southeast side of Maltby Road flowing from east to west. It is dominated by Reed Canary Grass (*Phalaris arundinacea*) and also contains Goldenrod (*Solidago* sp.) and Sensitive Fern (*Onoclea sensibilis*). The soils are loam with a soil moisture regime of 4. The wetland on the southeast side of Maltby was planted with grass/mown in the summer of 2022.

Hydrologically, the wetland receives water inputs from Maltby Road and its associated roadside ditch, from the surrounding agricultural lands, and from precipitation. This low-lying area is only seasonally wet and was observed to be dry by late spring/early summer in 2022. Fish are not present.

Significant Observations and Habitats

WET-10 provides very limited habitat and ecological function due to its small size, disturbance from adjacent agricultural lands, and isolated location. The closest natural feature is a narrow deciduous hedgerow within 5m. The closest PSW is 94m away.

No federally, provincially, or locally significant species were observed in this wetland, and no significant habitats are present. Given that the wetland is dominated by Reed Canary Grass, it has low species and habitat diversity. The lack of standing water throughout the growing season also suggests amphibian breeding is not occurring within this wetland.

Relevant Grand River Conservation Authority Policies

Wetlands and watercourses are regulated by the GRCA under *Ontario Regulation 150/06.* Development within a naturally-occurring wetland less than 0.5ha in size may be permitted if the wetland satisfies the criteria outlined in Section 8.4.4 of GRCA policy.

8.4.4 Development within a naturally-occurring wetland may be permitted where the wetland is less than 0.5 hectares (1.24 acres), and it can be demonstrated that the wetland is not:

- *a) part of a Provincially Significant Wetland,*
- *b) located within a floodplain or riparian community,*
- *c) part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land,*
- *d) a bog, fen,*
- *e) fish habitat,*
- *f) significant wildlife habitat,*
- *g) confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources and Forestry or as determined by the municipality,*
- *h) part of an ecologically functional corridor or linkage between larger wetlands or natural areas,*
- *i) part of a groundwater recharge area, or*
- j) *a groundwater discharge area associated with any of the above*

Wetland Assessment

It must be demonstrated that the wetlands meet the 10 criteria listed above to be considered for removal. Table 1 provides an analysis of the required criteria under GRCA policy 8.4.4 for WET-10, which is 0.04ha in size.

Table 1. GRCA Wetland Removal Policy Summary (Section 8.4.4).

GRCA Policy Criteria	Summary Results
a) part of a Provincially Significant Wetland	No. The MNRF has confirmed that WET-10 is not provincially significant (Appendix I).
b) located within a floodplain or riparian community	No. WET-10 is not mapped as floodplain according to GRCA mapping (GRCA 2021). There is no riparian community.
c) part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land	No. WET-10 is not part of a provincially-designated natural heritage feature, significant woodland, or hazard land.
d) a bog, fen	No. WET-10 is not classified as a bog or fen.
e) fish habitat	No. WET-10 does not qualify as fish habitat under the *Fisheries Act* because it isn't connected to any other waterbodies/watercourses. Fish were not observed and the wetland is dry in the summer.
f) significant wildlife habitat	No. Significant Wildlife Habitat (SWH) was not confirmed within WET-10. Anuran call surveys were not completed within this wetland due to the lack of surface water during breeding periods.
g) confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources and Forestry or as determined by the municipality	No. Provincially or regionally significant species are not present.
h) part of an ecologically functional corridor or linkage between larger wetlands or natural areas	No. WET-10 is an isolated feature and therefore not part of an ecologically functional corridor or linkage between larger wetlands or natural areas. Active agricultural lands create a barrier for species and habitats of ecological significance (i.e., other PSWs or woodlands) which are >100m away.
i) part of a groundwater recharge area	No, the wetland does not provide a substantial quality of recharge relative to the overall subject property area: its contribution to recharge is not vital to the maintenance of the watershed. See Appendix II for a hydrogeological assessment letter prepared by GM BluePlan.

GRCA Policy Criteria	Summary Results
j) a groundwater discharge area associated with any of the above	No. WET-10 is perched above the main water table. Groundwater discharge to the WET-10 is not occurring (Anderson GeoLogic Limited 2010). Appendix II provides additional rationale.

Conclusion

WET-10 satisfies all of the criteria listed. Based on the assessment provided, it has been demonstrated that WET-10 adequately meets the criteria within Section 8.4.4 of GRCA policy to permit removal of the wetland.

Should you have any questions, please do not hesitate to contact the undersigned.

[redacted]

David Stephenson
Senior Biologist/Certified Wetland Evaluator

[redacted]

Laura Hockley
Ecologist/Project Manager

References

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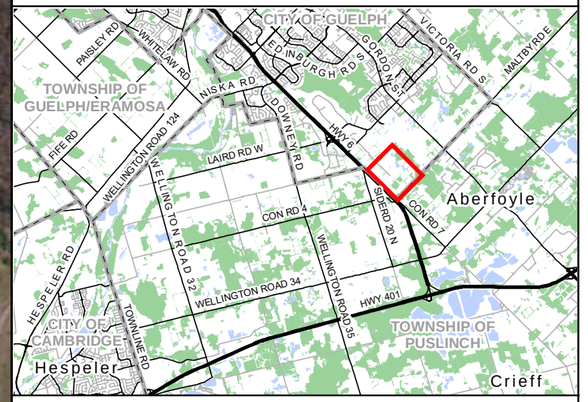
Map

Map 1

Southgate Business Park

Wetlands



Legend

- Subject Property
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Surveyed Dripline (Confirmed by City of Guelph September 9, 2022)
- Provincially Significant Wetland (PSW)
- Other Wetland (Non-PSW)
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SWD3-3) Swamp Maple Mineral Deciduous Swamp Type
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp Type
(SWT2-4) Buttonbush Mineral Thicket Swamp Type
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Imagery: First Base Solutions Inc. (2021).

Project: 2778
Date: December 14, 2022

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map1_Wetlands_8K_2022_12_14_LEH.mxd

Appendix I

Wetland Status Assessment and Ministry of Natural Resources and Forestry Confirmation

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Memo

#2778

To:	**David Denyes, NDMNRF**
From:	**David Stephenson, Laura Hockley (NRSI)**
Date:	**September 13, 2022**
Re:	**Southgate Business Park, Guelph**
	Wetland Assessment

Natural Resource Solutions Inc. (NRSI) was retained by Cowie Capital Inc. to complete an Environmental Impact Study (EIS) for the proposed industrial development of Southgate Business Park at 384-352 Crawley Road, Guelph. The subject property contains a number of wetlands, including those of the Mill Creek Puslinch Provincially Significant Wetland (PSW) complex and three unevaluated wetlands (Map 1).

As part of the EIS, the City of Guelph and Grand River Conservation Authority (GRCA) have requested that a complexing exercise be undertaken for the three unevaluated wetlands according to the procotols within the Ontario Wetland Evaluation System (OWES) Southern Manual (MNRF 2014). They also requested that the results of this exercise be confirmed by the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF).

Background

NRSI has completed a number of ecological surveys on the subject property, dating back to 2006 to the present. In 2007, an EIS was submitted by NRSI and approved by the City of Guelph and GRCA (NRSI 2007). In that EIS, the three unevaluated wetlands were documented and characterized, however, wetlands less than 0.5ha did not require a buffer from development. In 2012, an Environmental Implementation Report (EIR) was submitted by NRSI (NRSI 2012a). Subsequently, two EIR addendums were submitted in 2012 (NRSI 2012b) and 2014 (NRSI 2014). However, the landowners eventually let the Draft Plan lapse and the EIR was not approved. In the EIR submissions, one of the wetlands, WET-10, was not mapped or considered within the site plans and the implications of the development on this wetland were not discussed as it was assumed that the Environmental Assessment (EA) for the widening of Maltby Road would address this wetland. Further improvements to Maltby Road (e.g., sidewalks, bike lanes, etc.) are expected as part of additional EAs in the future.

In 2022, spring and summer vegetation inventories have been completed to document current conditions of all vegetation communities within the subject property, including the unevaluated wetlands. Other monitoring, such as amphibian breeding and movement surveys, breeding bird surveys, reptile surveys, etc has also been completed within the wetlands and other habitats in 2022 as part of the EIS. The boundaries of the wetlands within the development area have been surveyed using a Trimble R10 with Can-Net corrections and confirmed with GRCA staff on August 19th, 2022. These boundaries were previously surveyed as part of the original EIS completed by NRSI in 2006; they have been resurveyed in 2022 to document current conditions.

Existing Conditions

The following provides a description of each unevaluated wetland. A summary of each wetland, which includes OWES vegetation codes, is provided in Table 1.

WET-08

This mineral meadow marsh is located within a depressional area in a mineral cultural thicket community. It is 0.03ha in size and is within 40m of an adjacent PSW. It is surrounded by upland with no surface water connection to other wetland areas. In the 2007 EIS, this community was mapped as a larger swamp thicket, however, in the current condition, the dominant species have changed and the thicket areas are not considered wetland. It does not provide fish habitat.

During previous wildlife surveys, the habitats surrounding this wetland were found to contain Significant Wildlife Habitat for shrub/early successional bird breeding. Barn Swallow (*Hirundo rustica*) was also observed foraging in the area. No significant species were reported from the wetland community.

WET-09

This mineral meadow marsh is located within a depressional area in an agricultural field. It is seasonally flooded and in some years is dry enough to be tilled and planted with crop. It is 0.13ha and is surrounded by upland with no surface water connection to other wetland areas. The closest wetland is an unevaluated wetland 100m away on the adjacent property (2093 Gordon Street). The closest PSW is 160m away. It does not provide fish habitat. The areas surrounding this wetland are proposed to be planted and restored.

During previous wildlife surveys, this wetland was identified as part of an amphibian movement corridor. During 2022 surveys, amphibian species found within pitfall traps near this wetland include Unisexual *Ambystoma* (Blue-spotted Salamander-dependent population) (*Ambystoma* (2) *laterale - jeffersonianum*), American Toad (*Anaxyrus americanus*), Wood Frog (*Lithobates sylvaticus),* Red-spotted Newt (*Notophthalmus viridescens viridescens*), Green Frog (*Lithobates clamitans*), Spring Peeper (*Pseudacris crucifer*), and Gray Treefrog (*Hyla versicolor*). Northern Ribbonsnake (*Thamnophis sauritus septentrionalis*) was also observed within the vicinity of this wetland.

WET-10

This mineral meadow marsh is located within and directly adjacent to the ditch along Maltby Road. It is 0.04ha in area and is surrounded by agricultural fields. A culvert is present under Maltby Road which provides a connection between this wetland and the wetland on the southeast side of Maltby Road flowing from east to west. The closest wetland is the unevaluated wetland 16m away on the other side of Maltby Road. The closest PSW is 94m away. In the 2007 EIS, this community was mapped as a swamp thicket dominated by Gray Dogwood (*Cornus racemosa*), however, in the current condition, the dominant species have changed to Reed Canary Grass (*Phalaris arundinacea*). It does not provide fish habitat. The wetland on the south side of the road was described in the 2007 EIS as a Red Osier Mineral Thicket Swamp (STW2-5). At that time, the isolated feature was surrounded by red osier dogwood thicket around the perimeter, with grass similar to the surrounding pasture in the open water, suggesting that it was dry at times. On August 19, 2022, the wetland on the south side was limited to the ditch area along Maltby Road; much of this area was planted with grass, however, it is expected that a larger wet area would be present in wetter years.

No significant habitats or species have been observed within the wetland on the subject property to date. This wetland feature was not considered for protection within the approved 2007 EIS due to its small size and lack of significant habitats.

Table 1. Summary of Unevaluted Wetlands on Subject Property

Wetland #	Description	OWES Codes	ELC
WET-08	Small isolated open marsh pocket in cultural thicket. The area is a small depression area that is densely vegetated with Reed Canary Grass. Other species include Spotted Jewelweed (*Impatiens capensis*), Bittersweet Nightshade (*Solanum dulcamara*), and Field Mint (*Mentha arvensis).* The wetland is surrounded by upland tree and thicket species. The soils are silty loams with Soil Moisture Regime = 4.	neM1: Reed Canary Grass	MAM2-2 Reed-canary Grass Mineral Meadow Marsh
WET-09	Small isolated open marsh pocket in agricultural field. The area is a small depression that is densely vegetated and dominated by Reed Canary Grass, and contains Broad-leaved Cattail (*Typha latifolia),* European Reed (*Phragmites australis ssp. australis*), Northern Water-plantain (*Alisma triviale*), and Blunt Spikerush (*Eleocharis obtusa*). The soils are silt with Soil Moisture Regime = 5.	neM1: Reed Canary Grass	MAM2-2 Reed-canary Grass Mineral Meadow Marsh
WET-10	Small isolated open marsh pocket in agricultural field, along a ditch. The area is a small depression that is vegetated with Reed Canary Grass, Goldenrod (*Solidago* sp.), and Sensitive Fern (*Onoclea sensibilis*). The soils are loam with Soil Moisture Regime = 4.	neM1: Reed Canary Grass	MAM2-2 Reed-canary Grass Mineral Meadow Marsh

Photos of the wetlands are found in Appendix I. Map 2 shows the wetland vegetation communities.

Wetland Complexing

Table 2 provides an assessment of each wetland in complexing with the Mill Creek Puslinch PSW complex, using the criteria outlined in the OWES Southern Manual (MNRF 2014).

Table 2. Wetland Complexing Assessment

Criteria	Description	WET-08	WET-09	WET-10
Watersheds	Wetlands must not be complexed across watersheds except in rare circumstances. The test for determining whether a complex should be defined is the comfort level of the biologist in defending the complex on the grounds of wetland function	☑ The wetland unit is part of the same watershed.	☑ The wetland unit is part of the same watershed.	☑ The wetland unit is part of the same watershed.
Distance	The maximum distance between units of a complex must not exceed 0.75km straight line distance.	☑ The wetland unit is within 0.75km of a PSW.	☑ The wetland unit is within 0.75km of a PSW.	☑ The wetland unit is within 0.75km of a PSW.
Lacustrine Wetlands	As long as lacustrine wetlands are within the 0.75km distance criterion, they may be considered as units of a complex. Shoreline wetlands connected to one another by bands of submergent vegetation will not necessarily be complexes.	n/a	n/a	n/a
Size	Wetland units less than 2ha in size may be included as part of the complex. Such tiny wetlands may be recognized when, in the opinion of the evaluator, the small wetland pocket may provide important ecological benefit (e.g., containing rare or unusual plant species, a seepage area in which a regionally or provincially	☒ The wetland unit is 0.03ha. Ecological Factor: ☑ The wetland provides ecological benefit. It is located within a larger natural area that is to be protected and maintained as part of the Natural Heritage System. It is surrounded by other important species habitats and provides a stepping stone to	☒ The wetland unit is 0.13ha. Ecological Factor: ☑ The wetland provides ecological benefit. It is located within a larger natural area that is to be protected and maintained as part of the Natural Heritage System. It contains habitat for significant species and provides a stepping to other wetland habitats.	☒ The wetland unit is 0.04ha. Ecological Factor: ☒ Unlike the other two wetlands, this wetland is isolated from other natural heritage features and is surrounded by lands proposed to be developed. It does not contain rare or unusual species, is not a seepage area, does not provide habitat for a significant

Criteria	Description	WET-08	WET-09	WET-10
	significant plant or animal species is found, or a wetland which strengthens a corridor link between larger wetlands or natural areas.	other wetland habitats. **As such, it is recommended that this wetland be complexed with the PSW.**	Restoration within and surrounding this wetland will further improve habitat quality. **As such, it is recommended that this wetland be complexed with the PSW.**	species, and does not provide a linkage function to other natural areas that are proposed to be retained. Water inputs are largely from the culvert under Maltby Road and overland flow. **As such, it is recommended that this wetland not be complexed with the PSW.**

It is our interpretation that WET-08 and WET-09 should be complexed with the Mill Creek Puslinch PSW complex, which would therefore make these wetlands PSW as well. WET-10 is not recommended to be complexed with the Mill Creek Puslinch PSW complex. Its small size, isolation from other natural heritage features, and lack of significant species or ecological benefit, results in a different conclusion. As such, it should be considered a non-provincially significant wetland.

We trust that you would agree with this assessment of unevaluated wetlands at the proposed Southgate Business Park. Should you have any questions or comments regarding this assessment, please do not hesitate to contact the undersigned.

Sincerely,
Natural Resource Solutions Inc.

[redacted]

David Stephenson
Senior Biologist/Certified Wetland Evaluator

[redacted]

Laura Hockley
Ecologist/Project Manager

References

Natural Resource Solutions Inc. (NRSI). 2007. Southgate Business Park Draft Plan of Subdivision Environmental Impact Study. Prepared for Industrial Equities Guelph Corporation. July 24, 2007.

Natural Resource Solutions Inc. (NRSI). 2012a. Southgate Business Park 23T-06503 Environmental Implementation Report. Prepared for Industrial Equities Guelph Corporation. February 9, 2012

Natural Resource Solutions Inc. (NRSI). 2012b. Southgate Business Park 23T-06503 Environmental Implementation Report Phase 2 Addendum. Prepared for Industrial Equities Guelph Corporation. November 28, 2012.

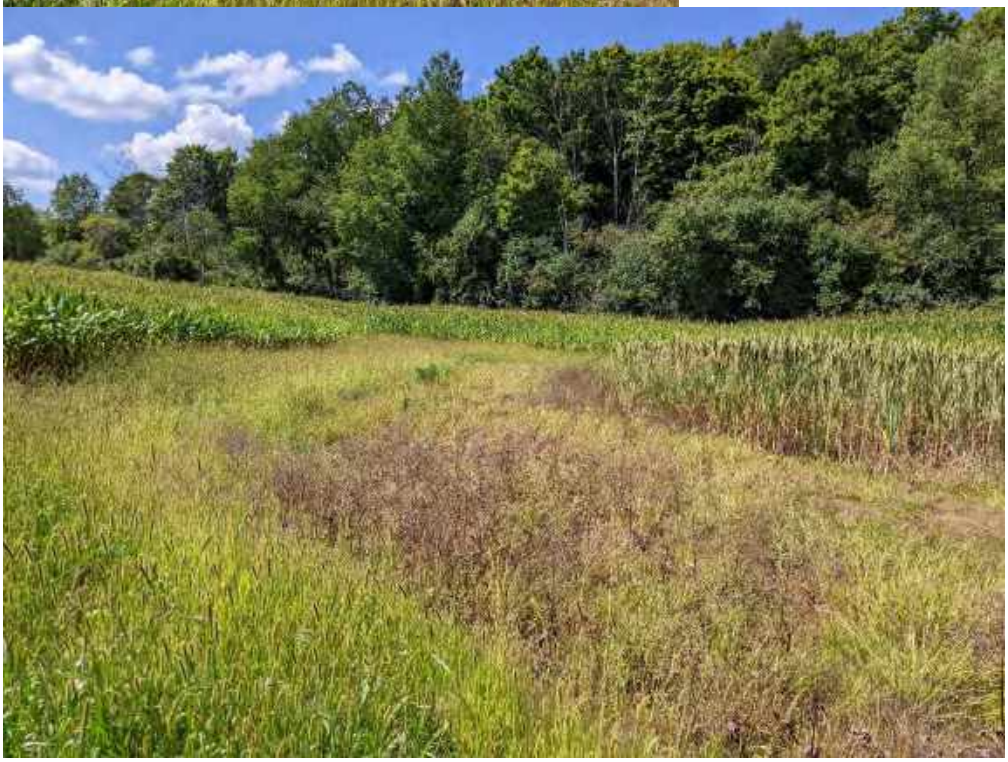
Natural Resource Solutions Inc. (NRSI). 2014. Southgate Business Park 23T-06503 Environmental Implementation Report Phase 2 Addendum Response. Prepared for Industrial Equities Guelph Corporation. January 9, 2014.

Ministry of Natural Resources and Forestry (MNRF). 2014. Ontario Wetland Evaluation System – Southern Manual. 3rd Edition, Version 3.3.

Appendix I
Wetland Photos

WET-08 soil

WET-09



WET-10

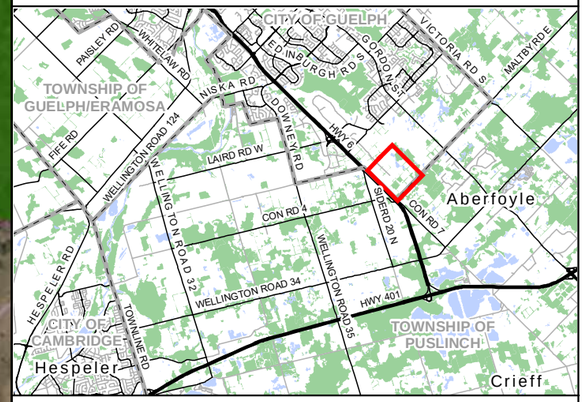
Wetland south of WET-10 (south of Maltby Rd)

MAPS

Map 1

Southgate Business Park EIS

Surveyed Wetlands



Legend

- Subject Property
- Surveyed Wetland (Confirmed by GRCA and City of Guelph August 19, 2022)
- Subwatershed (Wood 2022) (approximate)
- Provincially Significant Wetland (PSW) (MNRF)
- Unevaluated Wetland (MNRF)
- Ecological Land Classification (ELC)
  - (CUM) Cultural Meadow
  - (CUM1) Mineral Cultural Meadow Ecosite
  - (CUP3) Coniferous Plantation
  - (CUP3-2) White Pine Coniferous Plantation Type
  - (CUS1) Mineral Cultural Savannah Ecosite
  - (CUT1) Mineral Cultural Thicket Ecosite
  - (CUW1) Mineral Cultural Woodland Ecosite
  - (FOC3-1) Fresh - Moist Hemlock Coniferous Forest Type
  - (FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
  - (FOD4) Dry - Fresh Deciduous Forest Ecosite
  - (FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type
  - (FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
  - (FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
  - (FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest Type
  - (H) Hedgerow
  - (MAM2) Mineral Meadow Marsh Ecosite
  - (MAM2-2) Reed-canary Grass Mineral Meadow Marsh Type
  - (MAS3-10) Forb Organic Shallow Marsh Type
  - (MAS3-2) Bulrush Organic Shallow Marsh Type
  - (SWD3-2) Silver Maple Mineral Deciduous Swamp Type
  - (SWD4-1) Willow Mineral Deciduous Swamp Type
  - (SWT2-4) Buttonbush Mineral Thicket Swamp Type
  - (SWT2-5) Red-osier Dogwood Mineral Thicket Swamp Type

Natural Heritage System (City of Guelph 2022)

- Significant Natural Areas
- Ecological Linkages
- Restoration Areas

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Project: 2778
Date: September 13, 2022

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

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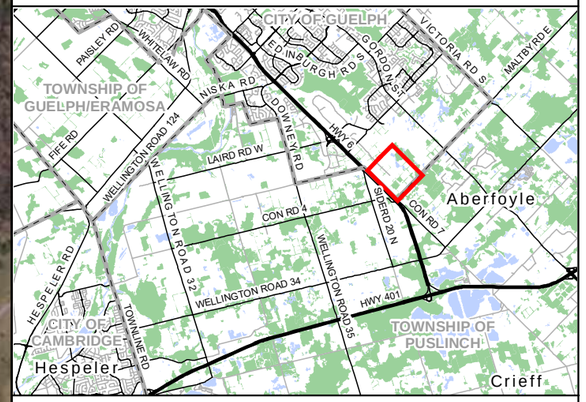
Map 2

Southgate Business Park EIS

Wetland Vegetation Communities



Legend

- Subject Property
- Subwatershed (Wood 2022) (approximate)
- Wetland Boundary

VEGETATION FORM
ne: narrow-leaved emergents

WETLAND TYPE
M: marsh

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Imagery: First Base Solutions Inc. (2021).

Project: 2778
Date: September 13, 2022

NAD83 - UTM Zone 17
Size: 11x17"
1:4,000

0 40 80 120 160 200 Metres

Path: X:\2778_SouthgateBusinessParkGuelph_EIS\NRSI_2778_Map1_WetlandVegCommunities_8K_2022_09_13_LEH.mxd

Subject: Southgate Business Park Wetland Complexing (proj2778)
From: "Denyes, David (MNRF)" <David.Denyes@ontario.ca>
Date: 11/23/2022, 10:13 AM
To: "mmidgley@cowiecapital.com" <mmidgley@cowiecapital.com>
CC: Laura Hockley <lhockley@nrsi.on.ca>, Dave Stephenson <dstephenson@nrsi.on.ca>

Hello Mr. Midgley,

Please accept the attached Landowner Notification Letter advising that the Ministry has approved the changes recommended in the wetland assessment report (dated Sept 13, 2022) submitted by Natural Resource Solutions Inc.

WET-08 and WET-09 on the attached map will be complexed with the Mill Creek Puslinch PSW complex, but WET-10 will not be complexed.

If you have any questions or concerns, please don't hesitate to contact me.

Regards,

David

David Denyes
Management Biologist
Ministry of Natural Resources and Forestry
Vineland Field Office
4890 Victoria Avenue North
Vineland Station ON, L0R 2E0
Tel: (289) 241-6872
david.denyes@ontario.ca

Attachments:

Landowner Notification Letter- CrawleyRd-signed.pdf 392 KB

Ministry of Natural Resources and Forestry

Guelph District
1 Stone Road West
Guelph, Ontario
N1G 4Y2

Ministère des Richesses naturelles et des Forêts

Telephone: (519) 826-4955
Facsimile: (519) 826-4929

Ontario

November 22, 2022

Industrial Equities Guelph Corp.
(c/o Matthew Midgley)
mmidgley@cowiecapital.com

SUBJECT: Update to the Provincially Significant Mill Creek Puslinch Wetland Complex, 384-352 Crawley Road, City of Guelph, ON

Dear Mr. Midgley:

The Ministry of Natural Resources and Forestry (MNRF) is notifying you of an update to the above-named Provincially Significant Wetland (PSW) located on your property (MPAC Roll No. #23080600175400000000)**.** For your information, we have attached a map showing the changes to the wetland boundary. Note that the wetland boundary in its entirety will be made available for viewing through the MNRF's Natural Heritage "Make a Map" program https://www.ontario.ca/page/make-natural-heritage-area-map.

The Ministry's role in wetland evaluations is to review and confirm wetland boundary evaluations and to update information in the provincial Land Information Ontario, a mapping tool, which is used to inform planning decisions. Boundary refinements are completed in accordance with the provincial framework (Ontario Wetland Evaluation System (OWES)).

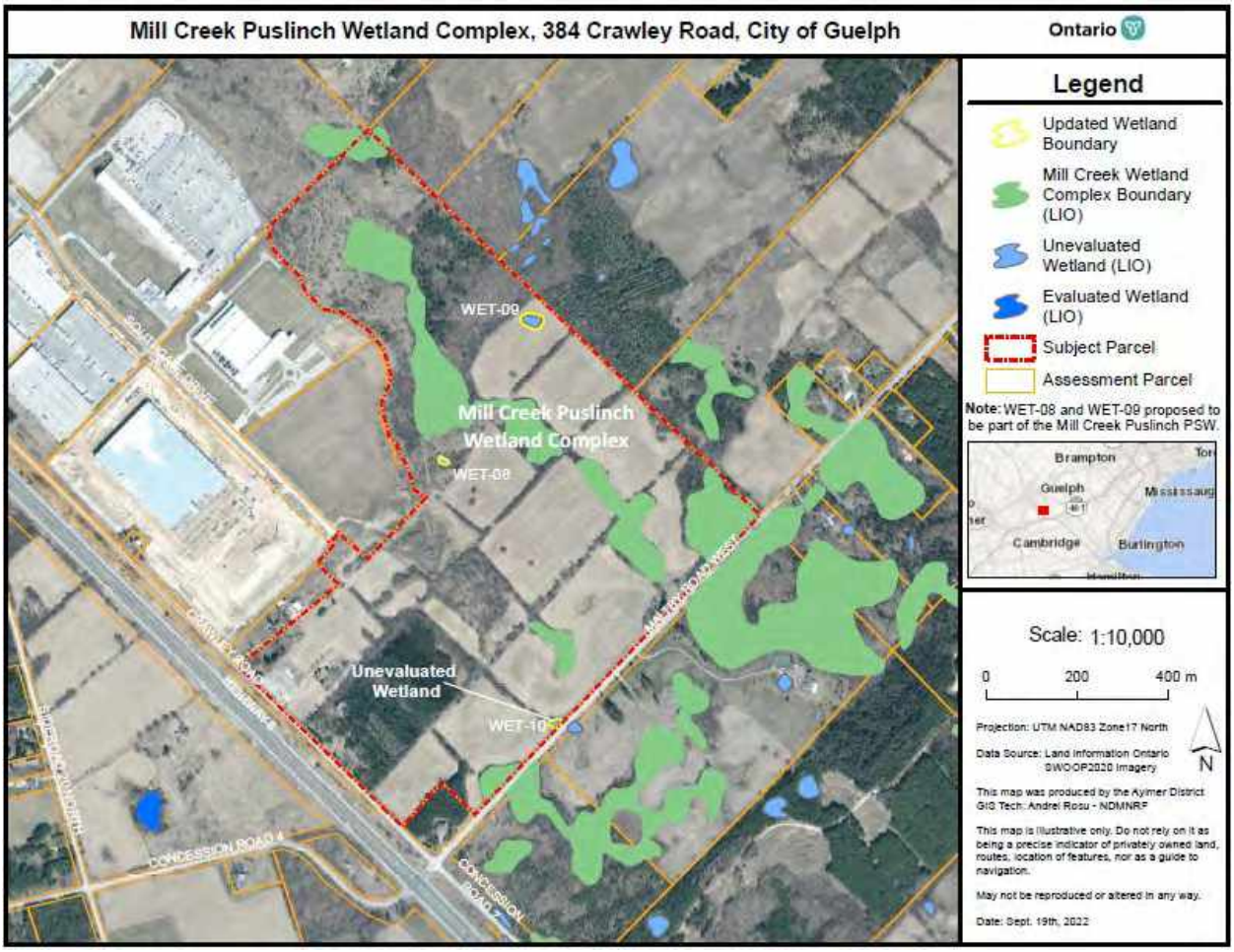
Wetland evaluation files are considered "open files" in that they may be updated from time to time as new information becomes available.

If you have any questions about this Notification Letter, please feel free to contact David Denyes, Management Biologist at 289-241-6872 or David.denyes@ontario.ca.

Sincerely,

[redacted]

Deanna Lindblad
District Supervisor


Mill Creek Puslinch Wetland Complex, 384 Crawley Road, City of Guelph
Ontario
WET-09
Mill Creek Puslinch Wetland Complex
WET-08
Unevaluated Wetland
WET-10
CONCESSION ROAD 4
CONCESSION ROAD 7
Legend
Updated Wetland Boundary
Mill Creek Wetland Complex Boundary (LIO)
Unevaluated Wetland (LIO)
Evaluated Wetland (LIO)
Subject Parcel
Assessment Parcel
Note: WET-08 and WET-09 proposed to be part of the Mill Creek Puslinch PSW.
Brampton
Guelph
Cambridge
Burlington
Scale: 1:10,000
0
200
400 m
N
Projection: UTM NAD83 Zone17 North
Data Source: Land Information Ontario
SWOOP2020 Imagery
This map was produced by the Aylmer District GIS Tech: Andrei Rosu - NDMNRF
This map is illustrative only. Do not rely on it as being a precise indicator of privately owned land, routes, location of features, nor as a guide to navigation.
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Date: Sept. 19th, 2022

Appendix II
Hydrogeological Assessment (GM BluePlan 2022)

January 9, 2023
Our File: 121123

Natural Resource Solutions Inc.
ATTN: Laura Hockley
415 Phillip Street, Unit C
Waterloo, Ontario N2L 3X2

Re: Hydrogeological Assessment – 384 Crawley Road
Assessment of "WET-10" per GRCA Wetland Regulation

Dear Ms. Hockley,

GM BluePlan Engineering has been retained by Industrial Equities Guelph Limited (the Client) to conduct a Hydrogeological Study regarding an industrial development proposed for the property 384 Crawley Road, Guelph, ON (hereafter referred to as the Site).

We acknowledge that NRSI is assisting the Client by undertaking an assessment of one of the on-Site wetlands (identified as WET-10) to determine whether, according to the policies of the Grand River Conservation Authority, this wetland might be considered for removal or encroachment of development. Section 8.4.4 of the applicable GRCA Planning Policies states the following:

8.4.4 Development within a naturally-occurring wetland may be permitted where the wetland is less than 0.5 hectares (1.24 acres), and it can be demonstrated that the wetland is not:

- *a) part of a Provincially Significant Wetland,*
- *b) located within a floodplain or riparian community,*
- *c) part of a Provincially or municipally designated natural heritage feature, a significant woodland, or hazard land,*
- *d) a bog, fen,*
- *e) fish habitat,*
- *f) significant wildlife habitat,*
- *g) confirmed habitat for a Provincially or regionally significant species as determined by the Ministry of Natural Resources and Forestry or as determined by the municipality,*
- *h) part of an ecologically functional corridor or linkage between larger wetlands or natural areas,*
- *i) part of a groundwater recharge area, or*
- *j) a groundwater discharge area associated with any of the above*

To contribute to the assessment being undertaken by NRSI regarding WET-10, this letter will address items ***i)*** and ***j)***.

Groundwater Recharge Conditions

As indicated in the Grand River Conservation Area Web Map (GRCA, 2020), the entirety of the property and the broader overall area known as the Paris-Galt Moraine have been identified as a "Significant Groundwater Recharge Area" (see Enclosure A). The Site itself is described as having hummocky terrain with numerous rolling hills and low-lying closed depression areas. Not all of these depressions are wetlands.

As part of a previous Environmental Impact Report (completed by NRSI, 2012), a hydrogeological study was conducted on the subject Site by Anderson Geologic (2010). That study involved the installation and monitoring of nested piezometers in low-lying areas across the property, including at WET-10. The monitoring data from this study confirmed that the vertical groundwater gradient is downward at WET-10, indicative of groundwater recharge conditions.

Groundwater modeling results provided in the Clair Maltby Secondary Plan (Matrix Solutions Inc., 2018) indicate that the annual rate of recharge in the lands surrounding WET-10 is similar to that which is indicated for a large proportion of the Site (see Enclosure B for Figure GW-11 showing the modeling results).

WET-10 is therefore not considered to be a significant recharge feature in the context of the Site. Furthermore, due to its limited size (i.e., approximately 0.04 ha), WET-10 does not provide a substantial quantity of recharge relative to the overall Site area.

Groundwater Discharge Conditions

Groundwater discharge does not occur at WET-10. Evidence of this is provided by groundwater monitoring data that was previously collected by Anderson Geologic Limited (2010). The regional groundwater table at WET-10 is approximately 4 m below the ground surface even during seasonal high groundwater table periods (see Enclosure C for a groundwater contour plan prepared by Anderson GeoLogic). Furthermore, the nested piezometers installed by Anderson exhibited a downward vertical gradient at WET-10 throughout the duration of the monitoring which indicates that discharge conditions do not exist at that location.

Conclusion

Based on our assessment of the hydrogeological function (i.e., in terms of recharge and discharge) of WET-10, it is our opinion that items ***i)*** and ***j)*** of Section 8.4.4 of the GRCA Planning Policy are satisfied.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED

Per: [redacted]

Matthew Long, M.Eng

ML/af

REFERENCES

Anderson GeoLogic Limited. 2010. Hydrogeological Assessment for the Environmental Implementation Report, Southgate Business Park (23T-06503) Guelph, Ontario. Dated November 2010.

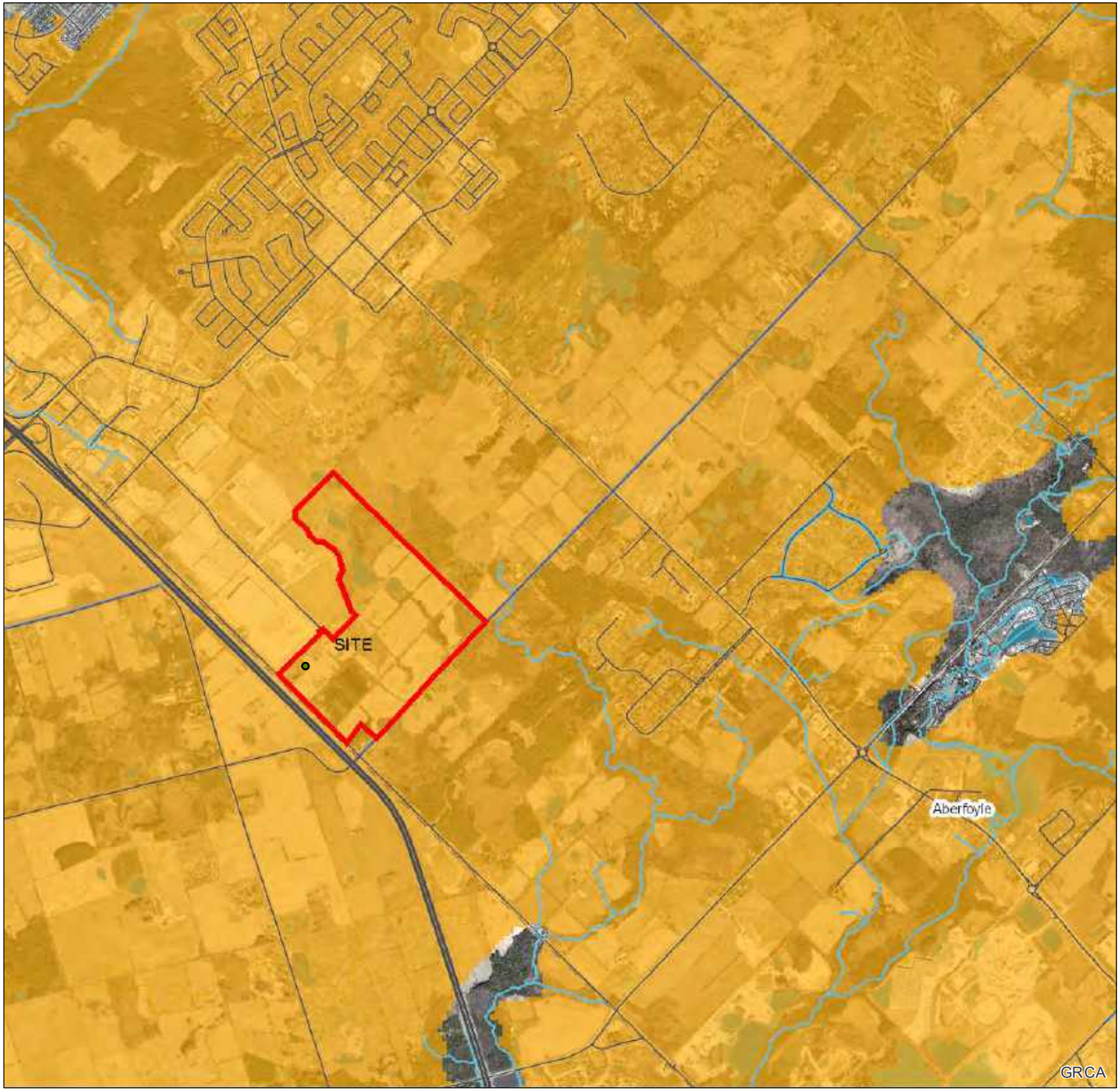
GM BluePlan Engineering Limited. 2022. Hydrogeological Study: 384 Crawley Road, Guelph. GMBP File 121123. Dated October 2022.

Grand River Conservation Authority. 2020. SWP Signfiicant Groundwater Recharge Area – Tier 2 *In* GRCA Web Map. Accessed online at https://maps.grandriver.ca/web-gis/public/?theme=General&bbox=565084,4814156,565479,4814379

Matrix Solutions Inc. 2018. Hydrogeological Study for Clair-Maltby Comprehensive Environmental Impact Study: Phase 1 Characterization Report *In* Clair-Maltby Secondary Plan and Master Environmental Servicing Plan: Comprehensive Environmental Impact Study Phase 1 and 2: Characterization Report. Accessed online at https://guelph.ca/wp-content/uploads/CEISCR-Appendix-B-Hydrogeology.pdf

NRSI. 2012. Southgate Business Park 23T-06503 Environmental Implementation Report. Project No. 636C. Dated February 2012.

ENCLOSURE A:
SIGNIFICANT GROUNDWATER RECHARGE AREAS



Grand River Conservation Authority

Date: Dec 10, 2022

Significant Groundwater Recharge Areas

Legend

- Municipal Boundary (GRCA)
- Watercourse - Local (GRCA)
- Significant Groundwater Recharge Area (GRCA)
- CA Boundary - Local (GRCA)
- Waterbody - Local (GRCA)
- Great Lakes - Local (GRCA)

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Disclaimer: This map is for illustrative purposes only. Information contained herein is not a substitute for professional review or a site survey and is subject to change without notice. The Grand River Conservation Authority takes no responsibility for, nor guarantees, the accuracy of the information contained on this map. Any interpretations or conclusions drawn from this map are the sole responsibility of the user.
The source for each data layer is shown in parentheses in the map legend. For a complete listing of sources and citations go to: https://maps.grandriver.ca/Sources-and-Citations.pdf

0 190 380 760 1,140 Metres

N

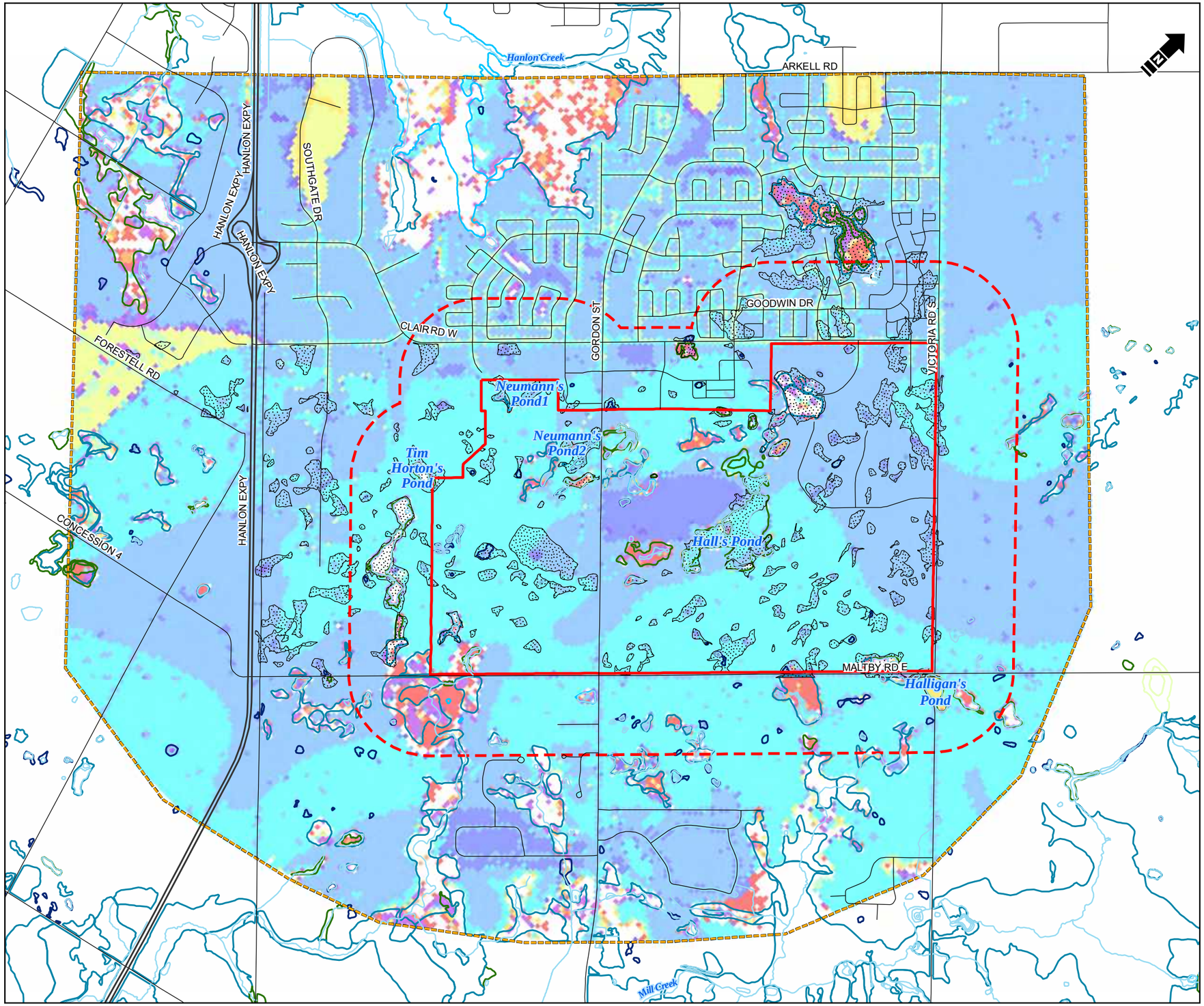
Map Centre (UTM NAD83 z17): 566,725.90 4,814,955.01

This map is not to be used for navigation | 2020 Ortho (ON)

NAD 1983 UTM Zone 17N

Scale: 31,778

ENCLOSURE B:
ANNUAL GROUNDWATER RECHARGE (SIMULATED)



- Primary Study Area Boundary
- Secondary Plan Area Boundary
- MIKE SHE Model Domain
- Closed Depression
- Fen
- Bog
- Swamp
- Marsh
- Open Water
- Unknown Wetland
- Water Body
- Watercourse
- Highway
- Road

Groundwater Recharge (mm/year)

- 0 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- > 500

1:25,000 metres
260 0 260 520
NAD 1983 UTM Zone 17N

Reference: Da ta pro vided b y the City o f Guelph, Geo Base® and Province of Ontario used under license.

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

City of Guelph
Clair- Maltby Comprehensive Environmental Impact Study
Phase 1 Characterization Report

Simulated Groundwater Recharge

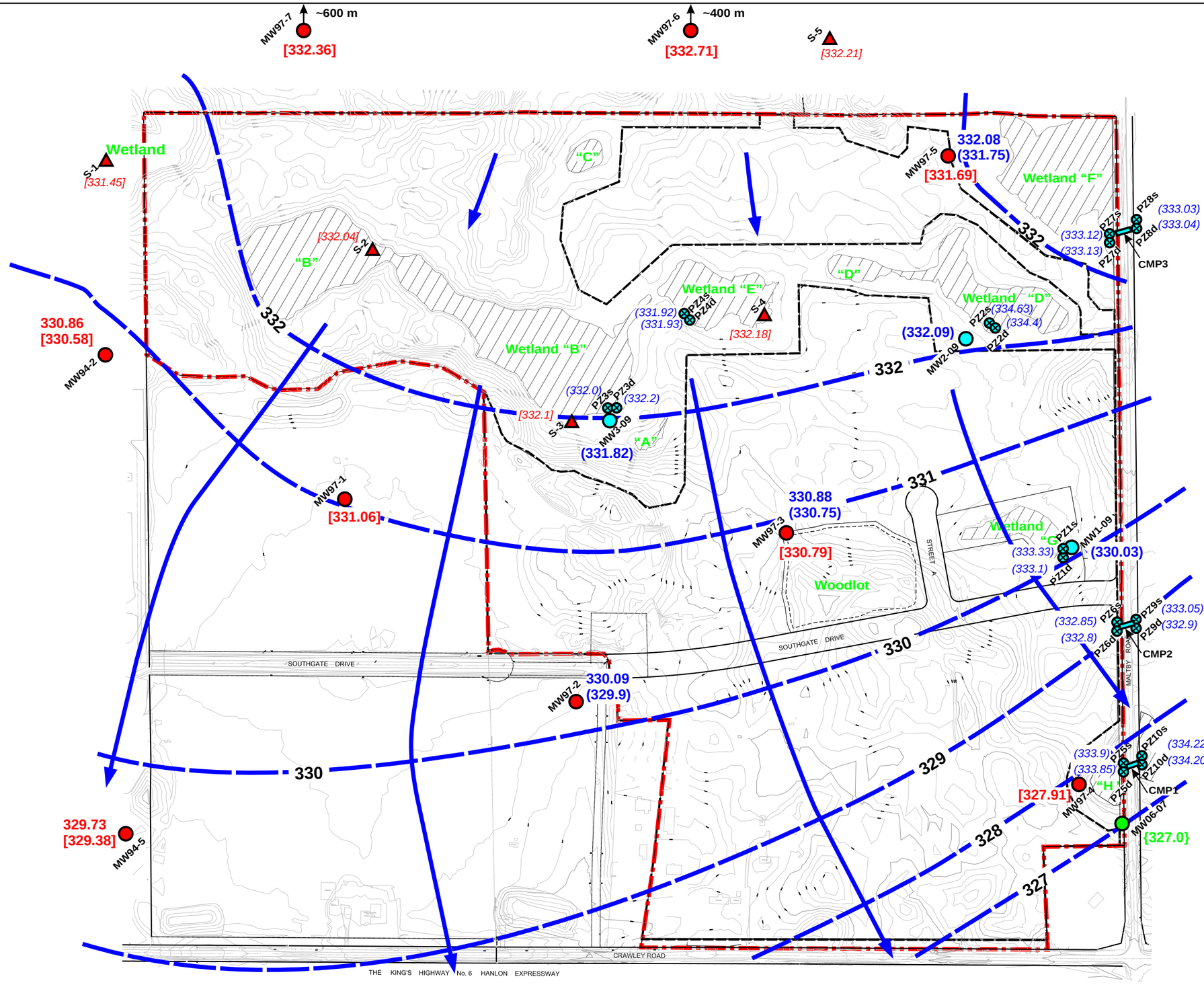
Date:	Project:	Submitter:	Reviewer:
June, 2018	23089	D. Martin	B. Blackport

Disclaimer: The information contained herein may be compiled from numerous third party materials that are subject to periodic change without prior notification. While every effort has been made by Matrix Solutions Inc. to ensure the accuracy of the information presented at the time of publication, Matrix Solutions Inc. assumes no liability for any errors, omissions, or inaccuracies in the third party material.

Figure GW-11

I:\City of Guelph\23089\Figures and Tables\GIS\2018\Report\Phase 1_Characterization_Report\Figure-GW-11-Simulated_Groundwater_Recharge.mxd - Tabloid_L - 08-Jun-18, 08:51 AM - courv - TD005

ENCLOSURE C:
INTERPRETED HIGH GROUNDWATER TABLE



LEGEND

327.66	June 2, 1997 Water Table Elevation - mASL
[328.29]*	July 21, 1997 Water Table Elevation (mASL)
{327.0}	April 25, 2007 Water Table Elevation (mASL)
330.10	June 5, 2009 Water Table Elevation (mASL)
(329.92)*	July 15, 2009 Water Table Elevation (mASL)
*	Note: July 1997 & 2009 Elevations Not Strictly Used in Contour Interpretation (0.2 to 0.4 m lower than other "highs")
[dry<331.89]	July 21, 1997 Surface Water Elevation (mASL)
(334.75) (334.6)	July 30, 2009 0.5-m &1.0-m Piezometer (s&d) Water Elevation (mASL)
205	Interpreted "High" Water Table Contour (mASL)
	Interpreted Groundwater Flow Direction

Scale 1:5,000

0 125 250 m

Figure 5
Interpreted 'High' Water Table Configuration

Hydrogeological Assessment
for EIR, Southgate Business Park
Guelph, Ontario
Project No. 267

Anderson GeoLogic Limited

Appendix XII
Ecological Restoration Plan

PROJECT:

NewCold Guelph: Phase 1
Ecological Restoration Plan

TITLE:

Restoration Plan

SHEET 1

INDEX:
Sheet 1: Restoration Plan
Sheet 2: Detailed Specifications

Legend

- Subject Property
- Phase1 Development
- Potential Future Trail Block
- Significant Wetland Buffer (30m)
- Expanded Wetland Buffer (variable)
- Reduced Wetland Buffer (variable)
- Significant Woodland Buffer (10m)
- Significant Landform
- Provincially Significant Wetland
- Woodland
- Other Retained Natural Feature
- Recommended Wildlife Culvert Location
- Woodland Compensation Area (5.49ha)
- Buffer/Landform Planting (5.55ha)
- Ecological Linkage Planting (0.42ha)[1]
- Pit & Mound Treatment
- Native Pairie/Meadow Seed Mix
- Meadow Seed Mix
- Recommended Areas for Artificial Bat Roosts
- Tree to be Transplanted to Woodland Compensation Area
- Proposed Landscaped Areas (10.54ha)[2]
- Ecological Land Classification (ELC)

(CUM) Cultural Meadow
(CUM1) Mineral Cultural Meadow Ecosite
(CUP3) Coniferous Plantation
(CUP3-2) White Pine Coniferous Plantation Type
(CUS1) Mineral Cultural Savannah Ecosite
(CUT1) Mineral Cultural Thicket Ecosite
(CUW1) Mineral Cultural Woodland Ecosite
(FOC3-1) Fresh - Moist Hemlock Coniferous Forest
(FOD3-1) Dry - Fresh Poplar Deciduous Forest Type
(FOD4) Dry - Fresh Deciduous Forest Ecosite
(FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest
(FOD5-6) Dry - Fresh Sugar Maple - Basswood Deciduous Forest Type
(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type
(FOM6-1) Fresh - Moist Sugar Maple - Hemlock Mixed Forest
(H) Hedgerow
(MAM2) Mineral Meadow Marsh Ecosite
(MAM2-2) Reed-canary Grass Mineral Meadow Marsh
(MAS1) Bedrock Shallow Marsh Ecosite
(MAS3-10) Forb Organic Shallow Marsh Type
(MAS3-2) Bulrush Organic Shallow Marsh Type
(SA) Shallow Water
(SWD3-3) Swamp Maple Mineral Deciduous Swamp
(SWD4-1) Willow Mineral Deciduous Swamp Type
(SWT2-2) Willow Mineral Thicket Swamp
(SWT2-4) Buttonbush Mineral Thicket Swamp
(SWT2-5) Red-osier Dogwood Mineral Thicket Swamp

[1]Exact plantings to be determined at the detailed design stage of Phase 5.
[2]Refer to Phase 1 Landscape Plans by AECOM (2023). Other landscaped areas to be determined at detailed design of associated phases.

Key Map

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REV	DD-MM-YY	REVISION DESC.	DRN	DES	CHK	APPR
1	24-04-23	Issued for submission	LEH	LEH	BDW	
0	27-02-23	Issued for coordination	LEH	LEH	BDW	

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Project: 2778
Date: April 22, 2023

NAD83 - UTM Zone 17
Size: 24x36"
1:2,000

0 40 80 120 Meters

N

Objectives
Objective 1: To achieve an early successional woodland within the Woodland Compensation Area by the Year 7 monitoring season, where a woodland is defined as 1000 trees per hectare (Forestry Act 1990). This density is to be achieved through:

•Direct planting: tree nursery stock, planted in multiple phases, as outlined in Stages 4-6 of the Sequencing section of this sheet
•Seeding: through tree seed collection and direct seeding, as outlined in Stages 1 and 5 of the Sequencing section of this sheet
•Natural succession: to occur through natural seed dispersal from the adjacent natural areas. Only native trees will count towards this objective.
•Tree relocation: to occur through tree spading of trees to be removed within the development footprint.

This objective will be measured using the forestry plot method outlined in Stages 7-10 of the Sequencing sections of this sheet.

Objective 2: Implement a pit and mound treatment within the Woodland Compensation Area to achieve diverse microhabitats. Pit and mound microtopography is an important structural component of most forests, influencing soil processes, habitat diversity and biodiversity of flora and fauna. In temperate forests, visible pit and mound topography may affect 15% to 50% of the forest floor (Stephens, 1956; Lyford and MacLean, 1966; Sobhani et al., 2014).

This treatment will increase the variety of moisture regimes within the restoration area. The specified sizes, densities, and random spacing are intended to mimic old growth topography of temperate forests. Pit areas will provide more mesic growing conditions, while mound areas will provide drier growing conditions.

This will also allow greater retention of precipitation and snow melt, leading to greater groundwater recharge and mitigating risk of drought. Ponding can also create functional amphibian breeding habitat.

Pit and Mound treatment will require permitting from GRCA wherever site alteration is proposed within the GRCA regulated areas. Pit and mound treatment will not occur within 30m of wetlands. Permitting will be confirmed through detailed design, once construction timing is better understood.

Objective 3: To create wildlife habitats. The following benefits to wildlife will be achieved from this restoration plan:

•Seed mixes are to be utilized during Stage 1 of the Sequencing section of this sheet to create initial habitats suitable for the native species known to be present within the Study Area. This includes habitat for open country bird species, insects, and locally significant species.
•Additional vegetation cover within the restoration area will improve wildlife movement corridors between the wetlands and wooded habitats within the Study Area.
•Artificial bat roosting structures that consist of bat boxes on a pole will be installed within the restoration area and other areas to provide initial habitats for bat Species at Risk. In the long-term, a more diverse deciduous/mixed woodland will provide higher quality bat habitat.
•Artificial wildlife habitats (brush piles, snake logs, etc.) will be created using trees removed from the development footprint.
•Long-term increase in coverage and enhancement of contiguous forested habitat that will benefit woodland and woodland-interior species. More interior forest habitat will be created and enhanced, and a better connectivity will be achieved.

Objective 4: To compensate for individually inventoried tree removals within buffer and landform areas. Individually inventoried trees, located outside of the plantation, will be compensated for at a minimum 5:1 ratio with nursery stock. These compensation plantings will be located within buffer areas and unvegetated portions of Significant Landform. The target density within the buffer/landform restoration areas is 1000 trees/ha, which will include direct planting and natural succession.

Species selection within buffer areas adjacent to the proposed development considers salt tolerance.

This objective will be measured using the forestry plot method outlined in Stages 7-10 of the Sequencing sections of this sheet.

Sequencing
Stage 1. Site Preparation and Seeding
The Woodland Compensation Area restoration activities are to begin as soon as the final Site Plan Application is approved for Phase 1 of development. Early-phase restoration activities will avoid the proposed trail alignment, which is to be confirmed at detailed design. Buffer/landform plantings may be delayed due to site grading activities, however, they are proposed to occur in the early stages of development (i.e., as Phase 1 construction begins) to ensure quick establishment across the site.

If site restoration activities are to begin in the Fall, the Woodland Compensation area and buffer/landform planting areas are to be disced by a farmer to prepare the soil for seed mixes and planting. A native tall grass prairie and meadow seed mix will be installed throughout the restoration areas at the end of October or early November or at the end of April/early May using a seed drill.

Refer to the Seeding Mix section of this sheet for seed species and application rates.

Invasive species management is recommended for Common Buckthorn, which is present within natural areas proposed to be retained. In vegetation communities adjacent to proposed buffer and compensation plantings where Common Buckthorn is found, an initial bark application of herbicide is recommended during Stage 1. Follow-up foliar application is recommended to be applied to any suckering shoots, saplings, and seedlings that have been germinated for up to 3 years.

Stage 2. Pit and Mound Treatment
Pit and mound construction will be completed. Application will be irregular in shape. Height of pits, and depth of mounds, will vary, with the majority of pits approximately 1mx1m wide/deep. Pits and mounds will be created at a combined density from 12-24 per hectare, with most areas at a 12 per hectare density. Approximately 44-88 pits and mounds will be created. Pits and mounds will be randomly placed in the restoration area to avoid any pattern of rows or grids. Random spacing will result in some pits being in close proximity, or even touching, and others meters apart.

This treatment is to be completed either immediately pre- or post-seeding, under the supervision of a qualified biologist.

Stage 3. Tree Removals and Habitat Creation
Tree removal within the development footprint will be initiated within the appropriate timing window upon approval of thePhase 1 Site Plan Application. The appropriate timing window for tree removals is outside of the breeding period for Migratory Birds (April 1 – August 31) and outside the active period for bats (April 1 – October 31). Tree removals must be approved by the Ministry of Conservation, Environment, and Parks (MECP) where bat habitat has been identified.

Some felled plantation trees that will be removed for the proposed development will be moved to the restoration area and used as wildlife habitat, which will be delimbed and lopped. A minimum of 100 logs are recommended. Branches from these removed trees will be used to create brush piles for snake habitat within the Woodland Compensation Area.

Seventeen trees identified for transplanting will be removed at this time and planted within the woodland compensation area. Trees with a maximum size of 25cm diameter-at-breast height (DBH) and of good condition have been identified within the Tree Protection Plan for transplanting and are shown on this plan.

Stage 4. Phase A Planting
Phase A planting will coincide with approval of the Phase 1 Site Plan Application. The Phase A planting will be completed in the spring (no later than May 20th), or fall (completed in early October) following approval. Refer to the Phase A Planting Specifications section of this sheet for planting details. Trees planted in the Woodland Compensation Area during Phase A will be species that are associated with early successional habitats and will provide better environments for natural regeneration, such as Eastern White Pine, Eastern Red Cedar, Trembling Aspen, Large-tooth Aspen, Balsam Poplar, and Silver Maple,. The entire Woodland Compensation Area will be planted, with variable spacing, to allow for subsequent planting phases to successively fill in the gaps to meet the target density of 1000 trees/ha.

Large caliper trees will be planted to allow for quick establishment in key areas around the trail and in other visible locations. At this time, artificial bat roosting structures will also be installed in the general locations specified on Sheet 1. The exact number and placement of roosting structures is to be determined in consultation with MECP.

Should planting of the buffer/landform areas be delayed due to site grading activities, the phasing for these areas will shift accordingly.

Stage 5. Tree and Herbaceous Vegetation Seed Collection and Direct Seeding
This stage will coincide with approval of thePhase 1 Site Plan Application, as outlined in Stage 3, and will occur during every planting phase provided that there are abundant seeds available. Seeds will be collected from native, local tree and shrub populations within the Subject Property. The restoration team will collect, clean, and sow seeds from the adjacent natural areas into the Woodland Compensation Area.

Stage 6. Phase B-H Woodland Compensation Planting
A second planting will be completed in the next consecutive fall or spring planting window following Phase A Planting. The type, size, and species will be selected based on the success of initial planting stock, but will consist entirely of species listed on the approved list, as found on this sheet. Subsequent planting phases will continue in the Spring and Fall for a period of 3 years since Phase A, with a 4th year planned as contingency. One of the main challenges to adhering to planting schedules is the availability of planting stock, and as such, a 4th year of planting will be included as a contingency to account for potential lack of planting stock to adequately carry out the restoration plan.

Stage 7. Year 1 Monitoring
Monitoring will occur in June of the subsequent calendar year following the final phase of planting. Using 50m^2 circular forestry plots at a density of 10 plots per hectare for each planting area, we will inventory and assess the health of all trees within the plot. The results of these plots will be compared to Objective 1. All native live tree stems will be counted towards the objective of 1000 trees/ha. Transplanted trees will be monitored at this time to ensure survival. In conjunction with this work, breeding bird evidence will be recorded. Retained natural areas will also be assessed for effectiveness of Common Buckthorn treatment whereby approximate percent cover will be estimated within treated vegetation communities. A Year 1 monitoring report will be provided to the City that outlines the methods and results, and identifies if any follow-up management is required.

8. Year 3 Monitoring
Monitoring will be completed 2 years following Year 1 Monitoring, and will adhere to the Year 1 Monitoring methods. A Year 3 monitoring report will be provided to the City that outlines the methods and results, and identifies if any follow-up management is required.

9. Year 5 Monitoring
Monitoring will be completed 2 years following Year 3 Monitoring, and will adhere to the Year 1 Monitoring methods. A Year 5 monitoring report will be provided to the City that outlines the methods and results, and identifies if any follow-up management is required.

10. Year 7 Monitoring
Monitoring will be completed 2 years following Year 5 Monitoring, and will adhere to the Year 1 Monitoring methods. A Year 7 monitoring report will be provided to the City that outlines the methods and results, and identifies if any follow-up management is required. It is expected that an average density of 1000 trees/hectare will be established at the time of this monitoring.

Specifications
•When possible, trees >2m in height will be preferred to mitigate loss from deer browse

•Material will be field fit, planted in a way that simulates natural succession. Final tree spacing will be roughly 3m on-centre.

•Species outlined in the approved species list on this sheet will be used within the restoration area, however, if other suitable species are identified they will be brought to the attention of reviewing agencies prior to their selection for planting. Native seed collection from the surrounding areas may vary.

•This plan will be adaptively managed during the course of work so that original planting success will be considered when completing following planting phases. The overall success will be measured through having met target tree densities of this plan.

•If the restoration area has not reached the target density at the Year 7 Monitoring stage, consideration for additional plantings will be discussed.

•Tree sizing will be planted at the following ratio to augment species diversity and habitat complexity while emphasizing tree establishment:
o 3% minimum 40mm caliper size
o 40% 1-3 gallon potted/whips
o 57% plugs

Educational Signage
Educational signage is recommended along the proposed trail to inform trail users of the purpose of the restoration area and the habitats being created. The signage should reference the City's Natural Heritage System and how the restoration of this area provides a more robust, contiguous habitat and enhances existing adjacent habitats. People should be discouraged from dumping or trespassing within the restoration area. Exact details and locations of educational signage will be provided at the detailed design stage.

Trees to be Transplanted to the Woodland Compensation Area

Tree Tag	Common Name	Scientific Name	Native/ Non-native	Number of Stems	DBH (cm)	Crown Radius (m)	Potential for Structural Failure	Health Rating	Comments
1219B	Black Walnut	*Juglans nigra*	Native	1	20.8	4.5	Improbable	Good	Lower vine present.
1302B	Eastern White Pine	*Pinus strobus*	Native	1	14.9	3.0	Improbable	Good	Good crown structure.
1314A	Black Cherry	*Prunus serotina*	Native	1	16.7	3.5	Improbable	Good	Large, healthy crown.
1396A	Sugar Maple	*Acer saccharum*	Native	1	18.7	3.5	Improbable	Good	Tall erect form; full crown; slightly suppressed.
1442B	Bitternut Hickory	*Carya cordiformis*	Native	1	14.3	3.0	Improbable	Good	Good form; slightly suppressed.
150A	Eastern White Pine	*Pinus strobus*	Native	1	19.2	4.0	Improbable	Good	Minor sap wound.
1548A	Bitternut Hickory	*Carya cordiformis*	Native	1	17.3	3.0	Improbable	Good	Slightly unbalanced crown due to competition with adjacent trees; crown otherwise full and vigorous; solid main stem
1553A	Sugar Maple	*Acer saccharum*	Native	1	23.2	4.5	Improbable	Good	Good form.
17A	Sugar Maple	*Acer saccharum*	Native	1	17.6	4.0	Improbable	Good	Tall narrow healthy crown.
207A	Black Cherry	*Prunus serotina*	Native	1	14.8	3.0	Improbable	Good	Good form.
285A	Sugar Maple	*Acer saccharum*	Native	1	18.2	3.5	Improbable	Good	Slightly suppressed.
679B	Black Cherry	*Prunus serotina*	Native	1	15.2	3.5	Improbable	Good	Healthy crown; suppressed from above.
802B	Eastern White Pine	*Pinus strobus*	Native	1	14.4	3.0	Improbable	Good	No apparent problems.
907B	Eastern White Pine	*Pinus strobus*	Native	1	12.5	3.0	Improbable	Good	Full crown.
925B	Sugar Maple	*Acer saccharum*	Native	1	17.0	4.5	Improbable	Good	Slightly suppressed on south.
977A	Sugar Maple	*Acer saccharum*	Native	1	12.5	4.0	Improbable	Good	Slightly uneven crown due to competition for sunlight, vigorous canopy.
986A	American Basswood	*Tilia americana*	Native	1	21.4	4.0	Improbable	Good	Minor defoliation, supercanopy tree.

Suitable Species for Restoration Planting

Scientific Name	Common Name
Conifers (40%)	
Juniperus virginiana*	**Eastern Red Cedar***
Pinus strobus	**Eastern White Pine**
*Thuja occidentalis**	White Cedar*
Deciduous Trees (60%)	
Acer rubrum	Red Maple
Acer saccharinum*	**Silver Maple***
Acer saccharum ssp. nigrum	Black Maple
Acer saccharum ssp. saccharum	Sugar Maple
*Betula alleghaniensis**	Yellow Birch*
Carya cordiformis	Bitternut Hickory
Carya ovata var. ovata	Shagbark Hickory
Liriodendron tulipifera	Tulip Tree
Tilia americana	American Basswood
Ostrya virginiana	Eastern Hop Hornbeam
Populus balsamifera ssp. balsamifera	**Balsam Poplar**
Populus grandidentata	**Large-tooth Aspen**
Populus tremuloides	**Trembling Aspen**
*Prunus serotina**	Black Cherry*
*Quercus alba**	White Oak*
Quercus macrocarpa	Bur Oak
*Quercus rubra**	Red Oak*
Shrubs	
Cornus alternifolia	**Alternate-leaved Dogwood**
Cornus racemosa	**Gray Dogwood**
Prunus virginiana	Choke Cherry
Rhus typhina	Staghorn Sumac
Viburnum lentago	**Nannyberry**
Hamamelis virginiana	American Witch-hazel
Diervilla lonicera	**Northern Bush-honeysuckle**

Bolded species = early phase plantings
*Moderate/High salt tolerance

Native Prairie/Meadow Seed Mix

Grasses		%
Andropogon gerardii	Big Bluestem	15
Elymus virginicus	Virginia Wild Rye	7
Panicum virgatum	Switchgrass	13
Schizachyrium scoparium	Little Bluestem	15
Sorghastrum nutans	Indian grass	20
Wildflowers		**%**
Asclepias syriaca	Common Milkweed	4
Asclepias tuberosa	Butterfly Milkweed	2
Coreopsis lanceolata	Lanceleaf Coreopsis	2
Helianthus giganteus	Tall Sunflower	2
Heliopsis helianthoides	Sweet Ox-eye	2
Lespedeza capitata	Round Headed Bushclover	2
Monarda fistulosa	Wild Bergamont	4
Oenothera biennis	Common Evening Primrose	3
Penstemon hirsutus	Hairy Beardtongue	1
Pycnanthemum virginianum	Virginia Mountain Mint	2
Rudbeckia hirta	Black-eyed Susan	5
Verbena stricta	Hoary Vervain	1

The prescribed seed mix will be applied at 6-8kg per hectare

Meadow Seed Mix

CVC7 Upland Native Meadow Mix		%
Rudbeckia hirta	Black Eyed Susan	10
Aster cordifolius	Heart Leaved Aster	1
Anemone canadensis	Canada Anemone	1
Solidago canadensis	Canada Goldenrod	2
Asclepias syriaca	Common Milkweed	2
Oenothera biennis)	Evening Primrose	25
Euthamnia graminifolia	Grass Leaf Goldenrod	1
Carex granularis	Meadow/Open Field Sedge	14
Aster novae-anglais	New England Aster	1
Elymus riparius	Riverbank Wild Rye	40
Clematis virginiana	Virgins Bower	1
Monarda fistulosa	Wild Bergamot	1

The prescribed seed mix will be applied at 25kg per hectare

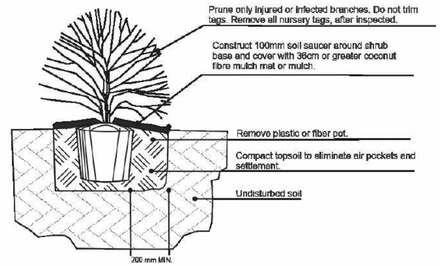
Woodland Compensation Area

Total Trees	**6,500**
3% caliper	195
40% 1-3 gallon potted/whips	2,600
57% plugs	3,705
Total Shrubs	**1,650**

Buffer/Landform Planting Area

Total Trees	**5,695**
3% caliper	171
40% 1-3 gallon potted/whips	2,278
57% plugs	3,246

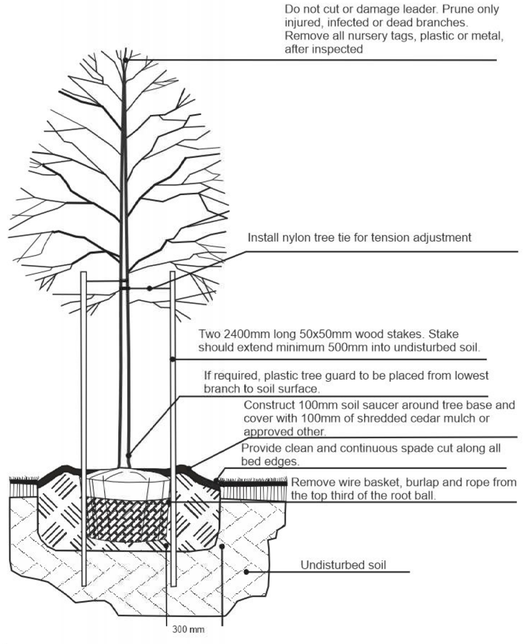
POTTED TREE OR SHRUB PLANTING



Notes:

1. Saucer shall be soaked with water and mulched immediately following planting.
2. All dimensions are in mm.
3. In poorly drained soils plant shrubs slightly higher than adjacent grade.
4. All plants to be straight and planted vertically regardless of slope.

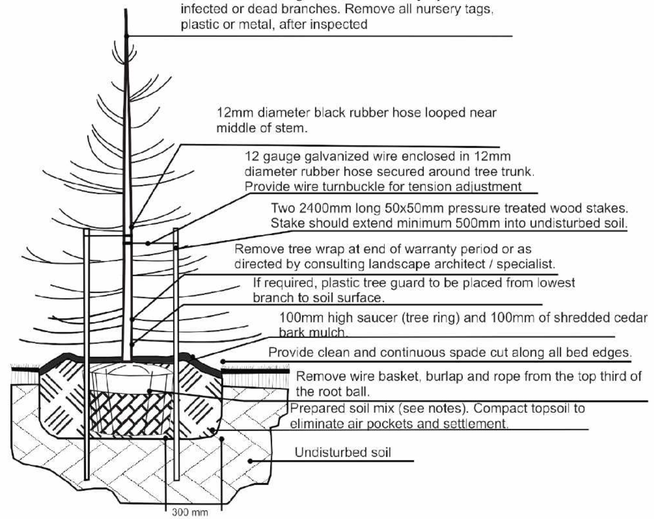
BALLED & BURLAPPED / WIRE BASKET
DECIDUOUS TREE PLANTING



Notes:

1. Saucer shall be soaked with water and mulched immediately following planting.
2. All dimensions are in mm.
3. All support systems must be removed once tree is established <2 yrs.
4. All trees to be straight and planted vertically regardless of slope.
5. Top of root flare shall be positioned 50mm above grade

BALLED & BURLAPPED / WIRE BASKET
CONIFEROUS TREE PLANTING



Notes:

1. Saucer shall be soaked with water and mulched immediately following planting.
2. All dimensions are in mm.
3. All support systems must be removed once tree is established <2 yrs.
4. All trees to be straight and planted vertically regardless of slope.

PROJECT:
NewCold Guelph:
Phase 1
Ecological Restoration Plan

TITLE:
Detailed Specifications

SHEET 2

INDEX:
Sheet 1: Restoration Plan
Sheet 2: Detailed Specifications

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REV	DD-MM-YY	REVISION DESC.	DRN	DES	CHK	APPR
	24-04-23	Issued for submission	LEH	LEH	BDW	
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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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PROJECT NO.: 2778
DATE: April 22, 2023

Path: X:\2778_SouthgateBusinessParkGuelph_ESSNRSI_2778_Sheet2_DetailedSpecs_2023_04_22_LEH.mxd

Appendix XIII
Site Grading Plan (AECOM)

NewCold Advanced Cold Logistics
NewCold Guelph - TO01

GUELPH, ONTARIO

ISSUED FOR SITE PLAN APPROVAL - PHASE 1

APRIL 2023

DRAWING INDEX

DWG NO.	DESCRIPTION
---	TITLE PAGE & DRAWING INDEX
GP-1	EXISTING CONDITIONS AND REMOVALS
GP-2	EROSION & SEDIMENT CONTROL
GP-3	SITE GRADING
GP-4	SITE GRADING
GP-5	SITE GRADING
GP-6	SITE GRADING
GP-7	SITE GRADING
SSP-1	SANITARY CATCHMENT AREA
SSP-2	SOUTHGATE DRIVE EXTENSION PLAN AND PROFILE
SSP-3	SOUTHGATE DRIVE EXTENSION PLAN AND PROFILE
SSP-4	SOUTHGATE DRIVE EXTENSION PLAN AND PROFILE
SSP-5	CRAWLEY ROAD PLAN AND PROFILE
SSP-6	CRAWLEY ROAD PLAN AND PROFILE
SSP-7	CRAWLEY ROAD PLAN AND PROFILE
SSP-8	CRAWLEY ROAD PLAN AND PROFILE
SSP-9	SITE SERVICING
SSP-10	SITE SERVICING
SSP-11	SITE SERVICING
SSP-12	SITE SERVICING
SSP-13	SITE SERVICING
D-100	GENERAL CIVIL DETAILS
D-101	GENERAL CIVIL DETAILS
D-200	GENERAL CIVIL NOTES
D-301	SWM DETAILS
D-302	SWM DETAILS
D-303	SWM DETAILS
D-304	SWM DETAILS
TGP-1	TRAFFIC GEOMETRIC

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\WA.AECOMNET.COM\LFS\AMER\MARKHAM-CATRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - EXISTING CONDITIONS 2021.DWG

Project Management Initials: Designer: AA Checked: AA Approved: AA ARCH D 24" x 36"

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

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REGISTRATION

[redacted]

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6		
5		
4		
3		
2		
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN

PROJECT NUMBER

60682143

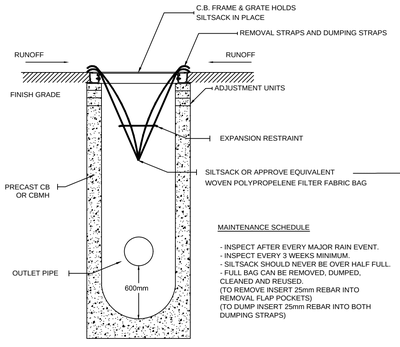
SHEET TITLE

EXISTING CONDITIONS & REMOVALS

SHEET NUMBER

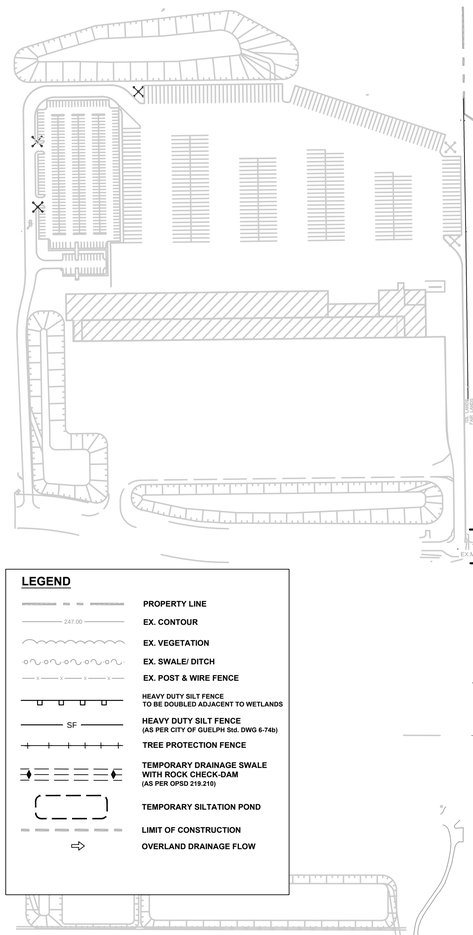
GP-1

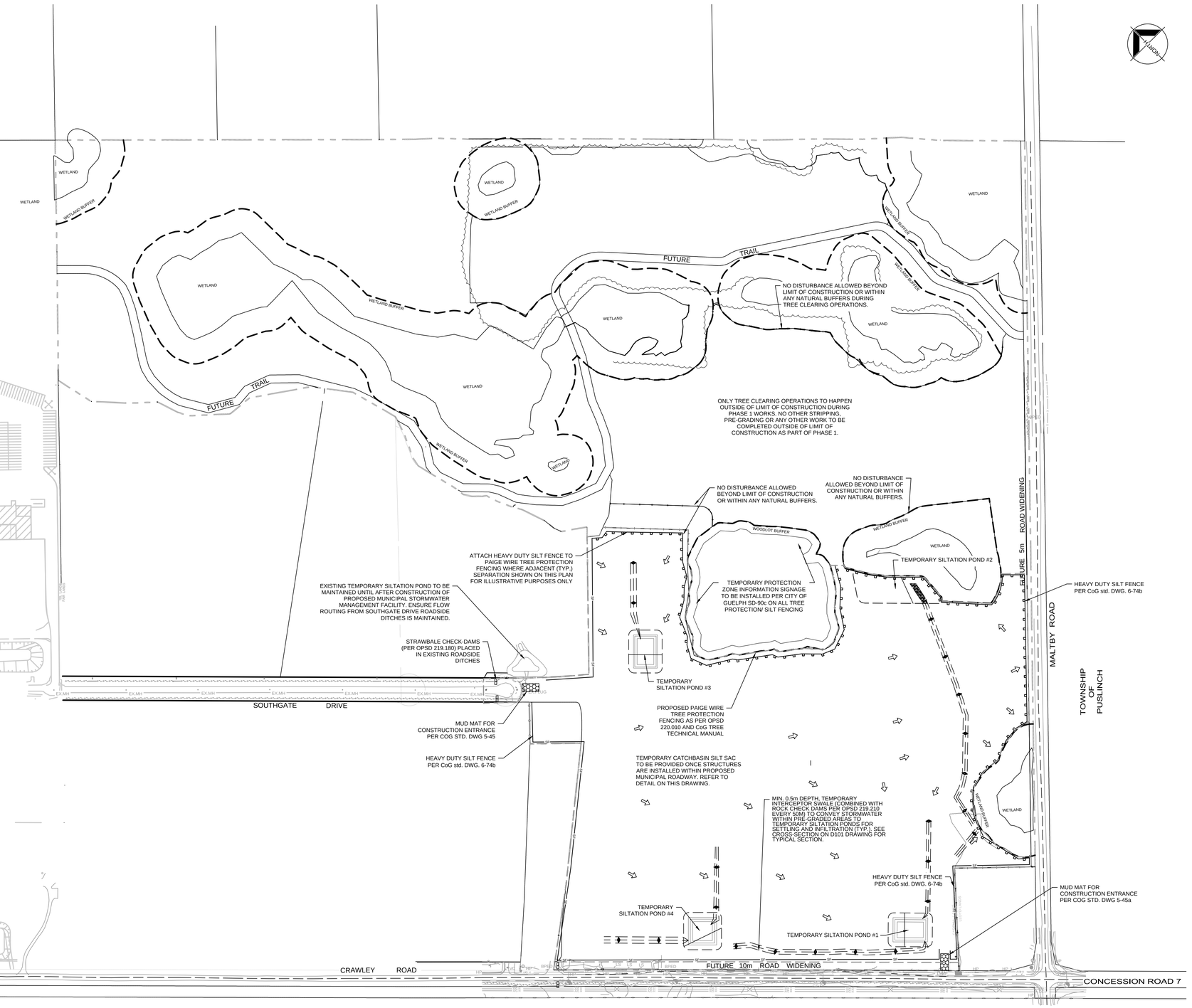
Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"
Last saved by: \\WADIS\{2023-04-20} Last Plotted: 2023-04-24
Filename: \\NA.AECOM\NET COM\LFSVAMER\MARKHAM-CATRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - E&S CONTROL 2021.DWG



DETAIL CATCH BASIN PROTECTION — 1

NOT TO SCALE





0 62.5 125 m H=1:2500 V=1:2500

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- TO01
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EROSION CONTROL NOTES:

1. EROSION CONTROL MEASURES ARE TO BE INSTALLED, AND TEMPORARY SEDIMENT FACILITIES WITHIN THE SITE ARE TO BE CONSTRUCTED PRIOR TO ANY PRE-GRADE WORK OCCURRING.
2. VOLUME AND PHASING OF TEMPORARY PONDS TO BE COMPLETED DURING DETAILED IN COORDINATION WITH INTERNAL PHASING OF THE SITE.
3. MUD MAT FOR CONSTRUCTION ENTRANCE (PER CoG STD. DWG. 5-45) TO BE PROVIDED AT ANY SITE ACCESS USED FOR CONSTRUCTION TRAFFIC.
4. EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY BY CONTRACTOR AND ANY DAMAGE REPAIRED IMMEDIATELY. SEDIMENT TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF 1/3 THE HEIGHT OF THE SILT FENCE

REGISTRATION

[redacted]

ISSUE/REVISION

6		
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4		
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1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

EROSION & SEDIMENT CONTROL

SHEET NUMBER

GP-2

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED MANDOOR
- PROPOSED OVERHEAD DOOR
- DIRECTION OF SURFACE FLOW
- PROPOSED ELEVATION
- MATCH EXISTING ELEVATION
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED CONCRETE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS PER OPSD 600.110)
- DRAINAGE DIVIDE
- LIMIT OF CONSTRUCTION

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 270 GEOTEXTILE OR EQUIVALENT (TYP.)

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

TEMPORARY SILTATION POND #3
TOTAL DRAINAGE AREA =2.25Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 417m³
PROVIDED PP VOLUME = 883m³ @ ELEV. 338.30
REQ'D ACTIVE STORAGE = 225m³/Ha = 507m³
PROVIDED ACTIVE STORAGE = 591m³ @ ELEV. 338.80
BTM = 337.30
NWL (PP) = 338.30
HWL = 338.80

SEE TYPICAL SILTATION POND DETAILS ON D101

NO GRADING DISTURBANCE OUTSIDE LIMIT OF CONSTRUCTION WITHIN NATURAL AREAS.

10m WOODLOT BUFFER

TURBIDITY CURTAIN AS PER OPSD 219.261, 219.261

POND BOTTOM=337.30

PERMANENT POOL=338.30

HIGH WATER LEVEL=338.80

TOP OF POND=339.10

EDGE OF PROPOSED ASPHALT

LANDSCAPE

SANITARY PUMPING STATION

TEMPORARY CONSTRUCTION FENCING. REFER TO ARCHITECTURAL/LANDSCAPE FOR DETAILS OF HEIGHT/TYPE.

TEMPORARY DRAINAGE SWALE WITH MAX 3:1 SIDE SLOPES AND 0.5M DEPTH TO CONVEY PARKING LOT RUNOFF TO DICB STRUCTURES. SPILLWAY FROM EDGE OF ASPHALT PARKING LOT TO BE PROTECTED BY 0.3m DEPTH OF RIP-RAP (TYP.)

ALL CURB WITHIN THE SITE TO BE BARRIER CURB PER OPSD 600.110 (TYP.)

PAINTED TRAFFIC ISLAND. REFER TO ARCHITECTURAL FOR PAVEMENT MARKING DETAILS.

TRANSITION CONCRETE CURB AND GUTTER (OPSD 600.040) WITHIN FUTURE ROW TO BARRIER CURB (OPSD 600.110) WITHIN SITE AT PROPERTY LINE (TYP. AT ALL SITE ENTRANCES)

372 CRAWLEY ROAD

SOUTHGATE DRIVE EXTENSION

3.6m LANDSCAPING/GRADING STRIP TO BE GRADED FROM PROPERTY LINE INTO SITE AT 2% ALONG LENGTH OF SOUTHGATE DRIVE EXTENSION & CRAWLEY ROAD FRONTAGES (TYP.)

EDGE OF PROPOSED ASPHALT

PROPOSED CAST-IN-PLACE CONCRETE RETAINING WALL C/W PEDESTRIAN HANDRAIL PER OPSD 980.101. MAXIMUM WALL HEIGHT TO BE 1.15m AT BUILDING FACE AND DESCEND WITH TAPER IN COMBINATION WITH DRIVE-UP RAMP. CONTRACTOR TO DESIGN AND SUBMIT STAMPED SHOP DRAWINGS FOR APPROVAL.

PR. HYDRANT WITH 4 SURROUNDING BOLLARDS AT 1.2m C/C

REFER TO ARCHITECTURAL PLANS FOR DETAILS INTERNAL STAIR ACCESS TO EXTERNAL GRADES.

TEMPORARY ACCESSIBILITY RAMP TO BE PER AODA STANDARD WITH MAX 1:12 (8.3%) SLOPE.

BUILDING FFE=341.300

DOCK/OFFICE PORTION OF BUILDING FFE=340.300

BUILDING FFE=340.100

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

MH 2A T/G=340.64 | MH 21 T/G=340.77 | MH 7A T/G=340.46 | MH8 | MH 34 T/G=340.46
CB 20 T/G=340.47 | CB 23 T/G=340.10 | CB 24 T/G=339.80 | CB 26 T/G=339.39 | CB 27 T/G=339.42
CBMH 22 T/G=340.01 | CBMH 25 T/G=339.15 | CBMH 28 T/G=339.49
DCBMH6 | DCB5 | DICB7 | CB8 | CB9

MATCHLINE SEE DWG GP-4

MATCHLINE SEE DWG GP-7

0 12.5 25 m H=1:500 V=1:500

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AECOM

PROJECT
NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT
NEWCOLD

CONSULTANT
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REGISTRATION
[redacted]

ISSUE/REVISION

6		
5		
4		
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1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER
60682143

SHEET TITLE
SITE GRADING

SHEET NUMBER
GP-3

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA_AECOM\NET COM\LFS\AMER\MARKHAM-CA\TRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - SITE GRADING 2021.DWG

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOM\NET COM\LFSAMER\MARKHAM-CA\TRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE II\60682143 NEWCOLD - SITE GRADING 2021.DWG

MATCHLINE SEE DWG GP-3

372 CRAWLEY ROAD

SOUTHGATE DRIVE EXTENSION

3.6m LANDSCAPING/GRADING STRIP TO BE GRADED FROM PROPERTY LINE INTO SITE AT 2% ALONG LENGTH OF SOUTHGATE DRIVE EXTENSION & CRAWLEY ROAD FRONTAGES (TYP.)

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

BUILDING
FFE=340.100

TEMPORARY SILTATION POND #4
TOTAL DRAINAGE AREA =3.33Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 616m³
PROVIDED PP VOLUME = 679m³ @ ELEV. 338.00
REQ'D ACTIVE STORAGE = 225m³/Ha = 750m³
PROVIDED ACTIVE STORAGE = 841m³ @ ELEV. 338.80
BTM = 337.00
NWL (PP) = 338.00
HWL = 338.80

TOP OF POND=339.10
HIGH WATER LEVEL=338.80
PERMANENT POOL=338.00
POND BOTTOM=337.00

SEE TYPICAL SILTATION POND DETAILS ON D101

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 250 GEOTEXTILE OR EQUIVALENT (TYP.)

TURBIDITY CURTAIN AS PER OPSD 219.261, 219.261

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

3.6m LANDSCAPING/GRADING STRIP TO BE GRADED FROM PROPERTY LINE INTO SITE AT 2% ALONG LENGTH OF SOUTHGATE DRIVE EXTENSION & CRAWLEY ROAD FRONTAGES (TYP.)

CRAWLEY ROAD

MATCHLINE SEE DWG GP-5

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED MANDOOR
- PROPOSED OVERHEAD DOOR
- DIRECTION OF SURFACE FLOW
- PROPOSED ELEVATION
- MATCH EXISTING ELEVATION
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED CONCRETE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS PER OPSD 600.110)
- DRAINAGE DIVIDE
- LIMIT OF CONSTRUCTION

0 12.5 25 m
0 12.5 25
H=1:500
V=1:500

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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REGISTRATION

[redacted]

ISSUE/REVISION

6		
5		
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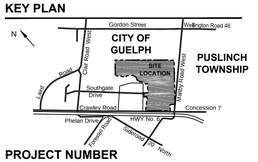
2		
1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SITE GRADING

SHEET NUMBER

GP-4

Project Management Initials: Designer: AA Checked: AA Approved: AA ARCH D 24" x 36"

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Filename: \\NA.AECOM\NET.COM\FS\AMER\MARKHAM-CA\TRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - SITE GRADING 2021.DWG

MATCHLINE SEE DWG GP-4

MATCHLINE SEE DWG GP-6

MALTBY ROAD

TOWNSHIP OF PUSLINCH

519 MALTBY ROAD WEST

CONCESSION ROAD 7

MAX 3:1 SLOPING TO BE PROVIDED BETWEEN TOP OF TEMPORARY SWALE AND WETLAND BUFFER.

NO GRADING DISTURBANCE OUTSIDE LIMIT OF CONSTRUCTION WITHIN NATURAL AREAS.

VEGETATED SWALES TO HAVE MAX. 3:1 SIDE SLOPES AND MINIMUM 0.5m DEEP. GRADING FOR SWALES NOT TO ENCROACH TO WETLAND BUFFER

30m WETLAND BUFFER

2.0M HIGH LANDSCAPED BERM TO MATCH EXISTING ELEVATIONS ALONG PROPERTY LINE AND BE CONSTRUCTED WITH MAXIMUM 3:1 SLOPES. REFER TO LANDSCAPE FOR PLANTING DETAILS.

MAX 3:1 SLOPING TO BE PROVIDED BETWEEN TOP OF POND AND WETLAND BUFFER.

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

TEMPORARY SILTATION PONDS AND INTERCEPTOR SWALES TO BE DECOMMISSIONED AND REMOVED WITH CONSTRUCTION OF PERMANENT STORM INFRASTRUCTURE WITHIN PHASED CONSTRUCTION OF THE SITE (TYP.).

TEMPORARY SILTATION POND #1
TOTAL DRAINAGE AREA =4.36Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 807m³
PROVIDED PP VOLUME = 851m³ @ ELEV. 337.25
REQ'D ACTIVE STORAGE = 225m³/Ha = 981m³
PROVIDED ACTIVE STORAGE = 1216m³ @ ELEV. 338.00
BTM = 336.25
NWL (PP) = 337.25
HWL = 338.00

SEE TYPICAL SILTATION POND DETAILS ON D101

HIGH WATER LEVEL=338.00

PERMANENT POOL=337.25

POND BOTTOM=336.25

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 270 GEOTEXTILE OR EQUIVALENT (TYP.)

TURBIDITY CURTAIN AS PER OPSD 219.261, 219.261

TOP OF POND=338.30

TRANSITION CONCRETE CURB AND GUTTER (OPSD 600.040) WITHIN FUTURE ROW TO BARRIER CURB (OPSD 600.110) WITHIN SITE AT PROPERTY LINE (TYP. AT ALL SITE ENTRANCES).

3.6m LANDSCAPING/GRADING STRIP TO BE GRADED FROM PROPERTY LINE INTO SITE AT 2% ALONG LENGTH OF SOUTHGATE DRIVE EXTENSION & CRAWLEY ROAD FRONTAGES (TYP.)

DCB18 CB19

0 12.5 25 m H=1:500 V=1:500

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED MANDOOR
- PROPOSED OVERHEAD DOOR
- DIRECTION OF SURFACE FLOW
- PROPOSED ELEVATION
- MATCH EXISTING ELEVATION
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED CONCRETE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS PER OPSD 600.110)
- DRAINAGE DIVIDE
- LIMIT OF CONSTRUCTION

AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

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REGISTRATION

[redacted]

ISSUE/REVISION

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2		
1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE GRADING

SHEET NUMBER

GP-5

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Project Management Initials: Designer:AA Checked:AA Approved:AA ARCH D 24" x 36"

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MATCHLINE SEE DWG GP-3

PROVIDE GRASSED/VEGETATED LEVEL SPREADER AT MAXIMUM 1% FOR DISCHARGE TO WETLAND

30m WETLAND BUFFER

300mm DEEP RIPRAP ON TERRAFIX 270 GEOTEXTILE (OR APPROVED EQUIVALENT) AT SWALE OUTLET TO LEVEL SPREADER

TEMPORARY SILTATION POND #2
TOTAL DRAINAGE AREA =4.81Ha

TURBIDITY CURTAIN AS PER OPSD 219.260, 219.261

2.0M HIGH LANDSCAPED BERM TO MATCH EXISTING ELEVATIONS ALONG PROPERTY LINE AND BE CONSTRUCTED WITH MAXIMUM 3:1 SLOPES. REFER TO LANDSCAPE FOR PLANTING DETAILS.

FINAL GRADING TO SWM FEATURES TO BE PROVIDED IN FUTURE PHASES

MALTBY ROAD

PROPOSED EDGE OF ASPHALT

MH 3A T/G=340.46

MH 4A T/G=340.24

MH 29 T/G=339.12

DICB 30 T/G=338.89

DICB 31 T/G=338.85

MH 5A T/G=338.85

MH 32 T/G=339.32

MH 6A T/G=338.97

DICBS TO BE C/W RIPRAP PER OPSD 810.020.

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

MATCHLINE SEE DWG GP-5

0 12.5 25 m
H=1:500
V=1:500

LEGEND

- PROPERTY LINE
- SIB — PROPERTY BAR
- 247.00 — EX. CONTOUR
- 247.50 — EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- AG H — EX. ABOVE GROUND HYDRO LINE
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED MANDOOR
- PROPOSED OVERHEAD DOOR
- 0.50% — DIRECTION OF SURFACE FLOW
- 334.162 — PROPOSED ELEVATION
- MATCH 334.162 — MATCH EXISTING ELEVATION
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED CONCRETE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS PER OPSD 600.110)
- DRAINAGE DIVIDE
- LIMIT OF CONSTRUCTION

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

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REGISTRATION

[redacted]

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6		
5		
4		
3		
2		
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE GRADING

SHEET NUMBER

GP-6

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

LEGEND

- PROPERTY LINE
- SIB — PROPERTY BAR
- 247.00 — EX. CONTOUR
- 247.50 — EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- AG H — EX. ABOVE GROUND HYDRO LINE
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED MANDOOR
- PROPOSED OVERHEAD DOOR
- 0.50% — DIRECTION OF SURFACE FLOW
- 334.162 — PROPOSED ELEVATION
- MATCH 334.162 — MATCH EXISTING ELEVATION
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED CONCRETE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS PER OPSD 600.110)
- DRAINAGE DIVIDE
- LIMIT OF CONSTRUCTION

NO GRADING DISTURBANCE OUTSIDE LIMIT OF CONSTRUCTION WITHIN NATURAL AREAS.

HYDROSEED PER OPSS 804 WHERE GRADING WILL BE UNDISTURBED FOR LONGER THAN 30 DAYS.

TEMPORARY SILTATION POND #3
TOTAL DRAINAGE AREA =2.25Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 417m³
PROVIDED PP VOLUME = 883m³ @ ELEV. 338.30
REQ'D ACTIVE STORAGE = 225m³/Ha = 507m³
PROVIDED ACTIVE STORAGE = 591m³ @ ELEV. 338.80
BTM = 337.30
NWL (PP) = 338.30
HWL = 338.80

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 270 GEOTEXTILE OR EQUIVALENT (TYP.)

TURBIDITY CURTAIN AS PER OPSD 219.261, 219.261

10m WOODLOT BUFFER

LANDSCAPE

SOUTHGATE DRIVE

PROVIDE 3:1 GRADING TO MATCH EXISTING GRADES AT PROPERTY LINE.

CBMH2 · CB3 · MH4 · MH1A · MH2A · DCBMH6 · DCB5 · MH8 · DICB7 · MH 21 T/G=340.77 · CB 20 T/G=340.47 · CBMH 22 T/G=340.01 · CB 23 T/G=340.10

0 12.5 25 m H=1:500 V=1:500

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOMNET.COM\LFS\AMER\MARKHAM-CATRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - SITE GRADING 2021.DWG

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- TO01
GUELPH, ONTARIO

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REGISTRATION

[redacted]

ISSUE/REVISION

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2		
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I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE GRADING

SHEET NUMBER

GP-7

Project Management Initials: Designer:.AA. Checked:AA. Approved:AA ARCH D 24" x 36"

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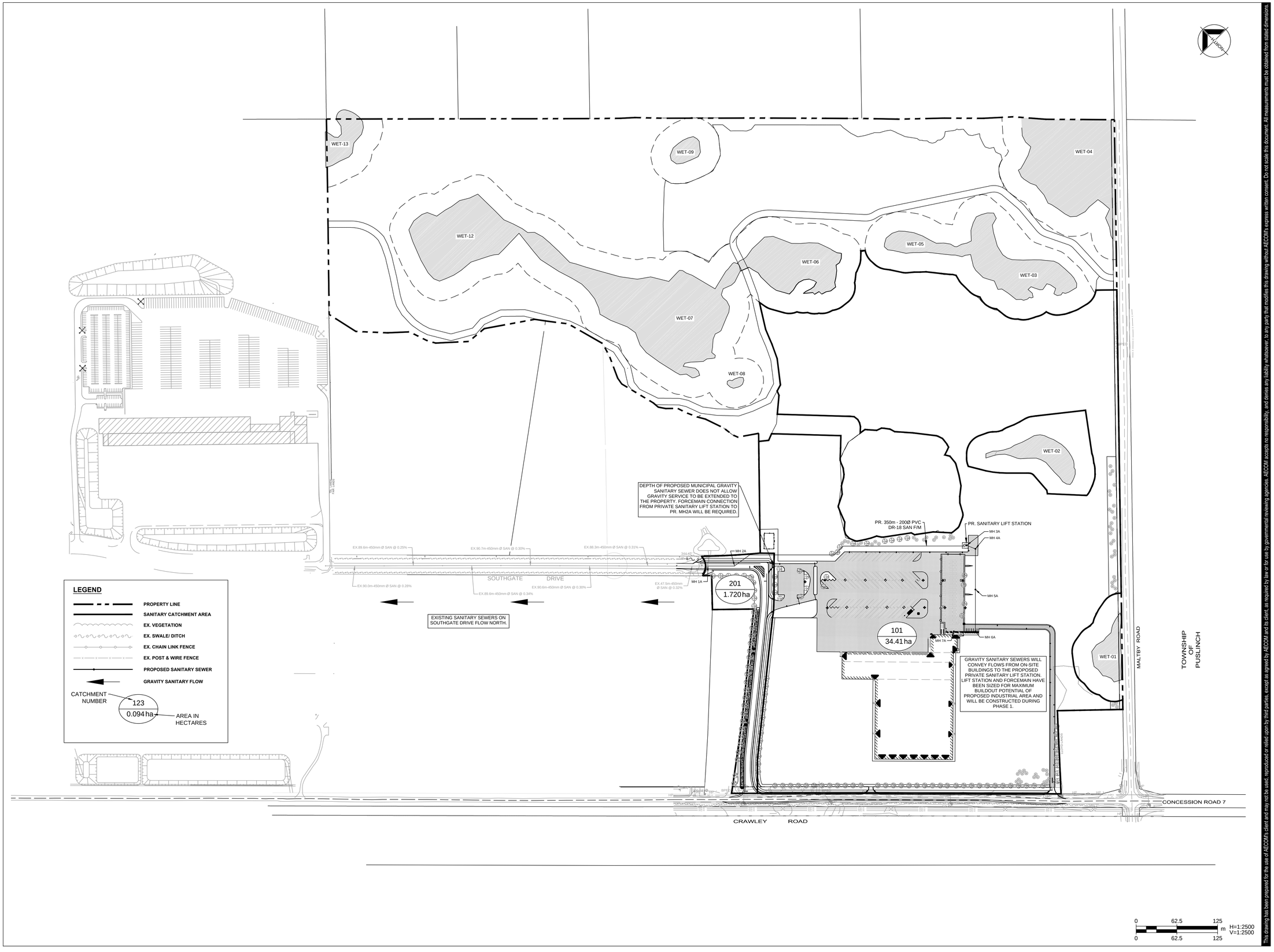
Filename: \\NA.AECOMNET.COM\LFS\AMER\MARKHAM-CA\TRT4\DCS\PROJECTS\BD\L\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - POST-CATCHMENT AREA (SAN).DWG



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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SANITARY CATCHMENT AREA

SHEET NUMBER

SSP-1

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

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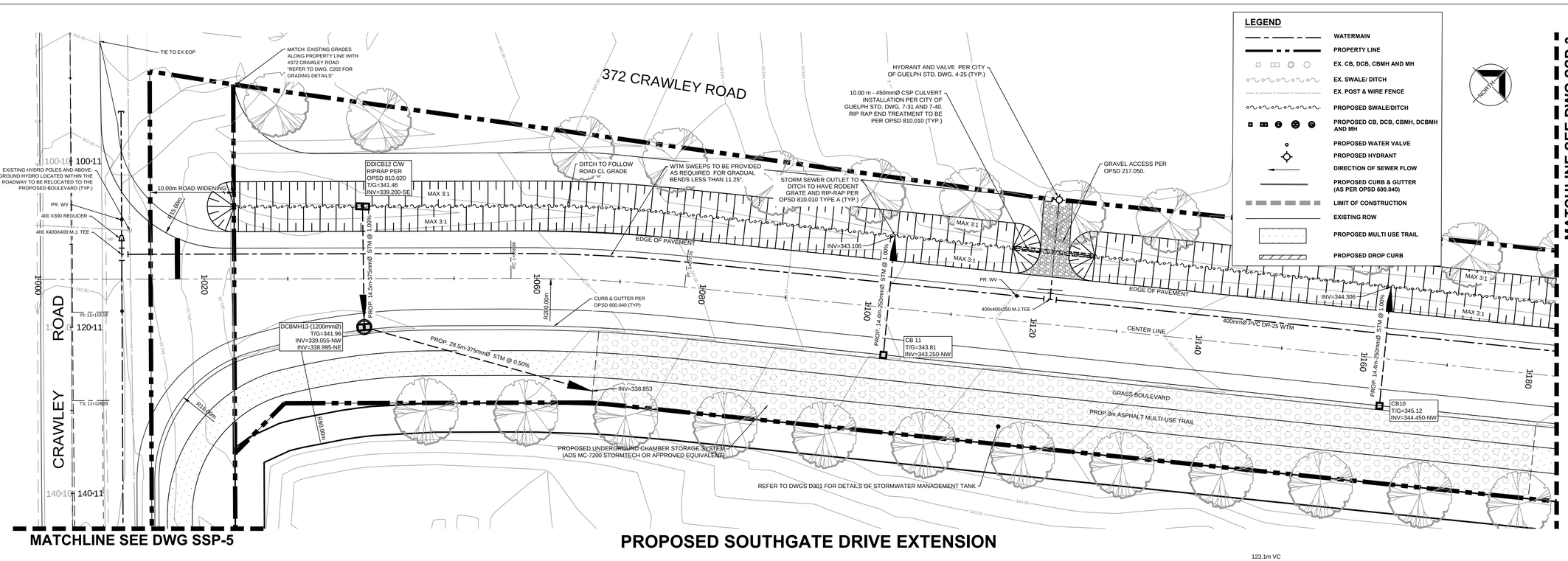

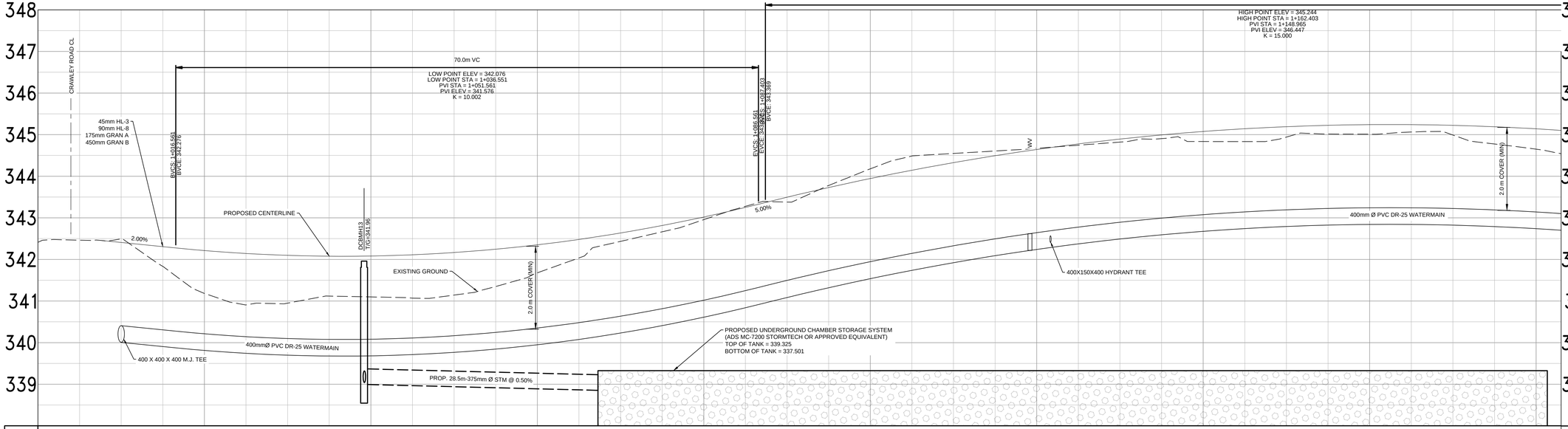

EXIST. ~C ELEV.	341.18	341.10	341.69	342.96	344.18	344.67	344.63	345.01	344.65	EXIST. ~C ELEV.
PROP. ~C ELEV.	342.21	342.08	342.35	343.02	343.95	344.64	345.08	345.24	345.14	PROP. ~C ELEV.
STM		339.055-NW 338.995-NE	PROP. 28.5m-375mm Ø STM @ 0.50% CLASS 'B' BEDDING		338.850-W					STM
SAN										SAN
STA	1+020	1+040	1+060	1+080	1+100	1+120	1+140	1+160	1+180	STA

0 6.25 12.5 m H=1:250
0 1.25 2.5 V=1:50

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SERVICING NOTES:

1. ALL STORM AND WATERMAIN WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS (2022) AND LATEST VERSION OF THE DGSSMS

REGISTRATION

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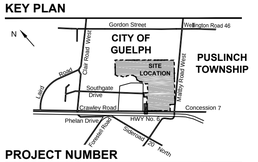

PROJECT NUMBER

60682143

SHEET TITLE

SOUTHGATE DRIVE EXTENSION
PLAN AND PROFILE

SHEET NUMBER

SSP-2

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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MATCHLINE SEE DWG SSP-2

MATCHLINE SEE DWG SSP-4

NORTH

372 CRAWLEY ROAD

HYDRANT AND VALVE PER CITY OF GUELPH STD. DWG 4-25 (TYP.)

GRAVEL ACCESS PER OPSD 217.050

STORM SEWER OUTLET TO DITCH TO HAVE RODENT GRATE AND RIP-RAP PER OPSD 810.010 TYPE A (TYP.)

10.00 m - 450mmØ CSP CULVERT INSTALLATION PER CITY OF GUELPH STD. DWG. 7-31 AND 7-40. RIP RAP END TREATMENT TO BE PER OPSD 810.010 (TYP.)

PROPOSED MUNICIPAL SWM LAYFIELD AQUABOX SYSTEM FOR SOUTHGATE DRIVE EXTENSION STORMWATER INFILTRATION
TOP OF GALLERY = 338.907
BOTTOM OF GALLERY = 336.957
PROVIDED VOLUME = 6337m3
REFER TO DETAILS ON DWG D304

LEGEND

- WATERMAIN
- PROPERTY LINE
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. POST & WIRE FENCE
- PROPOSED SWALE/DITCH
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- DIRECTION OF SEWER FLOW
- PROPOSED CURB & GUTTER (AS PER OPSD 600.040)
- LIMIT OF CONSTRUCTION
- EXISTING ROW
- PROPOSED MULTI USE TRAIL
- PROPOSED DROP CURB

INV=343.106

MAX 3:1

400mmØ PVC DR-25 WTM

PROP. 14.4m-250mmØ STM @ 1.00%

CB9
T/G=343.98
INV=343.250-NW

400X400X150 M.J.TEE

PR. WV

EDGE OF PAVEMENT

CENTER LINE

TOP OF DITCH BANK

INV=341.106

PROP. 14.4m-250mmØ STM @ 1.00%

CB8
T/G=342.18
INV=341.250-NW

GRASS BOULEVARD

CURB & GUTTER PER OPSD 600.040

PROP. 3.00 m ASPHALT MULTI-USE TRAIL

DICB7 C/W RIPRAP PER OPSD 810.020
T/G=340.95
INV=339.200-NE

PROP. 8.6m-450mmØ STM @ 1.00%

INV=338.457

PROP. 25.6m-375mmØ STM @ 2.33%

MH8-(1200mmØ)
T/G=340.79
INV=338.603-SW
INV=338.603-NE
INV=338.543-NW

DCBMH6-(1200mmØ)
T/G=340.40
INV=338.927-SE
INV=338.867-SW

PROP. 26.4m-375mmØ STM @ 1.00%

CURB & GUTTER PER OPSD 600.040

PC=1+284.24

R=20.70m

PT=1+335.68

400mmØ PVC DR-25 WTM

CONCRETE CURB & GUTTER TERMINATION PER OPSD 608.010

WATERMAIN SWEEPS TO BE PROVIDED AS REQUIRED FOR GRADUAL BENDS LESS THAN 11.25°

PROP. 14.3m-300mmØ STM @ 1.00%

DCB5
T/G=340.46
INV=339.070-NW

PROVIDE 4 TRUNCATED DOME WARNING PLATES AT MUT CROSSOVER OF DRIVEWAY PER CITY OF GUELPH SD-4.

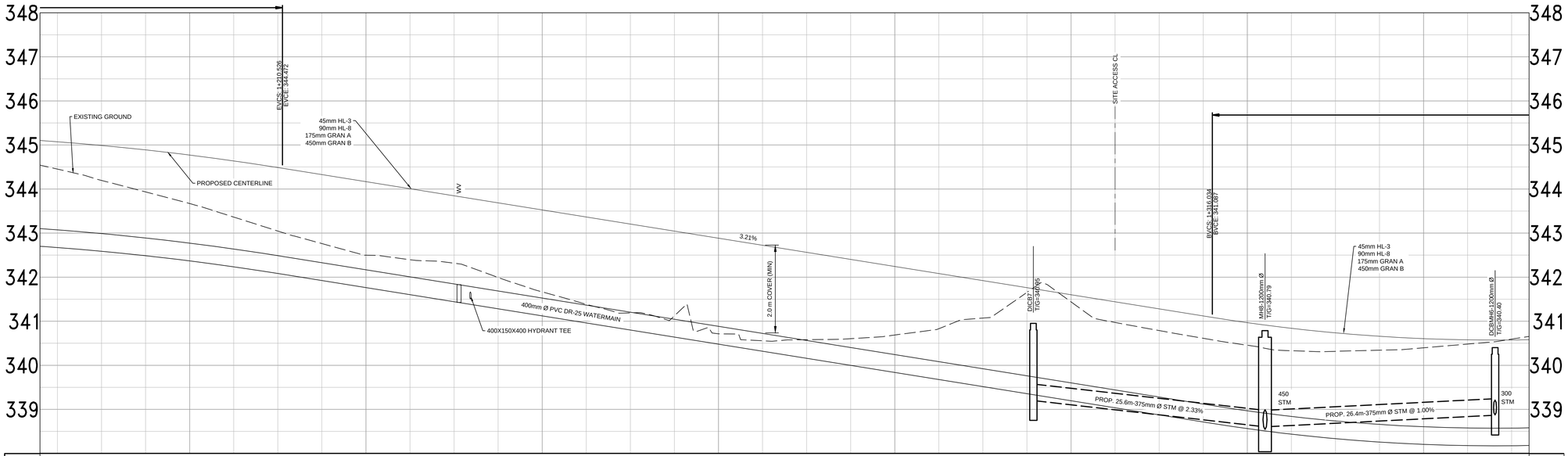
R20.70m

R10.00m

PROP. 3.00 m ASPHALT MULTI-USE TRAIL

CURB & GUTTER PER OPSD 600.040

PROPOSED SOUTHGATE DRIVE EXTENSION



EXIST. ~C ELEV.	343.67	342.50	341.67	340.71	340.09	341.44	340.46	340.40		EXIST. ~C ELEV.
PROP. ~C ELEV.	344.77	344.17	343.53	342.88	342.24	341.60	340.97	340.60		PROP. ~C ELEV.
STM						339.200-NE	PROP. 25.6m-375mm Ø STM @ 2.33% CLASS 'B' BEDDING	338.603-SW 338.603-NE 338.543-NW	PROP. 26.4m-375mm Ø STM @ 1.00% CLASS 'B' BEDDING	338.927-SE 338.867-SW		STM
SAN												SAN
STA	1+200	1+220	1+240	1+260	1+280	1+300	1+320	1+340		STA

0 6.25 12.5 m H=1:250
0 1.25 2.5 V=1:50

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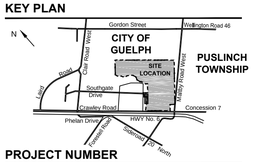
KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SOUTHGATE DRIVE EXTENSION
PLAN AND PROFILE

SHEET NUMBER

SSP-3

ARCH D 24" x 36"
Approved:AA
Checked:AA
Designer:AA
Project Management Initials:
Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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LEGEND

- WATERMAIN
- PROPERTY LINE
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. POST & WIRE FENCE
- PROPOSED SWALE/DITCH
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
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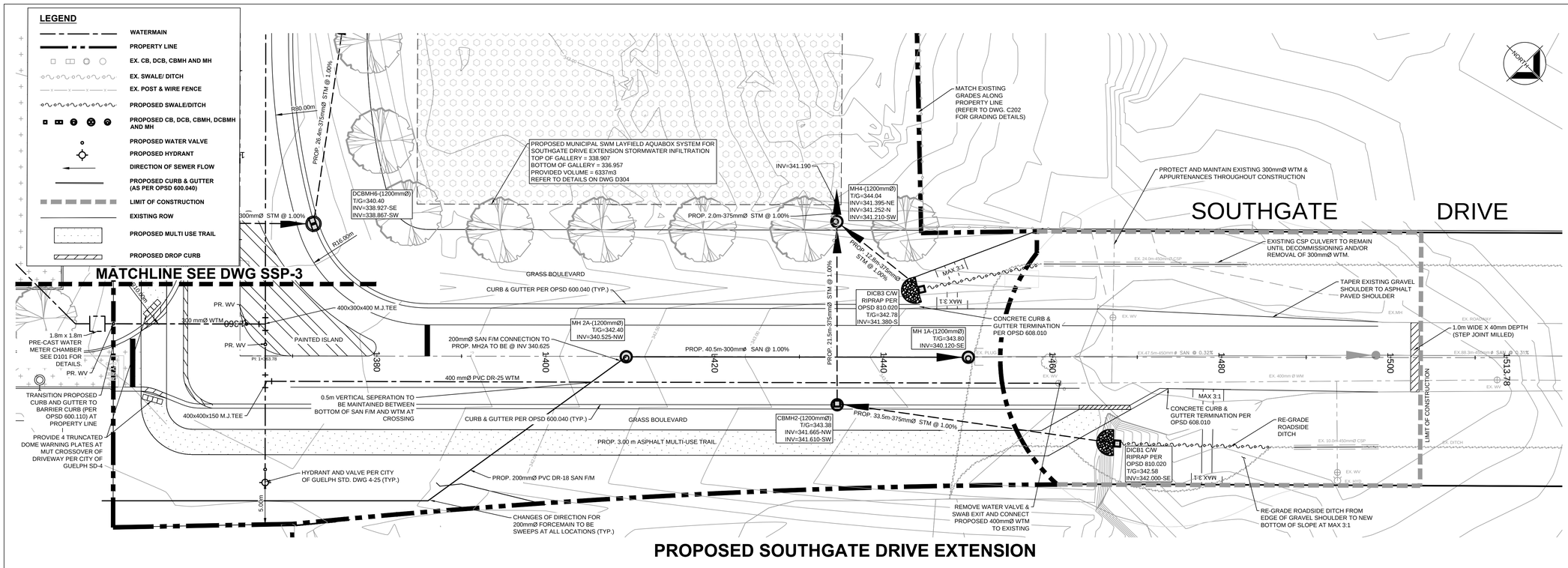
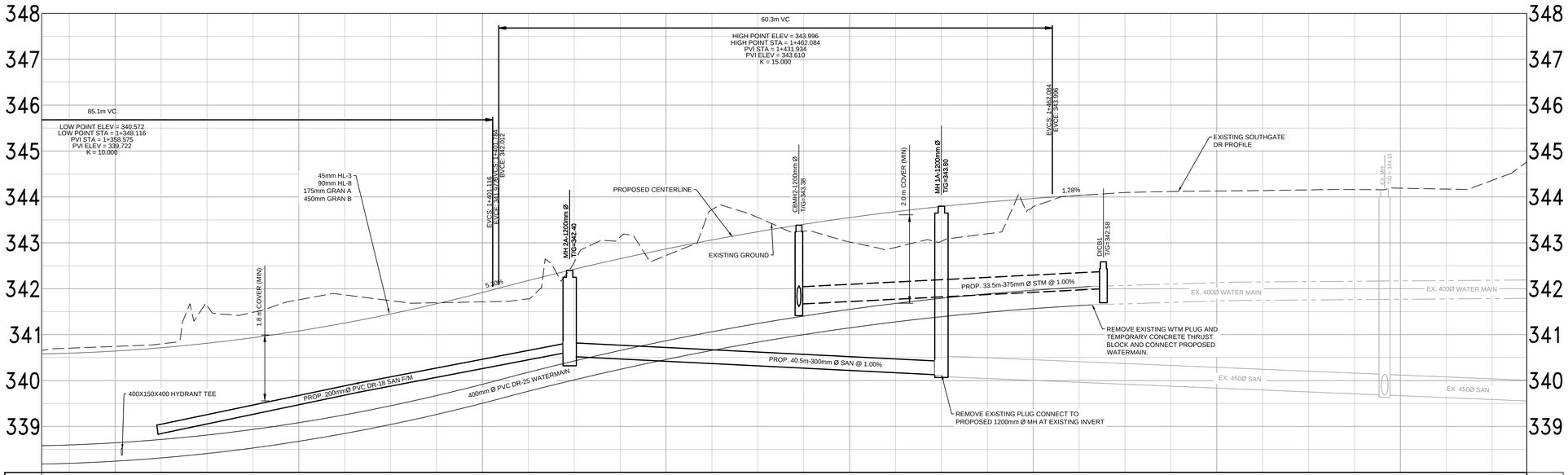
- PROPOSED MULTI USE TRAIL
- PROPOSED DROP CURB



PROPOSED SOUTHGATE DRIVE EXTENSION



EXIST. ~C ELEV.	340.74	341.76	341.71	342.72	343.02	343.79	344.13	344.19	344.76
PROP. ~C ELEV.	340.64	341.08	341.92	342.87	343.55	343.97			
STM					341.665-NW 341.610-SW	PROP. 33.5m-375mm ø STM @ 1.00% CLASS 'B' BEDDING		342.000-SE	
SAN	PROP. 200mmØ PVC DR-18 SAN FORCEMAIN CLASS 'B' BEDDING			340.625-E 340.525-NW	PROP. 40.5m-300mm ø PVC SAN SDR-35 @ 1.00% CLASS 'B' BEDDING		340.120-SE 340.060-NW	339.968-S 339.938-N	EX. 47.50m-450mm Ø SAN @ 0.32% EX. 88.30m-450mm Ø SAN @ 0.31%
STA	1+360	1+380	1+400	1+420	1+440	1+460	1+480	1+500	

0 6.25 12.5 m
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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SOUTHGATE DRIVE EXTENSION
PLAN AND PROFILE

SHEET NUMBER

SSP-4

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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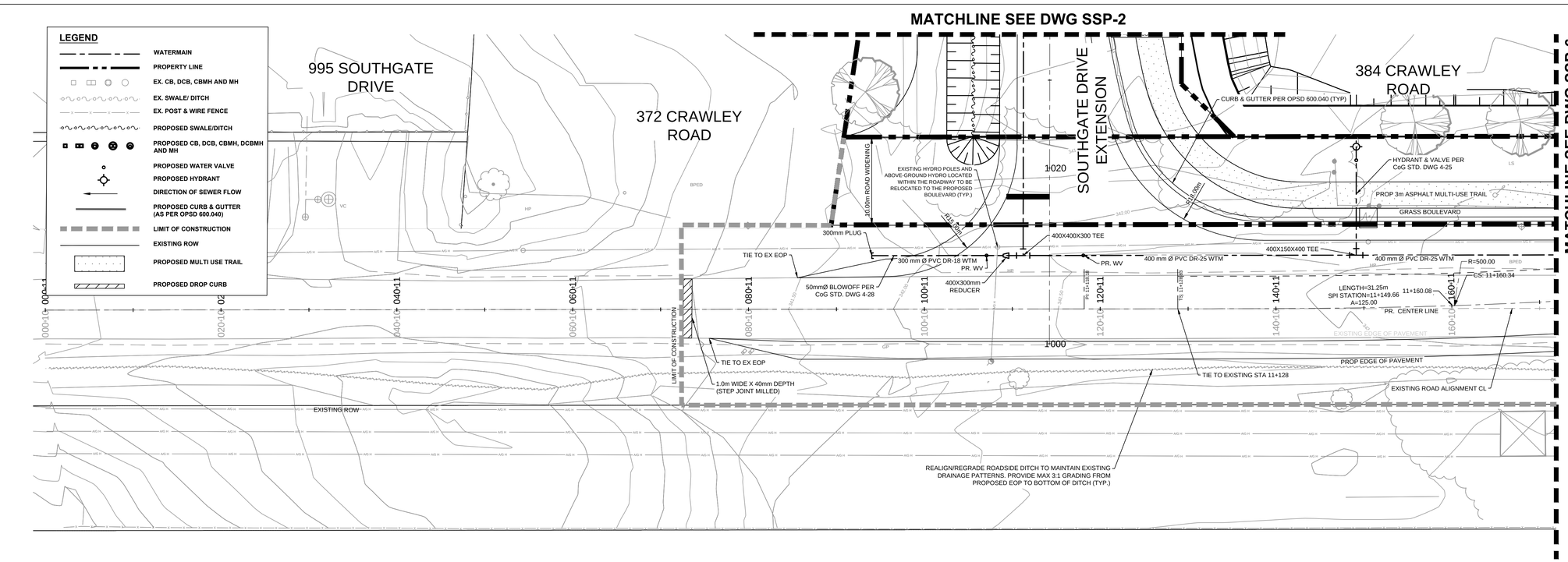

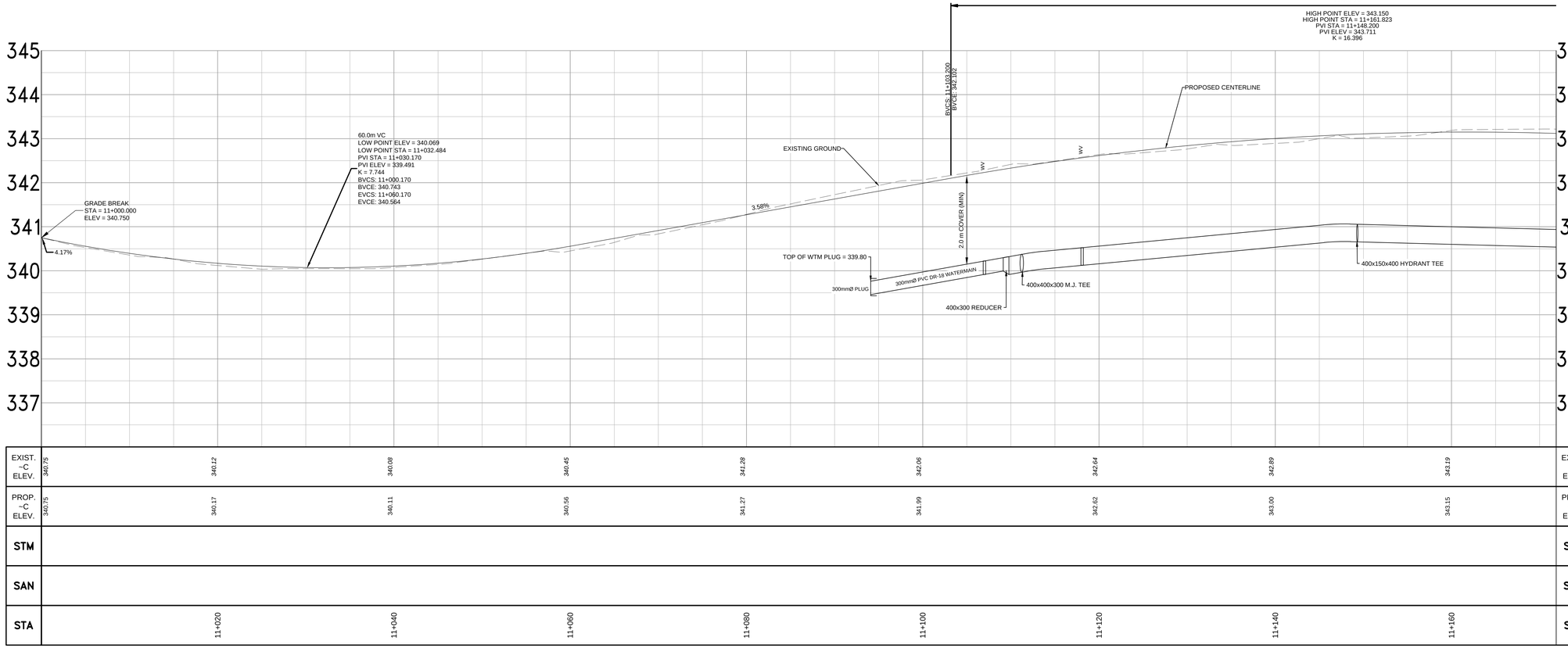

EXIST. ~C ELEV.	340.75	340.12	340.08	340.45	341.28	342.06	342.64	342.89	343.19	EXIST. ~C ELEV.
PROP. ~C ELEV.	340.75	340.17	340.11	340.56	341.27	341.99	342.62	343.00	343.15	PROP. ~C ELEV.
STM										STM
SAN										SAN
STA		11+020	11+040	11+060	11+080	11+100	11+120	11+140	11+160	STA

0 6.25 12.5 m H=1:250
0 1.25 2.5 V=1:50

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

NOTE:

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SERVICING NOTES:

1. ALL STORM AND WATERMAIN WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS (2022) AND LATEST VERSION OF THE DOSSMS

REGISTRATION

[redacted]

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6		
5		
4		
3		
2		
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

CRAWLEY ROAD PLAN AND PROFILE

SHEET NUMBER

SSP-5

Project Management Initials: Designer:.AA Checked:AA Approved/AA ARCH D 24" x 36"

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MATCHLINE SEE DWG SSP-5

MATCHLINE SEE DWG SSP-7

384 CRAWLEY ROAD

EXISTING HYDRO POLES AND ABOVE-GROUND HYDRO LOCATED WITHIN THE ROADWAY TO BE RELOCATED TO THE PROPOSED BOULEVARD (TYP.)

100m ROAD WIDENING

CB14
T/G=342.01
INV=341.550-SW

DCB15
T/G=341.23
INV=340.720-SW

CURB & GUTTER PER OPSD 600.040 (TYP)

HYDRANT & VALVE PER CoG STD. DWG 4-25

PROVIDE 4 TRUNCATED DOME WARNING PLATES AT MUT CROSSOVER OF DRIVEWAY PER CITY OF GUELPH SD-4

EXISTING HYDRO POLES AND ABOVE-GROUND HYDRO LOCATED WITHIN THE ROADWAY TO BE RELOCATED TO THE PROPOSED BOULEVARD (TYP.)

PROP 3m ASPHALT MULTI-USE TRAIL

GRASS BOULEVARD

PROP. 15.5m-250mmØ STM @ 1.00%

LENGTH=31.25m
SPI STATION=11+170.76
A=125.00

LENGTH=31.25m
SPI STATION=11+214.51
A=125.00

R=500.00

LENGTH=31.25m
SPI STATION=11+236.14
A=125.00

400 mm Ø PVC DR-25 WTM

PR. WV

PR. CENTER LINE

EXISTING EDGE OF PAVEMENT

CB LEADS TO DISCHARGE ACROSS ROADWAY TO EXISTING ROADSIDE DITCH (TYP.)

PROP. 15.5m-300mmØ STM @ 1.00%

400X150X400 TEE

PROP EDGE OF PAVEMENT

INV=341.395

INV=340.565

EXISTING ROAD ALIGNMENT CL

EXISTING ROW

LIMIT OF CONSTRUCTION

REALIGN/REGRADE ROADSIDE DITCH TO MAINTAIN EXISTING DRAINAGE PATTERNS. PROVIDE MAX 3:1 GRADING FROM PROPOSED EOP TO BOTTOM OF DITCH (TYP.)

RIPRAP AT CB LEAD OUTLET TO DITCH PER OPSD 810.010 (TYP.)

CRAWLEY ROAD

LEGEND

- WATERMAIN
- PROPERTY LINE
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. POST & WIRE FENCE
- PROPOSED SWALE/DITCH
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- DIRECTION OF SEWER FLOW
- PROPOSED CURB & GUTTER (AS PER OPSD 600.040)
- LIMIT OF CONSTRUCTION
- EXISTING ROW
- PROPOSED MULTI USE TRAIL
- PROPOSED DROP CURB

60.0m VC
LOW POINT ELEV = 342.246
LOW POINT STA = 11+239.799
PVI STA = 11+239.730
PVI ELEV = 341.959
K = 15.713

85.0m VC
HIGH POINT ELEV = 342.852
HIGH POINT STA = 11+301.053
PVI.STA = 11+314.620
PVI ELEV = 343.386
K = 15.188

EVCS: 11+169.700
EVCE: 342.850

BVCS: 11+269.730
BVCE: 342.534

EVCS: 11+269.730
EVCE: 342.531

BVCS: 11+272.120
BVCE: 342.576

1.91%

1.90%

EXISTING GROUND

PROPOSED CENTERLINE

2.0 m COVER (MIN)

400mmØ PVC DR-25 WATERMAIN

400x150x400 HYDRANT TEE

45mm HL-3
90mm HL-8
175mm GRAN 1
450mm GRAN B

EXIST. ~C ELEV.	343.11	342.76	342.49	342.24	342.18	342.66	342.98	342.87	342.26	EXIST. ~C ELEV.
PROP. ~C ELEV.	343.05	342.72	342.37	342.25	342.38	342.71	342.85	342.73	342.35	PROP. ~C ELEV.
STM										STM
SAN										SAN
STA	11+180	11+200	11+220	11+240	11+260	11+280	11+300	11+320	11+340	STA

0 6.25 12.5 m
0 1.25 2.5
H=1:250
V=1:50

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NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

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CONSULTANT

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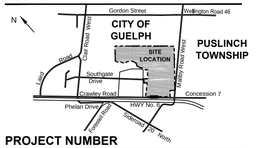
KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

CRAWLEY ROAD PLAN AND PROFILE

SHEET NUMBER

SSP-6

Project Management Initials: Designer:.AA Checked:AA Approved/AA ARCH D 24" x 36"

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MATCHLINE SEE DWG SSP-6

MATCHLINE SEE DWG SSP-8

EXISTING HYDRO POLES AND ABOVE-GROUND HYDRO LOCATED WITHIN THE ROADWAY TO BE RELOCATED TO THE PROPOSED BOULEVARD (TYP.)

HYDRANT & VALVE PER CoG STD. DWG 4-25

CURB & GUTTER PER OPSD 600.040 (TYP)

CB16
T/G=340.56
INV=340.100-SW

PROP 3m ASPHALT MULTI-USE TRAIL

GRASS BOULEVARD

CB17
T/G=339.81
INV=339.350-SW

10.00m ROAD WIDENING

PROP 3m ASPHALT MULTI-USE TRAIL

GRASS BOULEVARD

DCB18
T/G=339.46
INV=338.950-SW

PR. WV

400 mm Ø PVC DR-25 WTM

PR. CENTER LINE

EXISTING EDGE OF PAVEMENT

400X150X400 TEE (TYP.)

LENGTH=31.25m
SPI STATION=11+469.56
A=125.00

R=500.00

LENGTH=31.25m
SPI STATION=11+498.46
A=125.00

ST: 11+519.30

PROP. 12.5m-250mmØ STM @ 1.00%

PROP. 14.5m-300mmØ STM @ 1.00%

INV=339.975

INV=339.225

INV=338.805

PROP EDGE OF PAVEMENT

CB LEADS TO DISCHARGE ACROSS ROADWAY TO EXISTING ROADSIDE DITCH (TYP.)

RIPRAP AT CB LEAD OUTLET TO DITCH PER OPSD 810.010 (TYP.)

EXISTING ROAD ALIGNMENT CL

EXISTING ROW

LIMIT OF CONSTRUCTION

EXISTING ROW

REALIGN/REGRADE ROADSIDE DITCH TO MAINTAIN EXISTING DRAINAGE PATTERNS. PROVIDE MAX 3:1 GRADING FROM PROPOSED EOP TO BOTTOM OF DITCH (TYP.)

LEGEND

- WATERMAIN
- PROPERTY LINE
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. POST & WIRE FENCE
- PROPOSED SWALE/DITCH
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- DIRECTION OF SEWER FLOW
- PROPOSED CURB & GUTTER (AS PER OPSD 600.040)
- LIMIT OF CONSTRUCTION
- EXISTING ROW
- PROPOSED MULTI USE TRAIL
- PROPOSED DROP CURB

CRAWLEY ROAD

61.0m VC
HIGH POINT ELEV = 341.128
HIGH POINT STA = 11+402.999
PVI STA = 11+430.320
PVI ELEV = 341.189
K = 15.031

40.0m VC
LOW POINT ELEV = 341.117
LOW POINT STA = 11+395.012
PVI STA = 11+377.180
PVI ELEV = 341.077
K = 10.249
BVCS: 11+357.180
BVCE: 341.815
EVCS: 11+397.180
EVCE: 341.119

41.6m VC
LOW POINT ELEV = 339.241
LOW POINT STA = 11+500.946
PVI STA = 11+481.760
PVI ELEV = 339.210
K = 10.394

EVCS: 11+357.120
EVCE: 341.817

BVCS: 11+399.820
BVCE: 341.128

BVCS: 11+460.920
EVCE: 340.010

EVCS: 11+502.560
EVCE: 339.242

3.69%

0.21%

3.88%

0.16%

EXISTING GROUND

PROPOSED CENTERLINE

WV

2.0 m COVER (MIN)

400mmØ PVC DR-25 WATERMAIN

400x150x400 HYDRANT TEE

45mm HL-3
90mm HL-8
175mm GRAN 1
450mm GRAN B

345 344 343 342 341 340 339 338 337

EXIST. ~C ELEV.	341.65	341.01	341.07	341.21	340.66	340.07	339.47	339.31	339.22	EXIST. ~C ELEV.
PROP. ~C ELEV.	341.71	341.23	341.12	341.03	340.67	340.05	339.45	339.24	339.27	PROP. ~C ELEV.
STM										STM
SAN										SAN
STA	11+360	11+380	11+400	11+420	11+440	11+460	11+480	11+500	11+520	STA

0 6.25 12.5 m H=1:250
0 1.25 2.5 V=1:50

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

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REGISTRATION

[redacted]

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1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

CRAWLEY ROAD PLAN AND PROFILE

SHEET NUMBER

SSP-7

Project Management Initials: Designer:.AA Checked:AA Approved/AA ARCH D 24" x 36"

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MATCHLINE SEE DWG SSP-7

519 MALTBY ROAD WEST

EXISTING ROAD SIGNAGE TO BE REMOVED, SALVAGED AND REINSTATED (TYP.)

EXISTING HYDRO POLES AND ABOVE-GROUND HYDRO LOCATED WITHIN THE ROADWAY TO BE RELOCATED TO THE PROPOSED BOULEVARD (TYP.)

PROVIDE 4 TRUNCATED DOME WARNING PLATES AT MUT CROSSOVER OF DRIVEWAY PER CITY OF GUELPH SD-4

6.30m

R8.00m

10.00m ROAD WIDENING

CURB & GUTTER PER OPSD 600.040 (TYP)

HYDRANT & VALVE PER CoG STD. DWG 4-25

PROP 3m ASPHALT MULTI-USE TRAIL

GRASS BOULEVARD

CB19
T/G=339.43
INV=338.950-SW

PR. WV

400 mm Ø PVC DR-25 WTM

400X150X400 TEE

LENGTH=31.25m
SPI STATION=11+541.45
A=125.00

PR. CENTER LINE

R=500.00

CB LEADS TO DISCHARGE ACROSS ROADWAY TO EXISTING ROADSIDE DITCH (TYP.)

PROP. 18.0m-250mmØ STM @ 1.00%

LENGTH=31.25m
SPI STATION=11+571.80
A=125.00

50mmØ BLOWOFF PER CoG STD. DWG 4-28

SPILLWAY AS PER OPSD 604.010

CONCRETE CURB & GUTTER TERMINATION PER OPSD 608.010

REMAINDER OF CRAWLEY ROAD TO MALTBY ROAD TO BE REALIGNED AND RECONSTRUCTED IN CONJUNCTION WITH ROAD WIDENING ALONG #519 MALTBY ROAD WEST

400 mm Ø PVC DR-25 WTM

400mm PLUG

TIE TO EXISTING EOP

EXISTING EDGE OF PAVEMENT

LIMIT OF CONSTRUCTION

1.0m WIDE X 40mm DEPTH (STEP JOINT MILLED)

EXISTING EDGE OF PAVEMENT

PROP EDGE OF PAVEMENT

INV=338.770

EXISTING ROAD ALIGNMENT CL

EXISTING ROW

TIE TO EXISTING STA 11+592.63

EXISTING ROW

RIPRAP AT CB LEAD OUTLET TO DITCH PER OPSD 810.010 (TYP.)

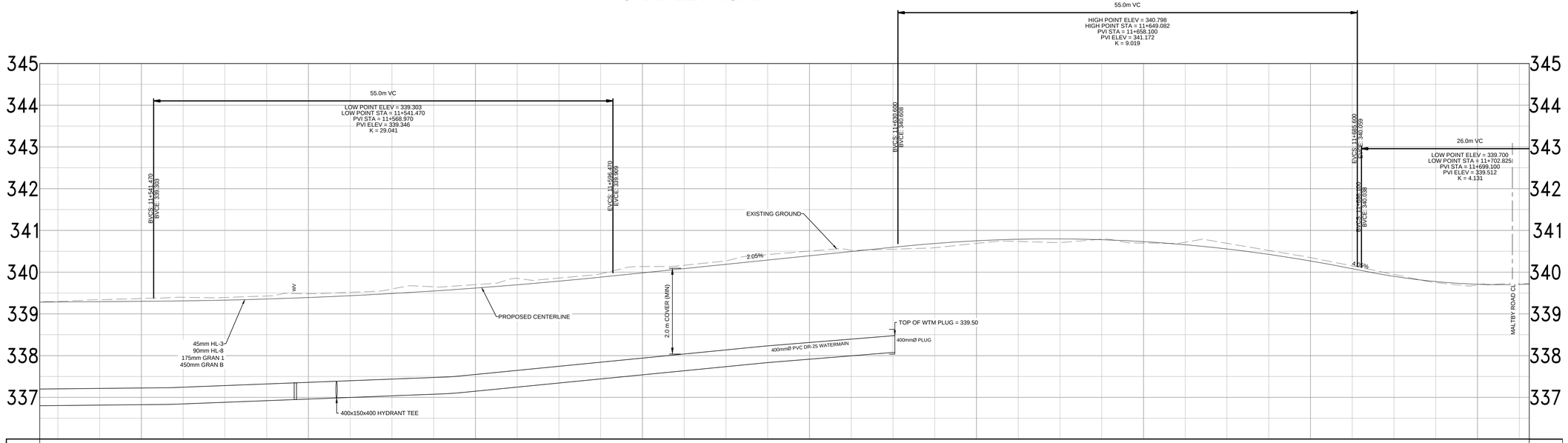
REALIGN/REGRADE ROADSIDE DITCH TO MAINTAIN EXISTING DRAINAGE PATTERNS. PROVIDE MAX 3:1 GRADING FROM PROPOSED EOP TO BOTTOM OF DITCH (TYP.)

MALTBY ROAD

LEGEND

- WATERMAIN
- PROPERTY LINE
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. POST & WIRE FENCE
- PROPOSED SWALE/DITCH
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- DIRECTION OF SEWER FLOW
- PROPOSED CURB & GUTTER (AS PER OPSD 600.040)
- LIMIT OF CONSTRUCTION
- EXISTING ROW
- PROPOSED MULTI USE TRAIL
- PROPOSED DROP CURB

CRAWLEY ROAD



EXIST. ~C ELEV.	339.37	339.48	339.70	340.13	340.50	340.69	340.70	340.35	339.69	EXIST. ~C ELEV.
PROP. ~C ELEV.	339.30	339.39	339.62	339.98	340.39	340.75	340.73	340.27	339.71	PROP. ~C ELEV.
STM										STM
SAN										SAN
STA	11+540	11+560	11+580	11+600	11+620	11+640	11+660	11+680	11+700	STA

0 6.25 12.5 m H=1:250
0 1.25 2.5 V=1:50

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

CRAWLEY ROAD PLAN AND PROFILE

SHEET NUMBER

SSP-8

Project Management Initials: Designer:AA Checked:AA Approved:AA ARCH D 24" x 36"

LEGEND

- PROPERTY LINE
- PROPERTY BAR (SIB)
- EX. CONTOUR (247.00)
- EX. SPOT ELEVATION (247.50)
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE (AG H)
- EX. MAN DOOR
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS NOTED BELOW)
- LIMIT OF CONSTRUCTION
- TEMPORARY DRAINAGE SWALE WITH ROCK CHECK-DAM (AS PER OPSD 219.210)
- PROPOSED WATERMAIN PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE

TEMPORARY SILTATION POND #3
TOTAL DRAINAGE AREA =2.25Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 417m³
PROVIDED PP VOLUME = 883m³ @ ELEV. 338.30
REQ'D ACTIVE STORAGE = 225m³/Ha = 507m³
PROVIDED ACTIVE STORAGE = 591m³ @ ELEV. 338.80
BTM = 337.30
NWL (PP) = 338.30
HWL = 338.80

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 270 GEOTEXTILE OR EQUIVALENT (TYP.)

TURBIDITY CURTAIN AS PER OPSD 219.260 & OPSD 219.261

PR. 82.5M - TEMPORARY 300mmØ PVC @ 1% PIPE MAINTAIN 1.2M COVER ALONG LENGTH.

INV=336.850

BOTTOM OF 300Ø STM = ±336.480
TOP OF 200Ø SAN F/M = ±339.661
MINIMUM 0.5M VERTICAL CLEARANCE TO BE MAINTAINED.

CHANGES OF DIRECTION FOR 200mmØ FORCEMAIN TO BE SWEEPS AT ALL LOCATIONS (TYP.)

SANITARY LIFT STATION TO BE SUBSURFACE, PRE-FABRICATED FRP SYSTEM DESIGNED TO CONVEY 66L/S AT FULL SITE BUILD-OUT. DETAILED LAYOUT AND INTERNAL STATION CONFIGURATION TO BE FINALIZED AT BUILDING PERMIT. FULL DEPTH OF LIFT STATION TO BE ±9.1M. OUTLET FORCEMAIN TO BE 200MMØ PVC DR-18 DISCHARGING TO PR. MH 2A AT SOUTHGATE DRIVE EXTENSION.
T/G = 340.50
INLET INV = 333.235 - S (250mmØ)
OUTLET INV = 338.035 (200mmØ F/M)

10m WOODLOT BUFFER

SANITARY PUMPING STATION

MH 3A
T/G=340.46

INV=338.035

PROP. 1.7m 200mm Ø SAN @ 2.00%

PROP. 200mmØ PVC DR-18 SAN F/M

PROP. 82.5m-300mmØ STM @ 1.00%

PROP. 200mmØ PVC DR-18 SAN F/M

LANDSCAPE

PROP. 300mmØ PVC DR-18 WTM

PROP. 113.1m-300mmØ STM @ 1.00%

MH 2A-(1200mmØ)
T/G=342.40
INV=340.525-NW

MH 21-(1200mmØ)
T/G=340.77
INV=338.869-SW
INV=338.809-SE

45° BEND

PROP. 10.4m-300mmØ STM @ 1.00%

CB 20
T/G=340.47
INV=338.973-NE

CBMH 22-(1200mmØ)
T/G=340.01
INV=336.022-N
INV=337.678-NW

CB 26

ALL CBS WITHIN LIMITS OF INFILTRATION CHAMBER WILL DISCHARGE DIRECTLY TO THE CHAMBER (TYP.). REFER TO TANK DETAILS ON DWG D302

1.5m X 1.5m GAPS WITHIN ADS STORMTECH CHAMBER TO BE PROVIDED FOR LIGHTING MAST GROUNDING RODS (MINIMUM DEPTH IS 3.6m). REFER TO LIGHTING PLAN SL-2 FOR FOUNDATION DETAILS AND DEPTHS OF LIGHTING MASTS.

200mmØ SAN F/M CONNECTION TO PROP. MH2A TO BE AT INV 340.625

PROP. 2.0m-375mm Ø STM @ 1.00%

PROP 14.3m-300mm Ø STM @ 1.00%

PROP 26.4m-375mm Ø STM @ 1.00%

PROP 8.6m-450mm Ø STM @ 1.00%

PROP 25.6m-375mm Ø STM @ 2.33%

MUNICIPAL STORMWATER MANAGEMENT

DCBMH6

DCB5

MH8

DCB37

CB8

CB9

1.8M X 1.8M CONCRETE WATER METER CHAMBER. REFER TO DETAILS ON DWG D10

PROP. 300mmØ PVC DR-18 WTM

LANDSCAPE

PROPOSED MUNICIPAL SWM LAYFIELD AQUABOX SYSTEM FOR SOUTHGATE DRIVE EXTENSION STORMWATER INFILTRATION.
TOP GALLERY = 338.907
BOTTOM GALLERY = 336.957
PROVIDED VOLUME = 6337m3
REFER TO DETAILS ON DWG D304

PROP 14.4m-250mm Ø STM @ 1.00%

372 CRAWLEY ROAD

SOUTHGATE DRIVE EXTENSION

PROPOSED ADS STORMTECH MC-7000 CHAMBER SYSTEM FOR PHASE 1 STORMWATER INFILTRATION.
TOP GALLERY = 336.00
BOTTOM GALLERY =334.324
PROVIDED VOLUME = 22 194m³
REFER TO DETAILS ON DWG D302

CB 23

CB 27

PR. HYDRANT AND 150MMØ LEAD PER COG SD 4-25. HYDRANT TO BE SURROUNDED BY CONCRETE BOLLARDS.

PR. 300mmØ PLUG FOR EXTENSION OF WATERMAIN TO FUTURE PHASES.

PROVIDE 50MM TEMPORARY BLOW-OFF PER COG SD 4-25 EAST OF ACCESS ROAD (WITHIN PRE-GRADED AREA). PROTECT BLOW-OFF WITH JERSEY BARRIERS AS REQUIRED OUTSIDE OF ACCESS ROAD.

CBMH 28
T/G=339.49
INV=336.807-NW

PROP. 81.3m-300mmØ STM @ 1.00%

300X200X300 M.J. TEE

PROP. 300mmØ PVC WTM

MH 7A-(1200mmØ)
T/G=339.80
INV=336.865-SW
INV=336.805-SE

MH 7A

300X150X300 M.J. TEE

PROP. 200mmØ PVC WTM

PROP. 65.0m-300mmØ STM @ 1.00%

CB 24
T/G=339.80
INV=338.300-SE

CBMH 25
T/G=339.15
INV=337.650-NW
INV=337.620-SE

PROVIDE MINIMUM 0.5m VERTICAL CLEARANCE FROM BOTTOM OF STM TO TOP OF WATERMAIN

PROP. 3.5m-200mm Ø SAN @ 1.00%

PROP. 33.1m-200mm Ø SAN @ 1.00%

PR. WTM INV=337.90

SAN INV=336.900

BUILDING FFE=341.30

BUILDING FFE=341.30

0 12.5 25 m H=1:500 V=1:500

MATCHLINE SEE DWG SSP-12

MATCHLINE SEE DWG SSP-10

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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REGISTRATION

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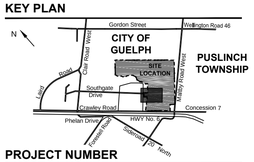
1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SITE SERVICING

SHEET NUMBER

SSP-9

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOMNET.COM\LFS\AMER\MARKHAM-CATRT41DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE 1\60682143 NEWCOLD - SITE SERVICING.DWG

Project Management Initials: Designer:.AA. Checked:AA. Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOMNET.COM\L-FS\AMER\MARKHAM-CATRT4\DCS\PROJECTS\BD\\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE 1\60682143 NEWCOLD - SITE SERVICING.DWG

MATCHLINE SEE DWG SSP-9

372 CRAWLEY ROAD

SOUTHGATE DRIVE EXTENSION

1:180 1:140 1:120 1:100 1:080 1:060 1:040 1:020 1:000

CB10

PROP 14.4m-250mm Ø STM @ 1.00%

CB11

PROP 14.4m-250mm Ø STM @ 1.00%

PROP 28.5m-375mm Ø STM @ 0.50%

DDICB12 DCBMH13

PROP 14.5m-375mm Ø STM @ 1.00%

BUILDING
FFE=340.10

TEMPORARY SILTATION POND #4
TOTAL DRAINAGE AREA =3.33Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 616m³
PROVIDED PP VOLUME = 679m³ @ ELEV. 338.00
REQ'D ACTIVE STORAGE = 225m³/Ha = 750m³
PROVIDED ACTIVE STORAGE = 841m³ @ ELEV. 338.80
BTM = 337.00
NWL (PP) = 338.00
HWL = 338.80

TURBIDITY CURTAIN AS
PER OPSD 219.260, 219.261

300mmDEEP RIPRAP AT
SWALE OUTLET ON
TERRAFIX 250 GEOTEXTILE
OR EQUIVALENT (TYP.)

INV=337.370
INV=337.300
PROP. 3.5m-250mmØ STM @ 2.00%

INV=337.370
INV=337.300
PROP. 3.5m-250mmØ STM @ 2.00%

150mmØ PERFORATED PVC RISER PIPE C/W
CLEAR STONE MATERIAL SURROUNDING. SEE
DETAIL ON DWG. D101
INV = 336.55

INV=336.550

PROPOSED ADS STORMTECH
MC-3500 CHAMBER SYSTEM FOR
ROOF STORMWATER INFILTRATION.
TOP GALLERY = 337.58
BOTTOM GALLERY = 335.90
PROVIDED VOLUME = 1897m³
REFER TO DETAILS ON DWG D303

PR. TEMPORARY CLEARSTONE
INFILTRATION GALLERY
DIMENSIONS: 4m X 20m X 1m
TOTAL ACTIVE VOLUME = 32m³
TOP GALLERY = 338.00
BOTTOM GALLERY = 337.00

PROP. 12.0m-300mmØ STM @ -12.00% (REVERSE SLOPED)

CB14 DCB15 CB16 CB17

PROP 15.5m-250mm Ø STM @ 1.00%
PROP 15.5m-300mm Ø STM @ 1.00%
PROP 12.5m-250mm Ø STM @ 1.00%
PROP 12.5m-250mm Ø STM

CRAWLEY ROAD

LEGEND

- PROPERTY LINE
- PROPERTY BAR (SIB)
- EX. CONTOUR (247.00)
- EX. SPOT ELEVATION (247.50)
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE (AG H)
- EX. MAN DOOR
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS NOTED BELOW)
- LIMIT OF CONSTRUCTION
- TEMPORARY DRAINAGE SWALE WITH ROCK CHECK-DAM (AS PER OPSD 219.210)
- PROPOSED WATERMAIN PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE

MATCHLINE SEE DWG SSP-11

0 12.5 25 m H=1:500 V=1:500

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NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

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KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

SITE SERVICING

SHEET NUMBER

SSP-10

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOMNET.COM\LFSAMER\MARKHAM-CAT\RT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 NEWCOLD - SITE SERVICING.DWG

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

MATCHLINE SEE DWG SSP-10

MATCHLINE SEE DWG SSP-12

NO GRADING DISTURBANCE
OUTSIDE LIMIT OF CONSTRUCTION
WITHIN NATURAL AREAS.

30m WETLAND
BUFFER

MALTBY ROAD

TOWNSHIP
OF PUSLINCH

TEMPORARY SILTATION POND #1
TOTAL DRAINAGE AREA =4.36Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 807m³
PROVIDED PP VOLUME = 851m³ @ ELEV. 337.25
REQ'D ACTIVE STORAGE = 225m³/Ha = 981m³
PROVIDED ACTIVE STORAGE = 1216m³ @ ELEV. 338.00
BTM = 336.25
NWL (PP) = 337.25
HWL = 338.00

INV=335.800
PROP. 9.5m-300mmØ STM @ -15.00% (REVERSE SLOPED)

150mmØ PERFORATED PVC
RISER PIPE C/W CLEAR STONE
MATERIAL SURROUNDING. SEE
DETAIL ON DWG. D101
INV = 335.80

PR. TEMPORARY CLEARSTONE
INFILTRATION GALLERY
DIMENSIONS: 5m X 20m X 1m
TOTAL ACTIVE VOLUME = 40m³
TOP GALLERY = 337.25
BOTTOM GALLERY = 336.25

TURBIDITY CURTAIN AS
PER OPSD 219.260, 219.261

300mmDEEP RIPRAP AT
SWALE OUTLET ON
TERRAFIX 270 GEOTEXTILE
OR EQUIVALENT (TYP.)

519 MALTBY
ROAD WEST

DCB18

CB19

1.00%

PROP 14.5m-300mm Ø STM @ 1.00%

PROP 18.0m-250mm Ø STM @ 1.00%

CONCESSION ROAD 7

0 12.5 25 m H=1:500 V=1:500
0 12.5 25

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- EX. MAN DOOR
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS NOTED BELOW)
- LIMIT OF CONSTRUCTION
- TEMPORARY DRAINAGE SWALE WITH ROCK CHECK-DAM (AS PER OPSD 219.210)
- PROPOSED WATERMAIN PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE

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PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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REGISTRATION

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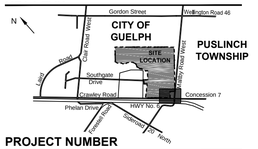
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SITE SERVICING

SHEET NUMBER

SSP-11

Project Management Initials: Designer:AA Checked:AA Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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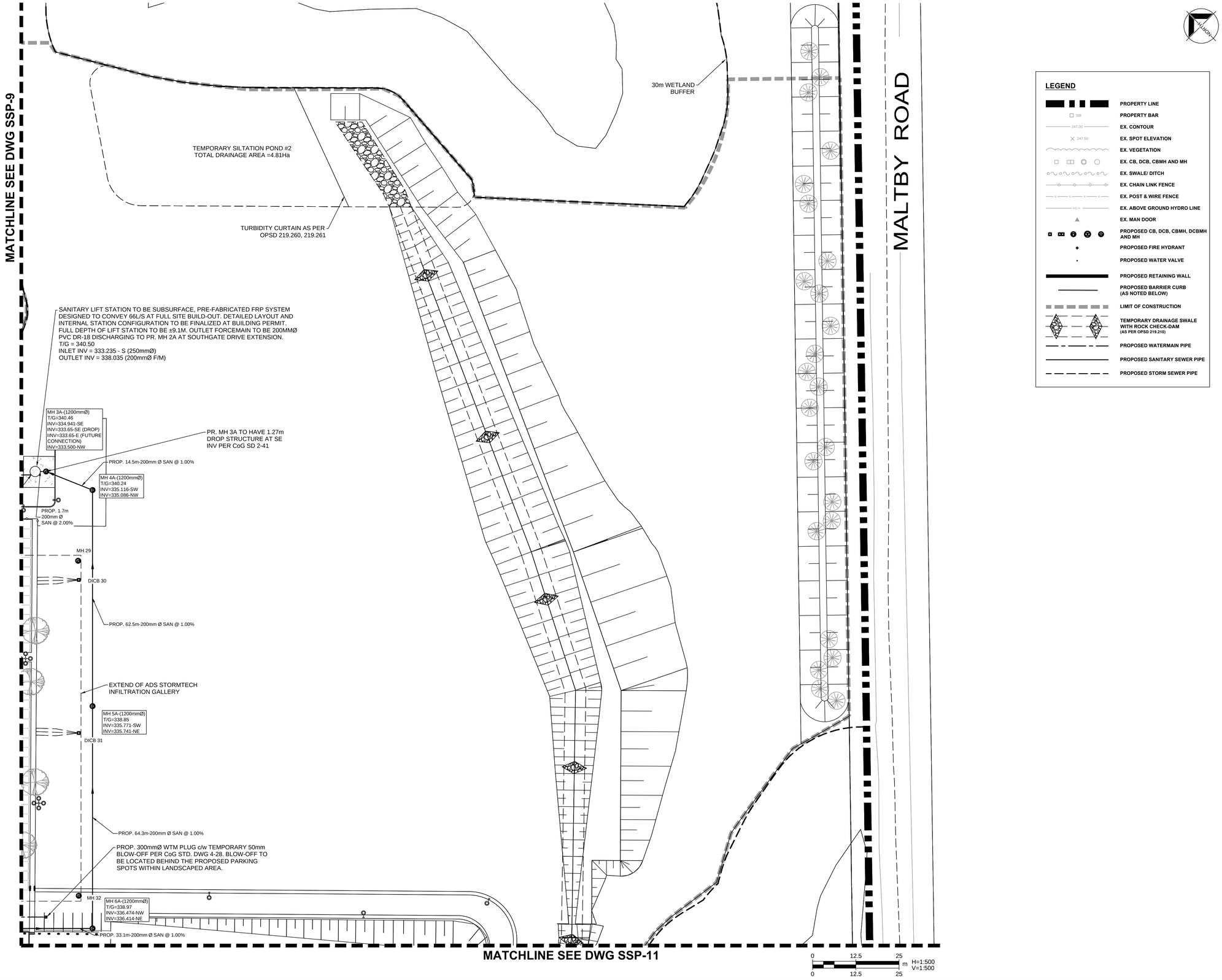

NORTH

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- EX. MAN DOOR
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS NOTED BELOW)
- LIMIT OF CONSTRUCTION
- TEMPORARY DRAINAGE SWALE WITH ROCK CHECK-DAM (AS PER OPSD 219.210)
- PROPOSED WATERMAIN PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE

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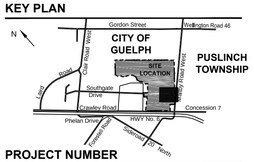

PROJECT NUMBER

60682143

SHEET TITLE

SITE SERVICING

SHEET NUMBER

SSP-12

Project Management Initials: Designer:.AA Checked:AA Approved:AA ARCH D 24" x 36"

Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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LEGEND

- PROPERTY LINE
- PROPERTY BAR (SIB)
- EX. CONTOUR (247.00)
- EX. SPOT ELEVATION (247.50)
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE (AG H)
- EX. MAN DOOR
- PROPOSED CB, DCB, CBMH, DCBMH AND MH
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED RETAINING WALL
- PROPOSED BARRIER CURB (AS NOTED BELOW)
- LIMIT OF CONSTRUCTION
- TEMPORARY DRAINAGE SWALE WITH ROCK CHECK-DAM (AS PER OPSD 219.210)
- PROPOSED WATERMAIN PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE

NO GRADING DISTURBANCE
OUTSIDE LIMIT OF CONSTRUCTION
WITHIN NATURAL AREAS.

TEMPORARY SILTATION POND #3
TOTAL DRAINAGE AREA =2.25Ha
REQ'D PERMANENT POOL (PP) VOLUME = 185m³/Ha
TOTAL REQ'D PP VOLUME = 417m³
PROVIDED PP VOLUME = 883m³ @ ELEV. 338.30
REQ'D ACTIVE STORAGE = 225m³/Ha = 507m³
PROVIDED ACTIVE STORAGE = 591m³ @ ELEV. 338.80
BTM = 337.30
NWL (PP) = 338.30
HWL = 338.80

300mmDEEP RIPRAP AT SWALE OUTLET ON TERRAFIX 270 GEOTEXTILE OR EQUIVALENT (TYP.)

TURBIDITY CURTAIN AS PER OPSD 219.260, 219.261

INV=336.850

10m WOODLOT BUFFER

LANDSCAPE

CHANGES OF DIRECTION FOR 200mmØ FORCEMAIN TO BE SWEEPS AT ALL LOCATIONS (TYP.)

PROP. 40.5m-300mm Ø SAN @ 1.00%
PROP 33.5m-375mm Ø STM @ 1.00%
CB1
CBMH2
MH 1A-(1200mmØ) T/G=343.80 INV=340.120-SE
MH 2A-(1200mmØ) T/G=342.40 INV=340.525-NW
PROP 21.5m-375mm Ø STM @ 1.00%
CB3
PROP 12.8m-375mm Ø STM @ 1.00%
MH4
PROP. 2.0m-375mm Ø STM @ 1.00%
PROP 14.3m-300mm Ø STM @ 1.00%
PROP 26.4m-375mm Ø STM @ 1.00%
MH8
PROP 8.6m-450mm Ø STM @ 1.00%
PROP 25.6m-375mm Ø STM @ 2.33%
DCBMH6
DCB5
DICB7

SOUTHGATE DRIVE

PROPOSED MUNICIPAL SWM LAYFIELD
AQUABOX SYSTEM FOR SOUTHGATE DRIVE
EXTENSION STORMWATER INFILTRATION.
TOP GALLERY = 338.907
BOTTOM GALLERY = 336.957
PROVIDED VOLUME = 6337m3
REFER TO DETAILS ON DWG D304

PROP. 200mmØ PVC DR-18 SAN F/M

PROP. 82.5m-300mmØ STM @ 1.00%

PROP. 300mmØ PVC DR-18 WTM

MH 21-(1200mmØ) T/G=340.77 INV=338.869-SW INV=338.809-SE

45° BEND

1.8M X 1.8M CONCRETE WATER METER CHAMBER. REFER TO DETAILS ON DWG D10

PROP. 10.4m-300mmØ STM @ 1.00%

CB 20 T/G=340.47 INV=338.973-NE

PROP. 300mmØ PVC DR-18 WTM

PROP. 113.1m-300mmØ STM @ 1.00%

CBMH 22-(1200mmØ) T/G=340.01 INV=336.022-N INV=337.678-NW

CB 23

LANDSCAPE

1513.78 1500 1480 1460 1440 1420 1400 1380 1360 1340 1320 1300

0 12.5 25 m H=1:500 V=1:500

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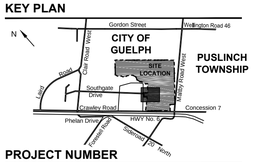
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN



PROJECT NUMBER

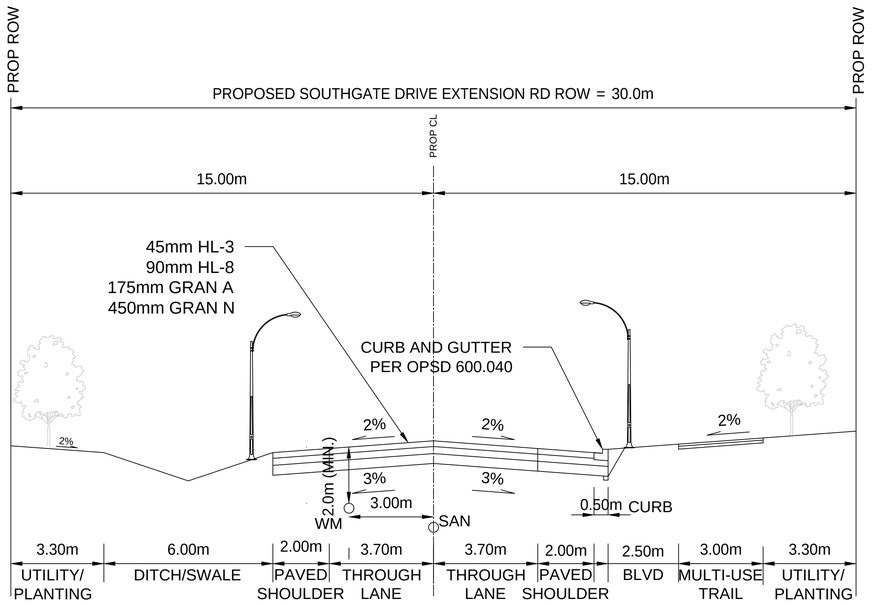
60682143

SHEET TITLE

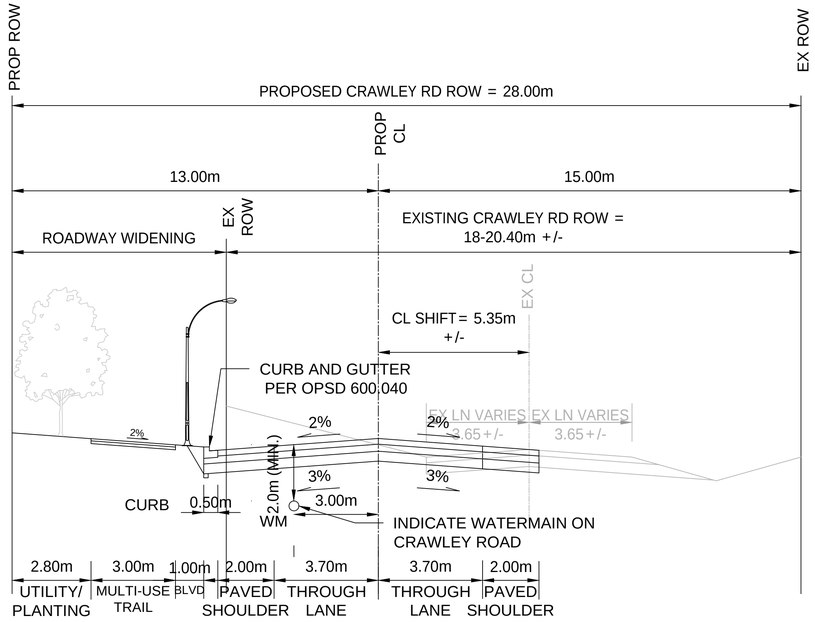
SITE SERVICING

SHEET NUMBER

SSP-13



SOUTHGATE DRIVE EXTENSION
SEC 1-1 (NOT TO SCALE)



CRAWLEY ROAD
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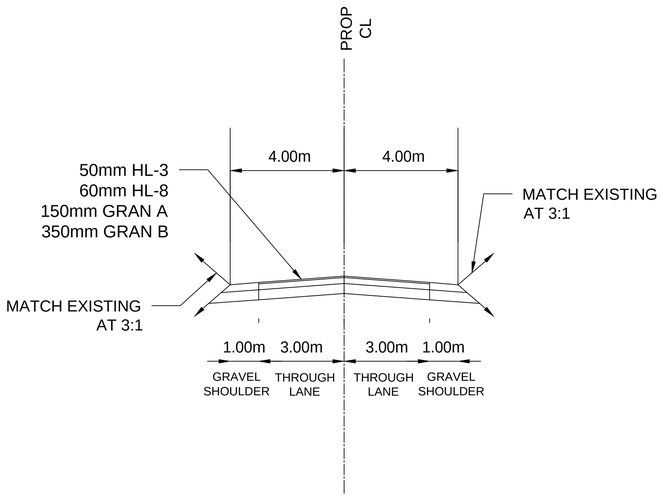
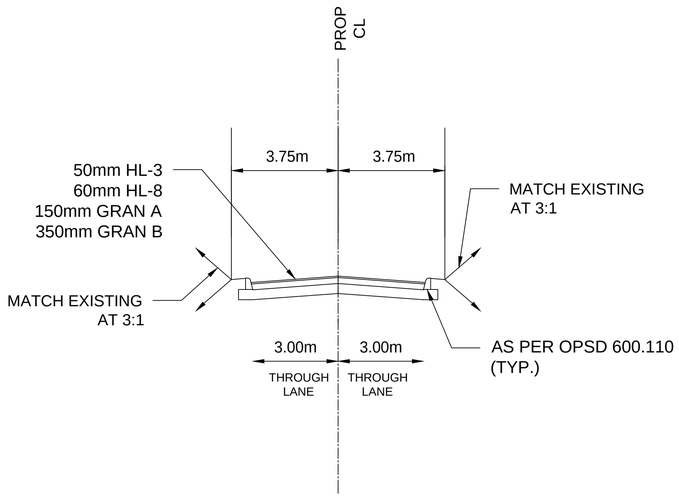
(NOT TO SCALE)



TEMPORARY ACCESS ROAD
SEC 3-3 - TYPICAL
(NOT TO SCALE)



TEMPORARY ACCESS ROAD
SEC 4-4 - TYPICAL
(NOT TO SCALE)

AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

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NOTE:

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REGISTRATION

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ISSUE/REVISION

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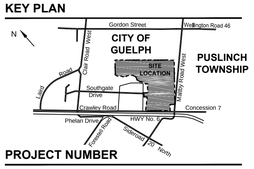
1	2022-04-26	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

GENERAL CIVIL DETAILS

SHEET NUMBER

D-100

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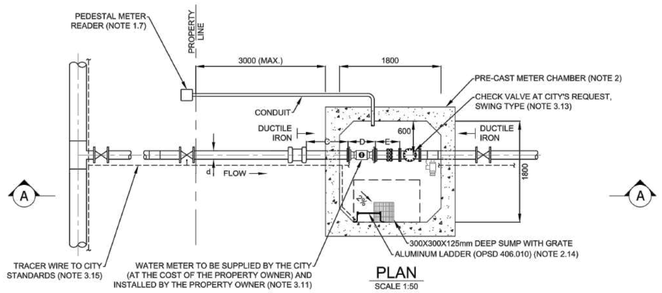

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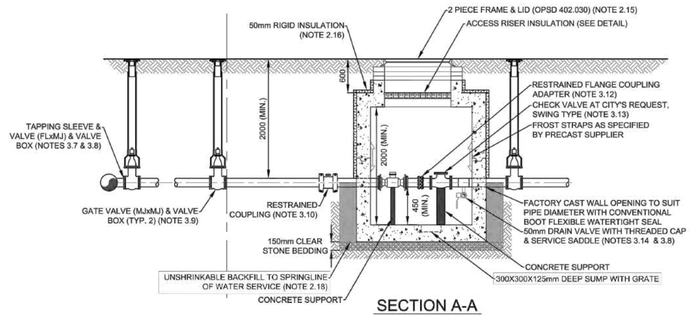
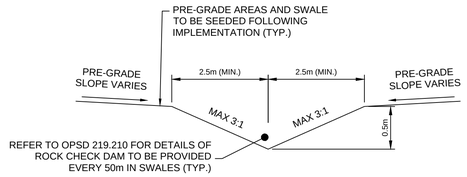


SECTION A-A

NOTES:

1. GENERAL:
   - 1.1. ALL MEASUREMENTS ARE NOMINAL AND IN MILLIMETRES (mm) UNLESS OTHERWISE NOTED.
   - 1.2. INTERIOR CHAMBER DIMENSIONS AS NOTED ARE MINIMUM DIMENSIONS FOR EACH WATER SERVICE DIAMETER.
   - 1.3. DIMENSIONS "C" AND "E" FOR THE STRAIGHT LENGTHS UPSTREAM AND DOWNSTREAM OF THE METER ARE MINIMUM LENGTHS FOR EACH METER TYPE AND SERVICE DIAMETER AND MUST BE ADHERED TO.
   - 1.4. NO OTHER PIPING OR FITTINGS SHALL BE INSTALLED IN THE CHAMBER THAT MAY INTERFERE WITH THE CLEAR SPACE IN FRONT OF THE WATER METER OR THE OPERATIONS OF VALVES OR THAT MAY OBSTRUCT THE METER OR VALVES IN ANY WAY.
   - 1.5. MINIMUM SURFACE GRADE AT METER CHAMBER LOCATION TO BE 1.0%.
   - 1.6. BACK-FLOW PREVENTER MAY BE REQUIRED. CONSULT WITH BUILDING SERVICES.
   - 1.7. METER READER TO BE MOUNTED TO A 100mmX100mm PRESSURE TREATED POST IN AN ACCESSIBLE LOCATION NO GREATER THAN 9.0m FROM THE CHAMBER.
2. PRE-CAST CHAMBER:
   - 2.1. PRE-CAST SECTIONS TO BE AS PER OPSS 1351 AND CSA A257.4.
   - 2.2. SUPPLIER OF PRE-CAST CHAMBER MUST VERIFY SITE CONDITIONS. THE REQUIRED SOIL BEARING CAPACITY MUST BE INSPECTED, AND THE REQUIRED BEARING CAPACITY MUST BE CONFIRMED BY A LICENSED SOIL ENGINEER.
   - 2.3. CONCRETE FOR PRE-CAST CHAMBER TO BE 35 MPa.
   - 2.4. REINFORCEMENT FOR PRE-CAST CHAMBER MUST SHALL BE TO THE LATEST VERSION OF APPLICABLE CSA STANDARDS.
   - 2.5. PRE-CAST CHAMBER SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN ONTARIO.
   - 2.6. ALL CONCRETE SHALL BE C-1 EXPOSURE CLASS.
   - 2.7. LOADING REQUIREMENTS FOR PRE-CAST CHAMBER:
     - 2.7.1. SUPERIMPOSED DEAD LOAD FROM SOIL COVER = 13.2kPA; LIVE LOAD = CSA S6-14, CANADIAN HIGHWAY BRIDGE DESIGN CODE (CHBDC), CL-625-ONT TRUCK LOADING.
     - 2.7.2. SIDE WALL LOADING-TYPICAL: SURCHARGE LIVE LOAD = CHBDC CL-625-ONT TRUCK LOADING.
     - 2.7.3. CHAMBER TO RESIST UPLIFT FROM EXTERNAL GROUNDWATER ELEVATION AT FINISHED GRADE. ONLY MASS OF CHAMBER, SOIL ON ROOF, AND SOIL DIRECTLY ABOVE BASE SLAB TOE PROJECTION MAY BE USED TO RESIST HYDROSTATIC UPLIFT.
   - 2.8. LIFTING HOOKS SHALL INSTALLED ON THE UNDERSIDE OF THE CHAMBER CEILING AT THE LOCATIONS AS INDICATED ON THE DRAWING. EACH LIFTING HOOK IS TO HAVE A 65mmØ EYE AND IS TO BE SUITABLE FOR LIFTING A WATER METER WITH A MASS OF UP TO 410 kg. ALL EXPOSED METAL SHALL BE STAINLESS STEEL OR HOT DIP GALVANIZED AFTER FABRICATION. LIFTING HOOKS AND ANCHORAGE SHALL BE COORDINATED WITH THE CHAMBER STRUCTURAL DESIGN AND DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN ONTARIO.
   - 2.9. FLOOR TO SLOPE TO SUMP = 2%.
   - 2.10. ALL MORTAR MIX TO BE 1:3.
   - 2.11. ALL JOINTS AND LIFT HOLES IN CHAMBER SECTIONS TO BE FILLED WITH MORTAR BEFORE BACKFILLING.
   - 2.12. ALL EXTERIOR AND INTERIOR BRICKWORK AND FRAME ADJUSTMENT RINGS TO BE PARGED TO A MINIMUM 15 mm THICKNESS.
   - 2.13. ALL JOINTS, RISER SECTIONS, AND FRAME ADJUSTMENT RINGS SHALL BE SEALED ON THE OUTSIDE WITH WATERPROOF MEMBRANE "MEL-ROL" BY W.R. MEADOWS , "BLUESKIN WP200" BY HENRY OF MILTON, ONTARIO, OR APPROVED EQUAL. EXTEND COMPLETELY AROUND ALL RISER SECTION JOINTS WITH A MINIMUM 300mm WIDE STRIP.
   - 2.14. ALUMINUM LADDER AS PER OPSD 406.010 AT 300mm CENTRE TO CENTRE WITH FIRST STEP TO BE 300mm BELOW FRAME.
   - 2.15. THE WORDS "WATER METER" SHALL BE CAST ONTO THE SURFACE OF THE CHAMBER COVER USING MINIMUM 50 mm HIGH LETTERS.
   - 2.16. ALL INSULATION TO BE RIGID TYPE EXPANDED STYRENE INSULATION (DOW HI-100 OR APPROVED EQUAL). ALL CHAMBER INSULATION TO BE INSTALLED WITH CONSTRUCTION ADHESIVE AND TAPCON ANCHORS AT MAX 600mm SPACING IN ALL DIRECTIONS (MINIMUM 2 ANCHORS PER SHEET OF INSULATION) WITH PROTECTION BOARD (CEMENT BOARD) AND WATERPROOFING.
   - 2.17. CHAMBER TO BE PLACED ON 150mm CLEAR-STONE BEDDING WRAPPED ON ALL SIDES IN FILTER CLOTH (TERRAFIX 270R OR APPROVED EQUAL).
   - 2.18. CHAMBER EXCAVATION TO BE BACKFILLED WITH UNSHRINKABLE FILL ON ALL SIDES TO THE SPRINGLINE OF THE WATER SERVICE. INSTALL POLYETHELYNE BOND BREAKER BETWEEN UNSHRINKABLE FILL AND WATERMAIN / APPURTENANCES. BACKFILL REMAINDER OF EXCAVATION WITH GRANULAR B TYPE II COMPACTED TO 98% SPMDD.
3. WATERMAIN PIPING AND APPURTENANCES:
   - 3.1. WATERMAIN PIPING THROUGH CHAMBER (FROM FIRST JOINT OUTSIDE OF CHAMBER AND THROUGH CHAMBER) TO BE DUCTILE IRON (DI) TO ANSI/AWWA C150, C110 AND/OR C115.
   - 3.2. PIPE FLANGES AND JOINTS TO BE COMPATIBLE IN EVERY RESPECT WITH FLANGES AND JOINTS OF FITTINGS AND APPURTENANCES.
   - 3.3. ALL JOINTS SHALL BE RESTRAINED.
   - 3.4. ALL METAL PIPE AND FITTINGS TO BE COMPLETELY PROTECTED WITH DENSO PASTE, DENSO MASTIC AND DENSO TAPE (OR APPROVED EQUAL) INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
   - 3.5. PROVIDE CONCRETE SUPPORTS AS INDICATED ON DRAWING.
   - 3.6. POLYETHYLENE BOND BREAKER TO BE USED BETWEEN CONCRETE AND PIPE / FITTINGS/APPURTENANCES.
   - 3.7. TAPPING VALVE AND VALVE BOX TO BE AS PER CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS. VALVE TO BE FLANGE X MECHANICAL JOINT RESTRAINED AND SUITABLE FOR USE WITH TAPPING SLEEVE.
   - 3.8. SERVICE SADDLES TO BE AS PER CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS.
   - 3.9. GATE VALVES AND VALVE BOXES TO BE AS PER CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS. GATE VALVES TO BE MECHANICAL JOINT X MECHANICAL JOINT RESTRAINED.
   - 3.10. RESTRAINED COUPLING TO BE TO BE SMITH-BLAIR 470 SERIES, GEORG FISCHER MULTIJOINT 3000 PLUS, ROMAC ALPHA, HYMAX GRIP OR APPROVED EQUAL. COUPLING SHALL BE SUITABLE FOR PIPE MATERIALS AND DIAMETERS USED.
   - 3.11. THE CITY WILL DETERMINE WATER METER SIZE BASED ON INFORMATION PROVIDED BY APPLICANT. CONSULT WITH WATER SERVICES.
   - 3.12. RESTRAINED FLANGE COUPLING ADAPTOR TO BE SMITH BLAIR 911, GEORG FISCHER MULTIJOINT 3057, ROMAC ALPHA FC, HYMAX GRIP FLANGE ADAPTOR OR APPROVED EQUAL.
   - 3.13. A CHECK VALVE IS REQUIRED AT THE CITY'S REQUEST FOR EXISTING LOOPED SYSTEMS AND FUTURE PLANNED LOOPED SYSTEMS. TO BE SWING TYPE BY MUELLER CANADA (OR APPROVED EQUAL).
   - 3.14. DRAIN VALVE TO BE 50mm THREADED, STAINLESS STEEL, SPRING RETURN 1000 WAG BALL VALVE (OR APPROVED EQUAL) WITH PTFE SEALS AND SEATS, WITH 50mm SERVICE SADDLE (REFER TO CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS FOR APPROVED SERVICE SADDLE PRODUCT LIST). DRAIN VALVE DISCHARGE TO BE FITTED WITH A THREADED CAP/PLUG.
   - 3.15. TRACER WIRE TO BE 8 GAUGE TWU MULTI-STRAND COPPER WIRE TO BE INSTALLED IN ACCORDANCE WITH CITY STANDARDS SD-54a AND SD-54b.
4. OPTIONS:
   - 4.1. IF OWNER REQUIRES A WATER METER BY-PASS, THIS WILL REQUIRE A SPECIAL DESIGN TO BE PREPARED BY A PROFESSIONAL ENGINEER RETAINED BY THE OWNER. THE DESIGN MUST BE APPROVED BY THE CITY. A SECOND WATER METER WILL BE REQUIRED ON THE BY-PASS LINE; NO UNMETERED BY-PASSES WILL BE PERMITTED.
   - 4.2. OWNER MAY INSTALL A SAMPLE LINE FROM THE DRAIN VALVE TO THE SURFACE. DETAILS MUST BE PROVIDED BY THE OWNER AND APPROVED BY THE CITY.



DETAIL TYPICAL INTERCEPTOR SWALE c/w ROCK CHECK DAM. 1

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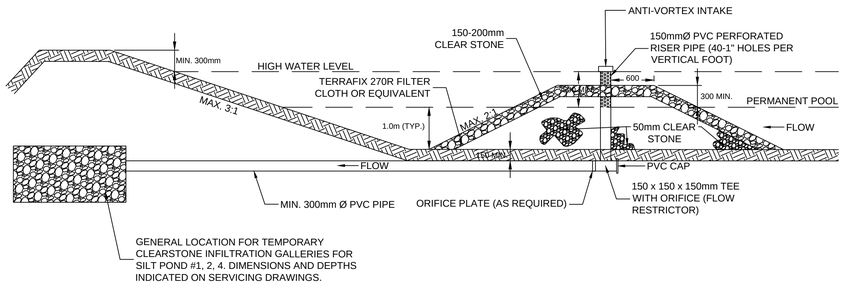

DETAIL TEMPORARY SEDIMENT POND AND OUTLET DETAILS 2

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PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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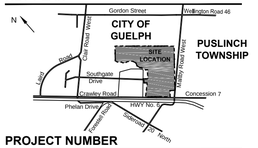

PROJECT NUMBER

60682143

SHEET TITLE

GENERAL CIVIL DETAILS

SHEET NUMBER

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GENERAL NOTES

1. ALL DIMENSIONS ARE SHOWN IN METERS UNLESS NOTED OTHERWISE.
2. TOPOGRAPHIC SURVEY MAY NOT BE COMPLETE OR ACCURATE. CONTRACTOR TO VERIFY EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.
3. ALL DIMENSIONS AND INFORMATION SHALL BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES MUST BE REPORTED TO THE CONSULTANT. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCH-MARKS, ELEVATIONS, DIMENSIONS AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE CONSULTANT. AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.
4. PROJECT CONTROL SHALL BE FIELD VERIFIED AND CHECKED FOR RELATIVE VERTICAL POSITION BASED ON THE BENCHMARK(S) STATED HEREON, PRIOR TO BEGINNING CONSTRUCTION LAYOUT.
5. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION ONLY AND ARE NOT GUARANTEED TO BE COMPLETE OR ACCURATE. CONTRACTOR SHALL VERIFY ELEVATIONS, PIPE SIZE, AND MATERIAL TYPES OF ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING WITH CONSTRUCTION AND SHALL BRING ANY DISCREPANCIES TO THE ATTENTION OF THE TESTING AGENCY, 72 HOURS PRIOR TO START OF CONSTRUCTION TO PREVENT GRADE AND ALIGNMENT CONFLICTS.
6. CONTRACTOR SHALL PRESERVE AND PROTECT FROM DAMAGE ALL EXISTING SURVEY MONUMENTATION DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PAYING FOR THE REPLACEMENT OF ANY MONUMENTS DAMAGED OR REMOVED DURING CONSTRUCTION. NEW MONUMENTS SHALL BE REESTABLISHED BY A LICENSED ONTARIO LAND SURVEYOR.
7. BUILDING SETBACK DIMENSIONS FROM PROPERTY LINES SHALL HOLD OVER ALL OTHER CALLOUTS. PROPERTY LINES AND ASSOCIATED BUILDING SETBACKS SHALL BE VERIFIED PRIOR TO CONSTRUCTION LAYOUT.
8. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LOCAL MUNICIPALITY STANDARDS, APPLICABLE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS & STANDARD DRAWINGS, AND ONTARIO BUILDING CODE.
9. THE COMPLETED INSTALLATION SHALL CONFORM TO ALL APPLICABLE FEDERAL, PROVINCIAL, AND LOCAL CODES, ORDINANCES AND REGULATIONS. ALL PERMITS, LICENSES AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES FOR THE EXECUTION AND COMPLETION OF WORK SHALL BE SECURED BY THE CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION.
10. CONTRACTOR SHALL MAINTAIN ALL UTILITIES TO ADJACENT FACILITIES AT ALL TIMES DURING CONSTRUCTION.
11. THE CONSULTANT OR OWNER IS NOT RESPONSIBLE FOR THE SAFETY OF THE CONTRACTOR OR HIS CREW. ONTARIO'S OH&S ACT AND REGULATIONS SHALL BE STRICTLY ADHERED TO IN THE PERFORMANCE OF THE WORK.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND SCHEDULING ALL WORK WITH TESTING AGENCY.
13. CONTRACTOR SHALL NOTIFY THE OWNER, THE CONSULTANT, THE TESTING AGENCY AND ALL APPLICABLE LOCAL AGENCIES / INSPECTORS 120 HOURS BEFORE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, THE CONSULTANT, THE TESTING AGENCY, THE CONTRACTOR AND THE LOCAL MUNICIPALITY.
14. THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL STAMPED BY THE CONSULTANT & APPROVED BY MUNICIPALITY.
15. ALL DRAWINGS REMAIN THE PROPERTY OF THE CONSULTANT AND MAY NOT BE REPRODUCED OR REVISED WITHOUT THE CONSULTANTS WRITTEN PERMISSION.
16. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION WITHIN THE ROAD ALLOWANCE, THE CONTRACTOR SHALL OBTAIN A WORK PERMIT FROM THE MUNICIPALITY WITH THE REQUIRED SECURITIES.
17. MAINTAIN ALL TRAFFIC & PEDESTRIAN TRAVEL IN AND AROUND THE WORK AREA AT ALL TIMES FOR THE DURATION OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN TO MUNICIPALITY FOR REVIEW AND APPROVAL PRIOR TO COMMENCING CONSTRUCTION.
18. ALL WORK INVOLVED IN THE CONSTRUCTION, RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROJECT SHALL BE TO THE SATISFACTION OF THE MUNICIPALITY.
19. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
   - BUILDING PERMIT
   - ROAD CUT PERMITS
   - APPROACH APPROVAL PERMITS
   - COMMITTEE OF ADJUSTMENT
   - SEWER AND WATER PERMITS
   - RELOCATION OF SERVICES
   - ENCROACHMENT AGREEMENTS (IF REQUIRED)
20. TREE PRESERVATION FENCING TO BE INSTALLED AND INSPECTED PRIOR TO ANY REMOVAL OR COMMENCEMENT OF SITE WORK. REFER TO LANDSCAPE DRAWING FOR DETAILS.
21. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH "AS-CONSTRUCTED" INFORMATION.

EROSION AND SEDIMENT CONTROL (ESC) NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES.
2. CONTRACTOR TO HOLD A PRE-CONSTRUCTION MEETING INCLUDING ALL RELEVANT PROJECT CONSTRUCTION PERSONNEL, INCLUDING THE TESTING AGENCY, TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS.
3. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH LOCAL AND PROVINCIAL REQUIREMENTS.
4. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH LOCAL AND PROVINCIAL REQUIREMENTS.
5. RETAIN A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN (ESCP) AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO THE PROVINCIAL OR LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE CONTRACTOR AND/OR PERMIT REGISTRANT (IF PERMIT IS REQUIRED), BUT DO NOT NEED TO BE AT THE CONSTRUCTION SITE.
6. ALL CONTRACTORS AND/OR PERMIT REGISTRANTS (IF PERMIT IS REQUIRED) MUST IMPLEMENT THE EROSION AND SEDIMENT CONTROL PLANS. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE EROSION AND SEDIMENT CONTROL PLANS IS A VIOLATION OF THE PERMIT.
7. THE EROSION AND SEDIMENT CONTROL PLANS MUST BE ACCURATE AND REFLECT SITE CONDITIONS.
8. THE EROSION AND SEDIMENT CONTROL PLANS MAY BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION.
9. ALTERNATIVE EROSION CONTROL MEASURES MUST BE REVIEWED AND APPROVED BY THE CONSULTANT AND THE MUNICIPALITY BEFORE IMPLEMENTATION.
10. ALL BASE ESC MEASURES, MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.
11. INLET PROTECTION SHALL BE RE-INSTALLED IMMEDIATELY FOLLOWING PAVING ACTIVITIES OR ADJUSTMENT OF FRAME AND GRATES.
12. EROSION & SEDIMENT CONTROL MEASURES TO BE IMPLEMENTED IN ACCORDANCE WITH APPLICABLE CONSERVATION AUTHORITY, AS WELL AS ALL APPLICABLE MUNICIPAL STANDARDS AND SPECIFICATIONS.
13. SITES MAY REQUIRE DIVERSION SWALES AND TEMPORARY SEDIMENTATION BASINS UNLESS IT IS SHOWN THAT THE EROSION INDEX FACTOR IS LOW ENOUGH THAT SUCH A FACILITY IS NOT WARRANTED.
14. SILT FENCING, AS PER CITY OF GUELPH STD. DWG 6-74b, TO BE INSTALLED PRIOR TO COMMENCEMENT OF ANY AREA GRADING OR EXCAVATING WORKS. EROSION CONTROL FENCING TO BE PLACED AROUND THE BASE OF ALL STOCKPILES. ALL STOCKPILES MUST BE KEPT A MINIMUM DISTANCE OF 2.5m FROM ALL PROPERTY LINES AND 15m AWAY FROM ALL WATER COURSES.
15. EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY BY CONTRACTOR AND ANY DAMAGE REPAIRED IMMEDIATELY. SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF ONE THIRD (1/3) THE HEIGHT OF THE SILT FENCE.
16. MUD MATS TO BE PROVIDED ON SITE AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES EXIT THE SITE. MUD MATS SHALL BE AS PER CITY OF GUELPH STD. DWG 5-45. CONTRACTOR TO ENSURE ALL VEHICLES LEAVE THE SITE VIA THE MUD MAT AND THAT THE MAT IS MAINTAINED IN A MANNER TO MAXIMIZE ITS EFFECTIVENESS AT ALL TIMES.
17. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY.
18. CONSTRUCTION ENTRANCES SHALL BE ADJUSTED AS NECESSARY DURING CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, STREET SWEEPING, AND VACUUMING, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
19. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING APPROPRIATE METHODS SUCH AS: CONSTRUCTION ENTRANCES, MUD MATS, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, TEMPORARY GRAVEL ROADS LOCATED WITHIN THE SITE, OR EXIT TIRE WASH STATIONS. THESE PROCEDURES MUST BE IN PLACE PRIOR TO LAND DISTURBING ACTIVITIES.
20. THE CONTRACTOR IS RESPONSIBLE FOR THE MUNICIPAL AND/OR REGION OWNED ROADWAYS TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING AT THE END OF EACH WORK DAY.
21. ANY MUD / MATERIAL TRACKED ONTO ROADWAYS SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE EQUIPMENT.
22. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE.
23. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK.
24. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
25. CONTRACTOR SHALL SUBMIT A PLAN INDICATING THE CONTROL AND DISPOSAL METHODS OF PROHIBITED MATERIALS, AS PER MUNICIPAL REQUIREMENTS. CONTROL PROHIBITED DISCHARGES SUCH AS CONCRETE WASH-OUT AND WASTEWATER FROM CLEANOUT OF STUCCO, PAINT, AND CURING COMPOUNDS FROM LEAVING THE CONSTRUCTION SITE AT ALL TIMES AS PER THE APPROVED PLAN.
26. PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS.
27. IMPLEMENT THE FOLLOWING PROCEDURES WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
28. FUEL STORAGE AND FUELING ON SITE ARE NOT ALLOWED.
29. DURING CONSTRUCTION MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE. PROTECT ALL DISTURBED AREAS FROM RUNOFF.
30. CONTRACTOR TO PRESERVE VEGETATION ON STEEP SLOPES UNTIL IT BECOMES NECESSARY TO DISTURB FOR CONSTRUCTION.
31. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND DURING WET WEATHER.
32. PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREAS WILL NOT BE REHABILITATED WITHIN 30 DAYS.
33. USE WATER, SOIL-BINDING AGENTS, OR OTHER DUST CONTROL TECHNIQUES AS REQUIRED TO CONTROL WIND-BLOWN DUST AND SOIL TO ACCEPTABLE LEVELS.
34. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. REFER TO LANDSCAPING SPECIFICATIONS IF APPLICABLE.
35. INSPECT CATCH BASIN TREATMENT AND CATCH BASIN SUMPS WEEKLY AND AFTER EVERY STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY. CLEAN CATCH BASINS BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT.
36. REMOVE TRAPPED SEDIMENTS FROM SEDIMENT BASINS AND SEDIMENT TRAPS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT.
37. SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE MUST BE REMEDIATED WITHIN 24 HOURS. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT ADDITIONAL CONTROLS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE PROVINCIAL AND LOCAL AUTHORITIES TIMEFRAME.
38. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS BY THE CONTRACTOR AT HIS OWN EXPENSE.
39. CONTRACTOR TO TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIALS, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS THAT HAVE BEEN AFFECTED.
40. ALL EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED WITH PAVEMENT OR GROUND COVER AND VEGETATION HAS BEEN ESTABLISHED.
41. AT THE COMPLETION OF CONSTRUCTION, AND ONCE ALL DISTURBED AREAS HAVE BEEN REHABILITATED AND STABILIZED, REMOVE FILTER CLOTHS AND CATCHBASIN TREATMENT ON CATCH BASINS AND MANHOLE COVERS. INSPECT AND CLEAN CATCH BASIN SUMPS AND SEWERS.

CONSTRUCTION NOTES

PROJECT NOTES

1. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE FOLLOWING ADDITIONAL INFORMATION:
   A. SITE PLAN PREPARED BY AECOM CANADA LTD., DATED MARCH 2023.
   B. STORMWATER MANAGEMENT REPORT BY AECOM CANADA LTD., DATED MARCH 2023.
   C. FUNCTIONAL SERVICING REPORT BY AECOM CANADA LTD., DATED MARCH 2023.
   D. GEOTECHNICAL INVESTIGATION COMPLETED BY PETO MACALLUM LTS., DATED JULY 2006.
2. SURVEY AND ELEVATIONS:
   A. TOPOGRAPHIC SURVEY COMPLETED BY AECOM CANADA LTD., DATED AUGUST 2022 AND OCTOBER 2022.
      i. CITY OF GUELPH BENCHMARK #387. BENCHMARK ELEVATION:338.980.

GENERAL

OPSS AND OPSD REFER TO ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS. SSMS REFERS TO REGION OF WATERLOO AND AREA SUPPLEMENTAL SPECIFICATIONS FOR MUNICIPAL SERVICES. COG REFERS TO CITY OF GUELPH DEVELOPMENT ENGINEERING MANUAL AND LINEAR INFRASTRUCTURE STANDARDS.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST MUNICIPAL STANDARDS AND SPECIFICATIONS.
2. ALL MATERIALS SHALL BE NEW. THE USE OF MANUFACTURER'S NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, AND USEFULNESS. PROPOSED SUBSTITUTIONS WILL REQUIRE WRITTEN APPROVAL FROM TESTING AGENCY PRIOR TO INSTALLATION.
3. ALL BEDDING, COVER MATERIAL AND EMBEDMENT MATERIAL TO BE COMPACTED GRANULAR 'A' UNLESS NOTED OTHERWISE.
4. EARTH FILL MATERIALS TO BE COMPACTED TO AT LEAST 95% STANDARD PROCTOR DENSITY (SPD), UNLESS OTHERWISE INDICATED IN THE LATEST GEOTECHNICAL REPORT. GRANULAR MATERIALS TO BE COMPACTED TO 100% SPD, UNLESS OTHERWISE INDICATED IN THE LATEST GEOTECHNICAL REPORT. FLOODING OR JETTING THE BACKFILLED TRENCHES WITH WATER IS NOT PERMITTED.
5. ALL BEDDING, GRANULAR BASE AND THRUST BLOCKING TO BE FOUNDED ON COMPETENT SOIL.
6. PLACEMENT OF GRANULAR MATERIALS 'A' AND 'B' ARE TO BE IN COMPLIANCE WITH OPSS 102, OPSS 314 AND OPSS 501. PLACEMENT OF RIP RAP TO BE IN COMPLIANCE WITH OPSS 511. PLACEMENT OF HOT MIX-HOT LAID ASPHALT ARE TO BE IN COMPLIANCE WITH OPSS 102 AND 310.
7. GRADING AND COMPACTION METHODS ARE TO BE IN COMPLIANCE WITH THE LATEST GEOTECHNICAL REPORT., OPSS.MUNI 206, OPSS.MUNI 314 AND OPSS.MUNI 501.
8. ALL SURPLUS MATERIALS NOT DESIGNATED FOR SALVAGE TO BE DISPOSED OF OFF-SITE BY CONTRACTOR. PROVIDE PROPERTY OWNER RELEASE FORM TO SATISFACTION OF THE TESTING AGENCY.
9. CONCRETE FOR CURBS, SIDEWALK AND DRIVEWAYS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH AS SPECIFIED.
10. SPECIAL INSPECTION BY THE GEOTECHNICAL ENGINEER REQUIRED FOR ALL COMPACTION TESTING.
11. SUBGRADE INSPECTION BEFORE PLACING GRANULAR BASE SHALL BE COMPLETED BY GEOTECHNICAL ENGINEER.

DEMOLITION

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND DISPOSAL OF EXISTING AC, CURBS, SIDEWALKS AND OTHER SITE ELEMENTS WITHIN THE SITE AREA AS IDENTIFIED IN THE PLANS.
2. EXCEPT FOR MATERIALS INDICATED TO BE STOCKPILED OR TO REMAIN ON OWNER'S PROPERTY, CLEARED MATERIALS SHALL BECOME CONTRACTOR'S PROPERTY, REMOVED FROM THE SITE, AND DISPOSED OF PROPERLY. CONTRACTOR SHALL PROVIDE LOCATION OF DISPOSAL SITES AND APPROPRIATE RELEASE FORMS FROM LAND OWNERS ACCEPTING THE MATERIAL AT THE COMPLETION OF THE PROJECT.
3. ITEMS INDICATED TO BE SALVAGED SHALL BE CAREFULLY REMOVED AND STORED AT THE PROJECT SITE AS DIRECTED BY THE TESTING AGENCY.
4. ALL LANDSCAPING, PAVEMENT, CURBS AND SIDEWALKS, BEYOND THE IDENTIFIED SITE AREA, DAMAGED DURING THE CONSTRUCTION SHALL BE REPLACED TO THEIR ORIGINAL CONDITION OR BETTER.
5. SAWCUT STRAIGHT MATCHLINES TO CREATE A BUTT JOINT BETWEEN THE EXISTING AND NEW PAVEMENT

UTILITIES

1. ADJUST ALL INCIDENTAL STRUCTURES, MANHOLES, VALVE BOXES, CATCH BASINS, FRAMES AND COVERS TO FINISHED GRADE.
2. CONTRACTOR SHALL ADJUST ALL EXISTING AND/OR NEW FLEXIBLE UTILITIES (WATER, TV, TELEPHONE, ETC.) TO CLEAR ANY EXISTING OR NEW GRAVITY DRAIN UTILITIES (STORM DRAIN, SANITARY SEWER, ETC.) WHERE CONFLICT OCCURS.
3. CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES FOR THE INSTALLATION OF OR ADJUSTMENT TO NATURAL GAS, ELECTRICAL, COAXIAL, FIBRE OPTIC, AND TELEPHONE SERVICES.
4. BEFORE BACKFILLING ANY SUBGRADE UTILITY IMPROVEMENTS CONTRACTOR SHALL SURVEY AND RECORD MEASUREMENTS OF EXACT LOCATION AND DEPTH OF UTILITIES AND SUBMIT TO TESTING AGENCY.
5. ALL WORK TO CONFORM TO OPSD STANDARDS, ONTARIO BUILDING CODE, AND THE LOCAL MUNICIPALITY AND/OR REGION.
6. CONTRACTOR TO SUPPORT AND PROTECT EXISTING UTILITIES DURING CONSTRUCTION TO THE SATISFACTION OF THE UTILITY COMPANY.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES, SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE, BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWINGS, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

SEWER

1. MANHOLE FRAME AND COVERS TO BE OPSD 401.010 TYPE 'A', UNLESS SPECIFIED OTHERWISE BY LOCAL MUNICIPALITY.
2. CATCH BASIN AND CATCHBASIN MANHOLE FRAMES AND GRATES TO BE OPSD 400.100, UNLESS SPECIFIED OTHERWISE BY LOCAL MUNICIPALITY.
3. FRAME AND COVERS AND FRAME AND GRATES TO BE INSTALLED WITH MINIMUM OF ONE ADJUSTMENT UNIT (75mm) TO A MAXIMUM OF 3 ADJUSTMENT UNITS (300mm), AND BE INSTALLED AS PER OPSD 704.010.
4. PRECAST CONCRETE STRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 407, OPSD 704.010-704.012 AND SHALL INCLUDE FRAME AND GRATE AND OTHER APPURTENANCES:
   A. MAINTENANCE HOLES AND CATCHBASIN MAINTENANCE HOLES:
   - 1200Ø - PER OPSD 701.010, 701.030, 701.031.
   - 1500Ø - PER OPSD 701.011, 701.040, 701.041.
   - BENCHING ACCORDING TO OPSD 701.021.
   - STEPS TO BE HOLLOW CIRCULAR ALUMINUM PER OPSD 405.010.
   B. CATCHBASINS:
   - SINGLE: OPSD 705.010, STD 1680mm HEIGHT, MIN. 250mm DIAMETER LEAD AT 1.0%, 600mm SUMP.
   - DOUBLE: OPSD 705.020, STD 1680mm HEIGHT, MIN. 300mm DIAMETER LEAD AT 1.0%.
   - DITCH INLET: OPSD 705.030.
   C. FRAMES & GRATES
   - SSMS E4-01, CATCHBASIN FRAME AND GRATE
   - OPSD 401.010, MAINTENANCE HOLE COVER, TYPE A "CLOSED" (SANITARY), TYPE B "OPEN" (STORM)
   - COG SD 2-16, DITCH INLET CATCHBASIN GRATE
5. SEWERS SHALL BE INSTALLED IN ACCORDANCE WITH OPSS MUNI 410 AND SSMS SECTION D.3, CLASS "B" BEDDING. ALL PIPES SHALL INCLUDE REQUIRED COUPLER GASKETS. CONNECTIONS TO MANHOLES SHALL BE PER OPSD 708.020.
   PVC PIPE WITH BEDDING AND COVER MATERIAL PER OPSD 802.010 TO 802.024.
   - <200mm DIAMETER - DR-28 PER CSA B182.2
   - ≤450mm DIAMETER - DR-35 PER CSA B182.2
   RIGID (CONCRETE) PIPE WITH BEDDING AND COVER MATERIAL PER OPSD 802.030
   - >450mm DIAMETER - CONCRETE CLASS 65-D
   FORCEMAIN
   - <300mm DIAMETER - DR-18 PER AWWA C900
7. INTERNAL JOINTS IN PRECAST SECTIONS SHALL BE MORTARED AND BRUSHED FINISHED AND ALL LIFT HOLES COMPLETELY FILLED WITH MORTAR.
8. FOR PIPES INSTALLED WITH LESS THAN 1.2m COVER, REFER TO OPSD 3090.101, AND PROVIDE INSULATION COVER IN ACCORDANCE WITH STANDARDS. PROVIDE FROST TAPERS IN ACCORDANCE WITH OPSD 803.030 USING COMPACTED GRAN "A" BACKFILL, EXCEPT IN LANDSCAPED AREAS.
9. SHOP DRAWINGS TO BE PROVIDED, AT A MINIMUM, FOR ALL STRUCTURES INCLUDING CATCH BASINS, CATCH BASIN MANHOLES, MANHOLES, OUTLET STRUCTURES, UNDERGROUND STORAGE TANKS, QUALITY CONTROL STRUCTURES, JERSEY BARRIERS, GUIDE RAIL SYSTEMS, AND RETAINING WALLS.

SURFACE WORKS

1. JOINTS AT EXISTING PAVEMENT SHALL BE SAWCUT AND MILLED IN ACCORDANCE WITH MUNICIPAL STANDARDS.
2. CONCRETE BARRIER CURB WITHIN PHASE 1 SITE WORKS TO BE PER OPSD 600.110. CURBS WITHIN FUTURE SOUTHGATE DRIVE EXTENSION TO BE PER OPSD 600.040, WITH DROP CURBS PROVIDED AT DRIVEWAY ENTRANCE LOCATIONS
3. CONCRETE SIDEWALK AS PER OPSS AND OPSD, UNLESS SPECIFIED OTHERWISE BY LOCAL MUNICIPALITY. SIDEWALKS TO HAVE MINIMUM BEDDING OF 150mm COMPACTED GRANULAR A. CONCRETE SIDEWALK THICKNESS TO BE MINIMUM 125mm. SIDEWALK THICKNESS TO BE INCREASED TO 200mm AT ENTRANCES TO RESIDENTIAL BLOCKS, COMMERCIAL BLOCKS, AND MAINTENANCE ACCESS AREAS.
4. ALL CONCRETE STRENGTH IS 30MPA WITHIN 28 DAYS WITH 6% +/- 1% AIR ENTRAINMENT, UNLESS OTHERWISE STATED.
5. GRASSED AREAS:
   a. 250mm (MIN.) TOP SOIL AND SEED SHALL BE IN ACCORDANCE WITH OPSS.MUNI 802 & 804
   b. 250mm (MIN.) TOP SOIL AND NO.1 NURSERY SOD SHALL BE IN ACCORDANCE WITH OPSS.MUNI 803 & 804.
   c. BOULEVARD TO BE GRADED AND SEEDED OVER 250mm OF TOP SOIL BY OWNER TO THE CITY'S SATISFACTION (IN ACCORDANCE WITH OPSS.MUNI 803 & 804)
6. PAVEMENT STRUCTURE FOR PROPOSED OR RECONSTRUCTED MUNICIPAL ROADWAYS TO BE:
   - 50mm HL3 , PER OPSS 310 COMPACTED TO 92% MRD
   - 90mm HL8, PER OPSS 310 COMPACTED TO 92% MRD
   - 175mm GRAN A BASE, PER OPSS.MUNI 206, 314 COMPACTED TO 98% SPMDD
   - 450mm GRAN B SUBBASE, PER OPSS.MUNI 206, 314 COMPACTED TO 98% SPMDD

LIGHT DUTY
- 50mm HL3, PER OPSS 310 AND COMPACTED TO 92% MRD
- 60mm HL8 (ONE LIFT), PER OPSS 310 AND COMPACTED TO 92% MRD
- 150mm GRAN 'A' BASE, PER OPSS 206, 314 AND COMPACTED TO 98% SPMDD
- 350mm GRAN 'B' SUBBASE, PER OPSS 206, 314 AND COMPACTED TO 98% SPMDD

HEAVY DUTY
- 50mm HL3, PER OPSS 310 AND COMPACTED TO 92% MRD
- 120mm HL8 (TWO LIFTS), PER OPSS 310 AND COMPACTED TO 92% MRD
- 150mm GRAN 'A' BASE, PER OPSS 206, 314 AND COMPACTED TO 98% SPMDD
- 600mm GRAN 'B' SUBBASE, PER OPSS 206, 314 AND COMPACTED TO 98% SPMDD

7. LINE PAINTING SHALL BE IN ACCORDANCE WITH OPSS 710 AND 1716.

WATERMAIN NOTES

1. WATERMAINS SHALL BE INSTALLED IN ACCORDANCE WITH OPSS.MUNI 441 AND SSMS D.2. BEDDING TO BE PER CoG SD 3-29 FOR WATERMAIN.
2. WATERMAINS CLEARANCES AND CROSSINGS PER SECTION 7.3.5.7 OF THE 2012 OBC AND SECTION 15 OF THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT (MOEE, JUNE 2012).
   - MINIMUM 2.5m CLEAR HORIZONTAL FROM ANY SEWER
   - WATERMAINS SHALL CROSS OVER SEWER WITH 0.5m CLEARANCE AND UNDER SEWER WITH 0.5m CLEARANCE, ADEQUATE SUPPORT, AND JOINTS FURTHER THAN 2.44m FROM THE SEWER.
3. WATERMAINS AND SERVICES TO HAVE 2.0m MINIMUM COVER FROM FINAL GRADES
4. WATER SYSTEMS 100mm DIAMETER AND LARGER SHALL BE ISOLATED FROM THE MUNICIPAL WATER SUPPLY WITH A CERTIFIED BACKFLOW PREVENTION DEVICE, AS PER SSMS E2-17, DURING CONSTRUCTION. ALL TESTING, SAMPLING, AND COMMISSIONING ACTIVITIES SHALL BE INCLUDED IN THE SCOPE OF THE WORK BY THE CONTRACTOR AND WITNESSED BY THE OWNER'S REPRESENTATIVE AND THE CONTRACT ADMINISTRATOR.
5. WATERMAINS AND APPURTENANCES SHALL BE FLUSHED AND CHLORINATED IN ACCORDANCE WITH MUNICIPAL STANDARDS.
6. PVC PIPE
   a. 100-300mm DIAMETER - DR-18 PER AWWA C900.
   b. >300mm DIAMETER, DR-25 PER AWWA C900.
7. CATHODIC PROTECTION, ANTI-CORROSION WRAPS FOR WATERMAINS AND FITTINGS SHALL CONFORM AND BE INSTALLED IN ACCORDANCE WITH OPSD1109.0110, OPSD 1109.0120 AND SSMS E2-15.
8. WATER COMMISSIONING AND CHLORINE RESIDUAL MAINTENANCE PLANS TO BE SUBMITTED AS PER SSMS D.2.6.
9. WATERMAINS, JOINTS, AND FITTINGS TO BE SUPPORTED BY CONCRETE THRUST BLOCKS PER CoG SD 4-27.
10. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH COG SD 4-25 AND HAVE 1-100mm NOZZLE WITH STORZ CONNECTION, 2-65mmØ NOZZLES, AND 1-150mm MECHANICAL JOINT OUTLET. HYDRANTS SHALL BE KEPT VISIBLE AND ACCESSIBLE AT ALL TIMES. STORZ CONNECTION SHALL FACE THE OUTLET ROAD.
11. VALVES SHALL BE INSTALLED IN ACCORDANCE WITH OPSD 1101.020 AND SSMS D.2.6.

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AECOM

PROJECT

NEWCOLD GUELPH - TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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NOTE:

IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES, SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

REGISTRATION

[redacted]

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6		
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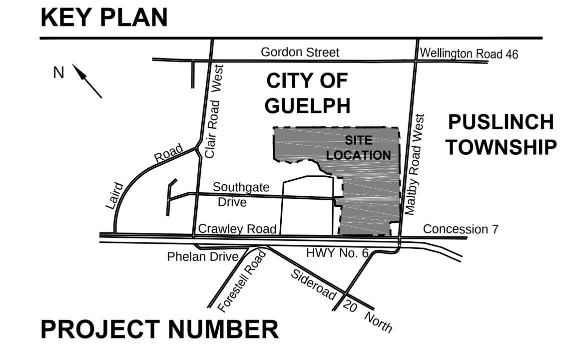
1	2022-04-26	ISSUED FOR SPA - PHASE 1

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

GENERAL CIVIL NOTES

SHEET NUMBER

D-200

Project Management Initials: Designer:AA Checked:AA Approved/AA ARCH D 24" x 36"
Last saved by: WADIS(2023-04-20) Last Plotted: 2023-04-24
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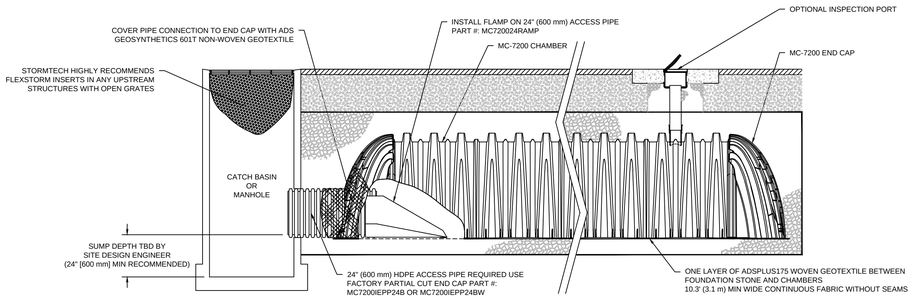


MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

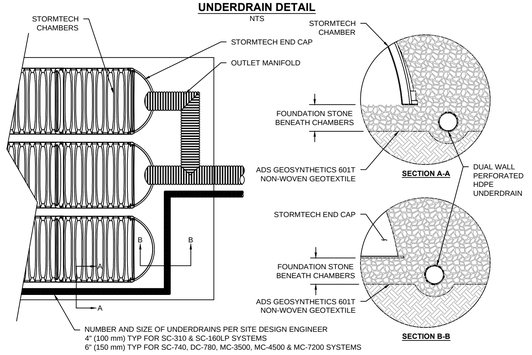
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

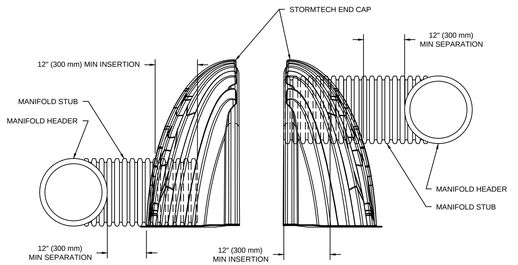
NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

UNDERDRAIN DETAIL
NTS

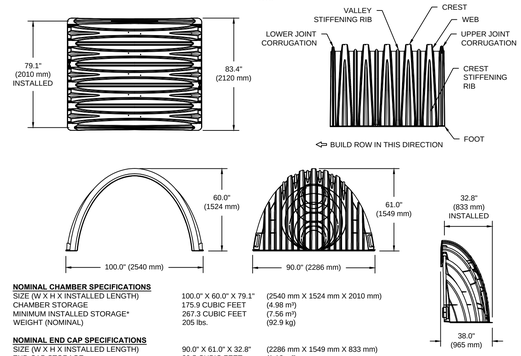


MC-SERIES END CAP INSERTION DETAIL
NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-7200 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
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MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
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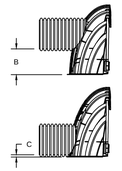
NOTE: ALL DIMENSIONS ARE NOMINAL

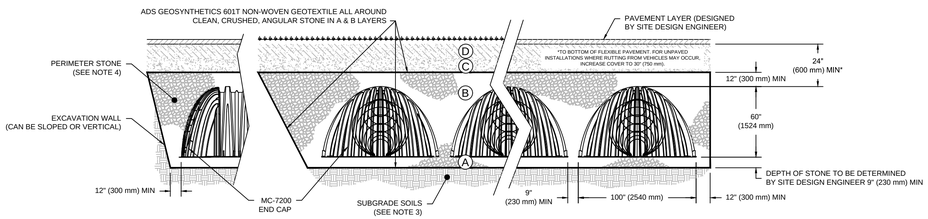


CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



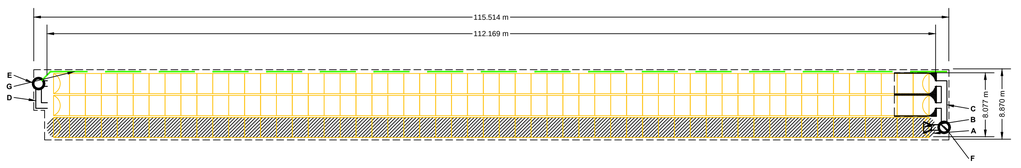
NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/% . THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

PROPOSED LAYOUT: BED 1		CONCEPTUAL ELEVATIONS: BED 1	
359	STORMTECH MC-3500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	3.810
28	STORMTECH MC-3500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	1.981
305	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	1.829
229	STONE BELOW (mm)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	1.829
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	1.829
1896.7	INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	1.676
		TOP OF MC-3500 CHAMBER:	1.372
		600 mm x 600 mm BOTTOM MANIFOLD INVERT:	0.281
		600 mm x 600 mm BOTTOM MANIFOLD INVERT:	0.281
1817.9	SYSTEM AREA (m²)	600 mm ISOLATOR ROW PLUS INVERT:	0.281
227.0	SYSTEM PERIMETER (m)	600 mm ISOLATOR ROW PLUS INVERT:	0.281
		450 mm x 450 mm BOTTOM MANIFOLD INVERT:	0.274
		450 mm BOTTOM CONNECTION INVERT:	0.274
		BOTTOM OF MC-3500 CHAMBER:	0.229
		BOTTOM OF STONE:	0.000

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	600 mm BOTTOM CORED END CAP, PART#: MC3500IEPP24BC / TYP OF ALL 600 mm BOTTOM CONNECTIONS	52 mm	
PREFABRICATED END CAP	B	450 mm BOTTOM CORED END CAP, PART#: MC3500IEPP18BC / TYP OF ALL 450 mm BOTTOM CONNECTIONS	45 mm	
MANIFOLD	C	600 mm x 600 mm BOTTOM MANIFOLD, ADS N-12	52 mm	
MANIFOLD	D	450 mm x 450 mm BOTTOM MANIFOLD, ADS N-12	45 mm	
MANIFOLD	E	600 mm x 600 mm BOTTOM MANIFOLD, ADS N-12	52 mm	
CONCRETE STRUCTURE	F	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		1013 L/s IN
CONCRETE STRUCTURE	G	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		1013 L/s IN
NYLOPLAST (INLET W/ ISO PLUS ROW)	H	750 mm DIAMETER (610 mm SUMP MIN)		311 L/s IN



PLACE MINIMUM 5.334 m OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES
- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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AECOM

PROJECT
NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT
NEWCOLD

CONSULTANT
AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

NOTE:

IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES, SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

REGISTRATION
[redacted]

ISSUE/REVISION

6		
5		
4		
3		
2		
1	2022-04-24	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER
60682143

SHEET TITLE
SWM DETAILS

SHEET NUMBER
D-301

Project Management Initials: Designer: AA Checked: AA Approved: AA ARCH D 24" x 36"
Last saved by: WADIS (2023-04-20) Last Plotted: 2023-04-24
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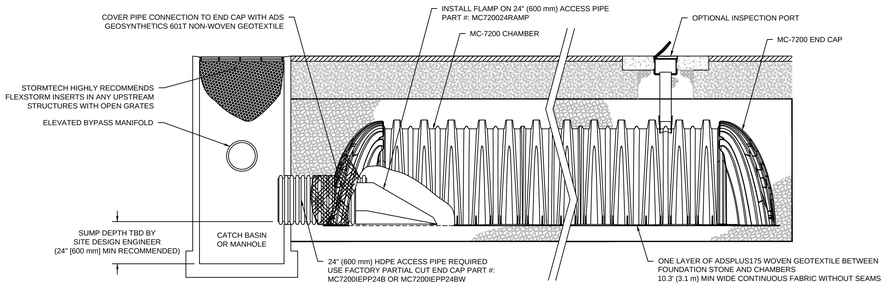


MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

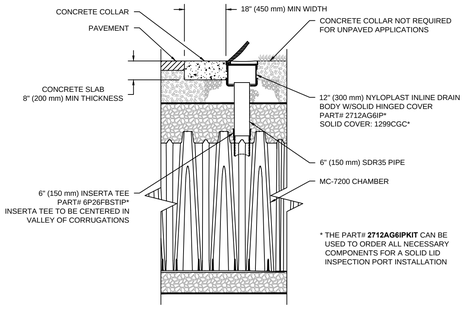
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

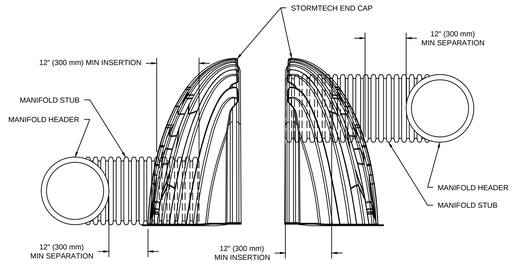
NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-7200 6" (150 mm) INSPECTION PORT DETAIL
NTS

MC-SERIES END CAP INSERTION DETAIL
NTS



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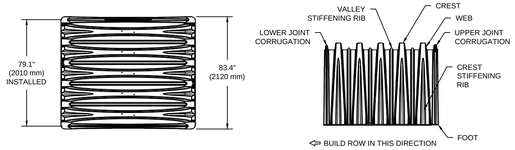

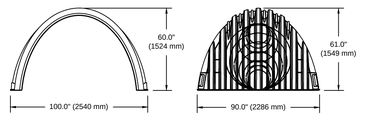

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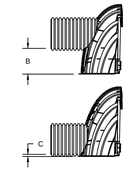

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MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
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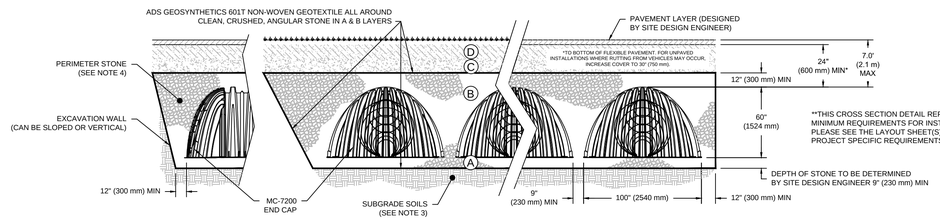
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

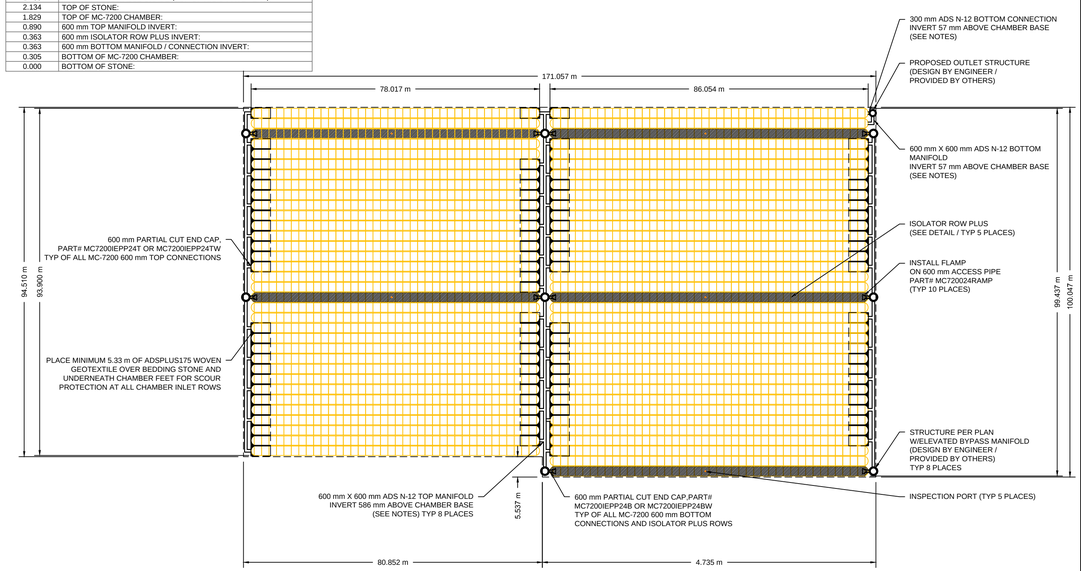
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT/%. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

CONCEPTUAL LAYOUT	
2,804	STORMTECH MC-7200 CHAMBERS
140	STORMTECH MC-7200 END CAPS
305	STONE ABOVE (mm)
305	STONE BELOW (mm)
40	% STONE VOID
22,690.5	**INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED)**
16,666.1	SYSTEM AREA (m²)
542.2	SYSTEM PERIMETER (m)

CONCEPTUAL ELEVATIONS	
3.963	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):
2.591	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):
2.439	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):
2.439	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):
2.439	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):
2.134	TOP OF STONE:
1.829	TOP OF MC-7200 CHAMBER:
0.890	600 mm TOP MANIFOLD INVERT:
0.363	600 mm ISOLATOR ROW PLUS INVERT:
0.363	600 mm BOTTOM MANIFOLD / CONNECTION INVERT:
0.305	BOTTOM OF MC-7200 CHAMBER:
0.000	BOTTOM OF STONE:

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECHNICAL NOTE 6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION**: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.



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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

NOTE:

IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES, SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

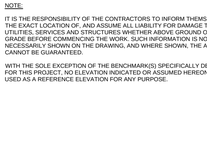
REGISTRATION

[redacted]

ISSUE/REVISION

6		
5		
4		
3		
2		
1	2022-04-24	ISSUED FOR SPA - PHASE 1
I/R	DATE	DESCRIPTION

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SWM DETAILS

SHEET NUMBER

D-302

Project Management Initials: Designer:AA Checked:AA Approved:AA ARCH D 24" x 36"
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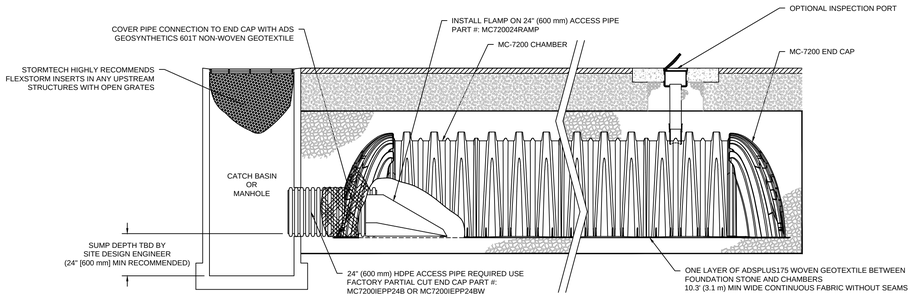

MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
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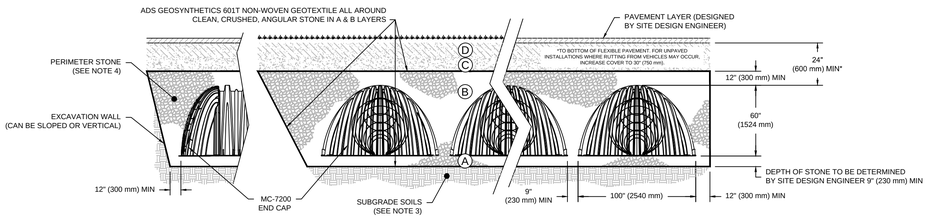

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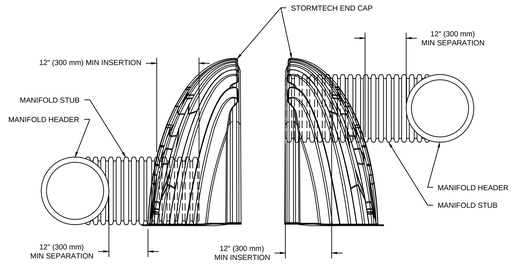
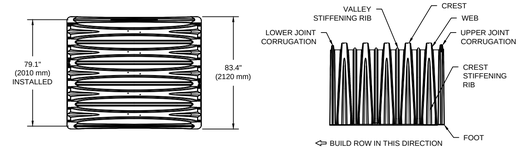
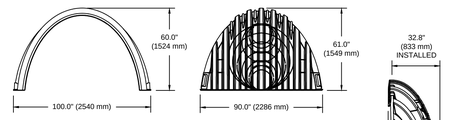
MC-SERIES END CAP INSERTION DETAIL
NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-7200 TECHNICAL SPECIFICATION
NTS





NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

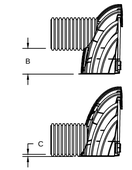
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

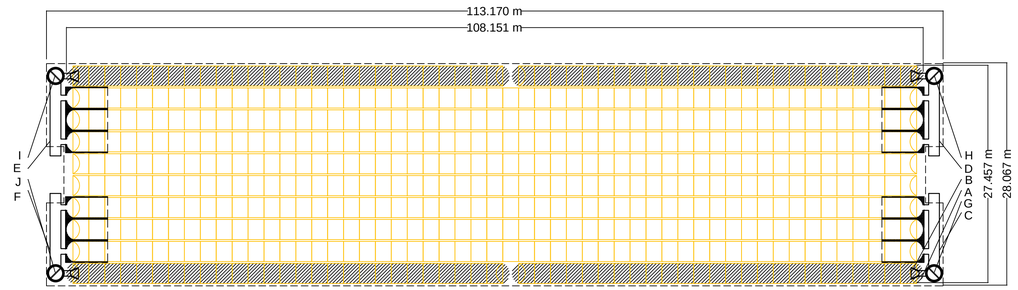


CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

PROPOSED LAYOUT: BED 1		CONCEPTUAL ELEVATIONS: BED 1	
359	STORMTECH MC-3500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	3.810
28	STORMTECH MC-3500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	1.980
305	STONE ABOVE (mm)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	1.829
229	STONE BELOW (mm)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	1.829
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	1.829
1896.7	INSTALLED SYSTEM VOLUME (m³) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	1.676
		TOP OF MC-3500 CHAMBER:	1.372
		600 mm x 600 mm BOTTOM MANIFOLD INVERT:	0.281
		600 mm x 600 mm BOTTOM MANIFOLD INVERT:	0.281
1817.9	SYSTEM AREA (m²)	600 mm ISOLATOR ROW PLUS INVERT:	0.281
227.0	SYSTEM PERIMETER (m)	600 mm ISOLATOR ROW PLUS INVERT:	0.281
		450 mm x 450 mm BOTTOM MANIFOLD INVERT:	0.274
		450 mm BOTTOM CONNECTION INVERT:	0.274
		BOTTOM OF MC-3500 CHAMBER:	0.229
		BOTTOM OF STONE:	0.000

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	600 mm BOTTOM CORED END CAP, PART#: MC3500IEPP24BC / TYP OF ALL 600 mm BOTTOM CONNECTIONS	52 mm	
PREFABRICATED END CAP	B	450 mm BOTTOM CORED END CAP, PART#: MC3500IEPP18BC / TYP OF ALL 450 mm BOTTOM CONNECTIONS	45 mm	
MANIFOLD	C	600 mm x 600 mm BOTTOM MANIFOLD, ADS N-12	52 mm	
MANIFOLD	D	450 mm x 450 mm BOTTOM MANIFOLD, ADS N-12	45 mm	
MANIFOLD	E	600 mm x 600 mm BOTTOM MANIFOLD, ADS N-12	52 mm	
CONCRETE STRUCTURE	F	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		1013 L/s IN
CONCRETE STRUCTURE	G	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		1013 L/s IN
NYLOPLAST (INLET W/ ISO PLUS ROW)	H	750 mm DIAMETER (610 mm SUMP MIN)		311 L/s IN



NO ISOLATOR ROW PLUS

PLACE MINIMUM 5.334 m OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES
- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- NOT FOR CONSTRUCTION: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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AECOM

PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

CLIENT

NEWCOLD

CONSULTANT

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NOTE:

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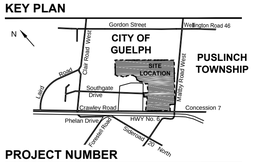
REGISTRATION

[redacted]

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6		
5		
4		
3		
2		
1	2022-04-24	ISSUED FOR SPA - PHASE 1

KEY PLAN



PROJECT NUMBER

60682143

SHEET TITLE

SWM DETAILS

SHEET NUMBER

D-303

Project Management Initials: Designer: AA Checked: AA Approved: AA ARCH D 24" x 36"

Last saved by: WADIS (2023-04-20) Last Plotted: 2023-04-24
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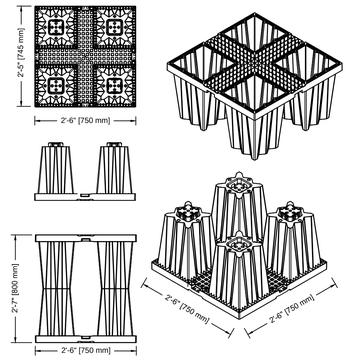
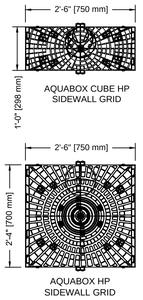
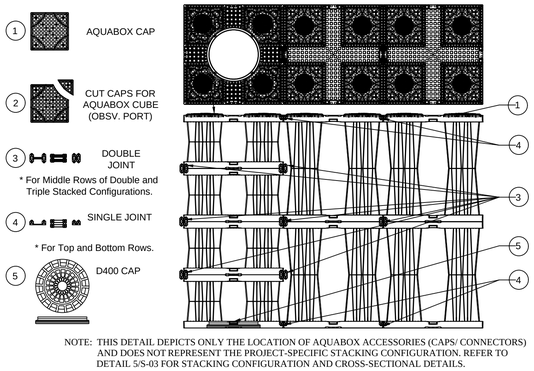


1 S-03 AQUABOX HP

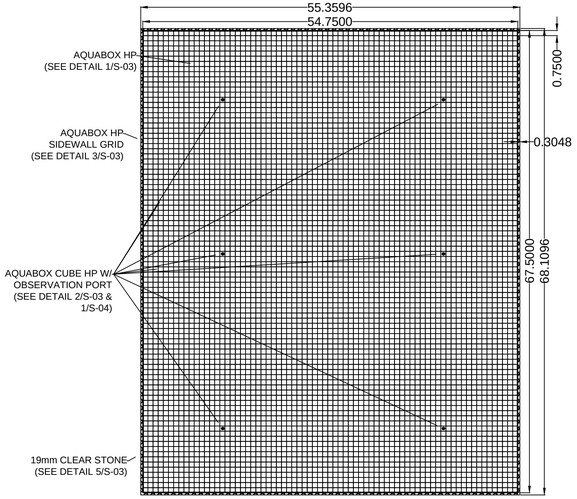


3 S-03 AQUABOX SIDEWALL GRID

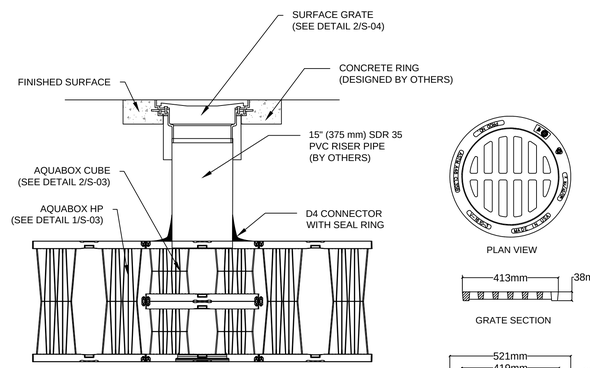


NOTE: THIS DETAIL DEPICTS ONLY THE LOCATION OF AQUABOX ACCESSORIES (CAPS/ CONNECTORS) AND DOES NOT REPRESENT THE PROJECT-SPECIFIC STACKING CONFIGURATION. REFER TO DETAIL 5/S-03 FOR STACKING CONFIGURATION AND CROSS-SECTIONAL DETAILS.

4 S-03 AQUABOX ACCESSORIES CAPS AND JOINTS



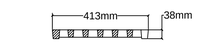
2 S-03 AQUABOX CUBE HP

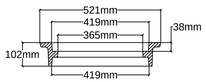


INSTALLATION SEQUENCE:

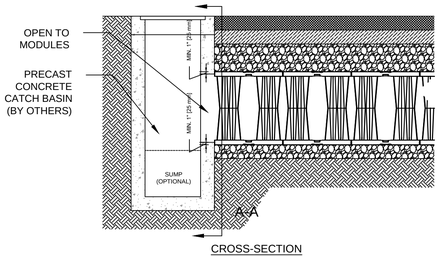
1. D4 CONNECTOR WITH SEAL RING
2. 15" (375 mm) SDR 35 PVC PIPE
3. SURFACE GRATE AT FINISHED GRADE

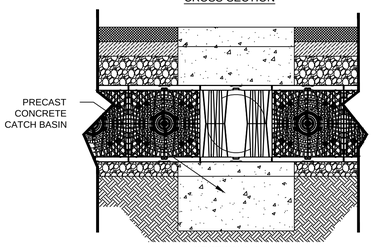
1 S-04 **AQUABOX OBSERVATION PORT**





2 S-04 OBSERVATION PORT SURFACE GRATE





3 S-04 **AQUABOX CATCHBASIN ABUTMENT (IF APPLICABLE)**

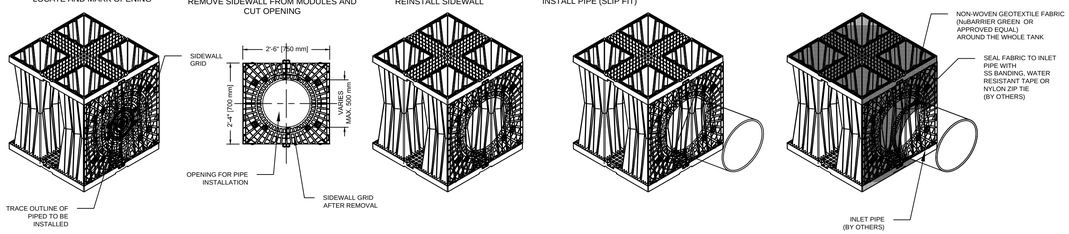
STEP 1: LOCATE AND MARK OPENING

STEP 2: REMOVE SIDEWALL FROM MODULES AND CUT OPENING

STEP 3: REINSTALL SIDEWALL

STEP 4: INSTALL PIPE (SLIP FIT)

STEP 5: WRAP AND SECURE GEOTEXTILE



4 S-04 **PIPE CONNECTION DETAIL**

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PROJECT

NEWCOLD GUELPH
- TO01
GUELPH, ONTARIO

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1	2022-04-24	ISSUED FOR SPA - PHASE 1

KEY PLAN

PROJECT NUMBER

60682143

SHEET TITLE

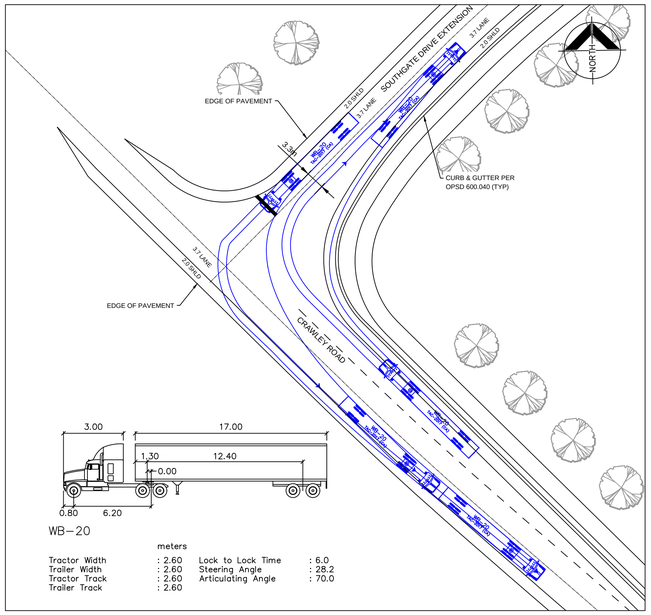
SWM DETAILS

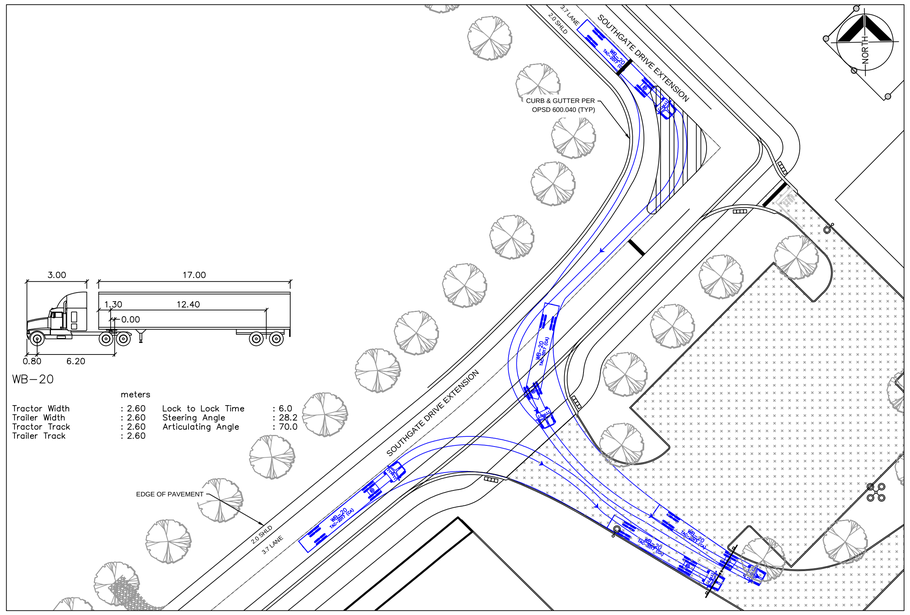
SHEET NUMBER

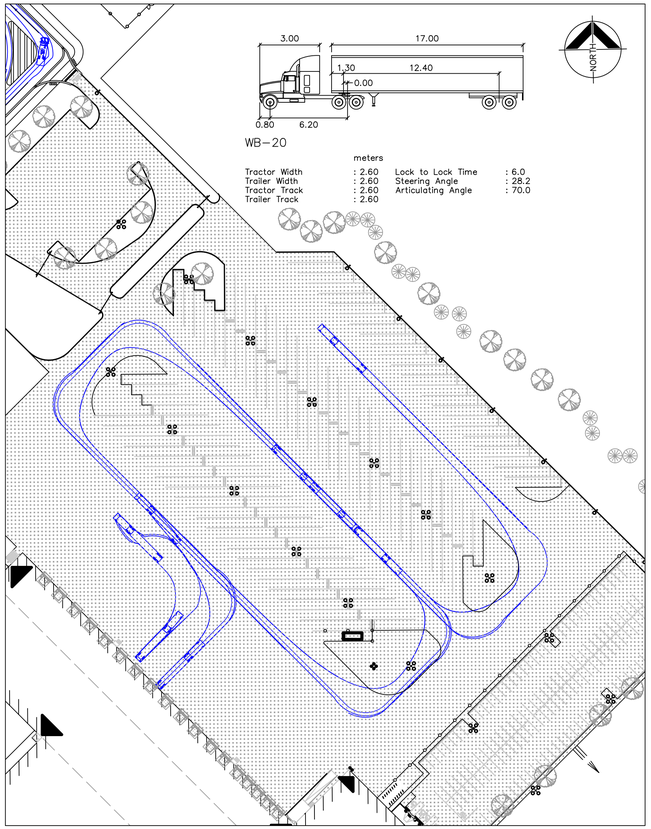
D-304

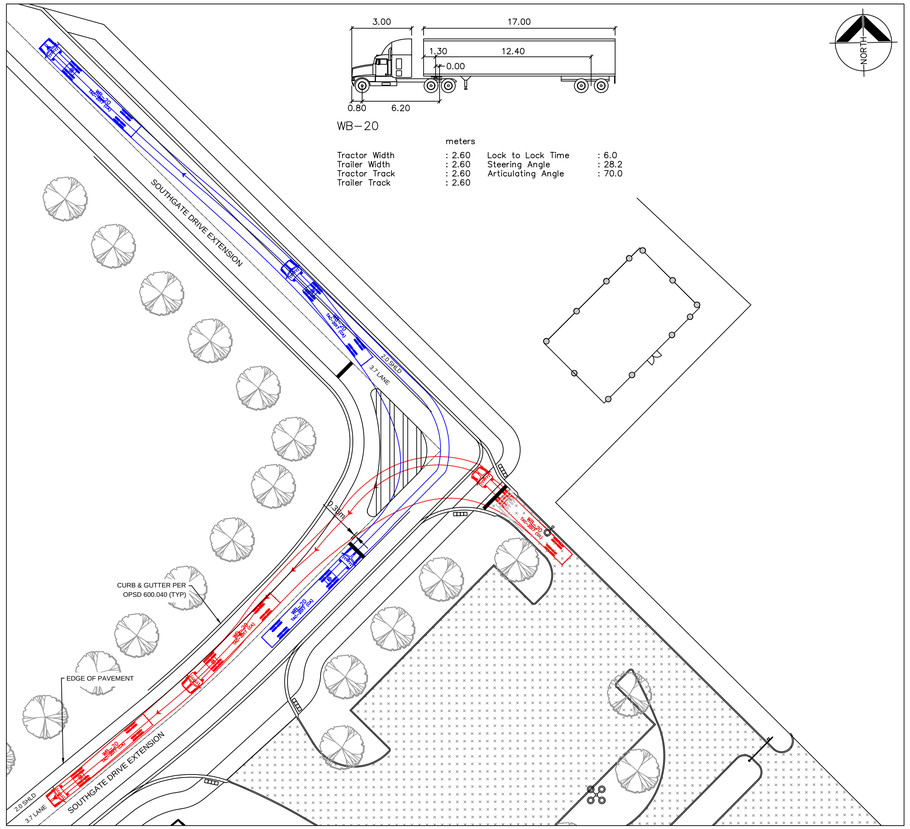
Project Management Initials: Designer: AA Checked: AA Approved: AA ARCH D 24" x 36"

Last saved by: WADIS (2023-04-20) Last Plotted: 2023-04-24
Filename: \\NA.AECOMNET.COM\LFS\AMER\MARKHAM-CA\TRT4\DCS\PROJECTS\BDL\60682143_NEWCOLD\900_CAD_GIS\911_CIVIL\911_3_PUBLISHED\PHASE I\60682143 - NEWCOLD -TURNING MOVEMENTS.DWG









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SERVICING NOTES:

1. ALL STORM AND WATERMAIN WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF GUELPH LINEAR INFRASTRUCTURE STANDARDS (2022) AND LATEST VERSION OF THE DOSSMS

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1	2022-04-26	ISSUED FOR SPA - PHASE 1

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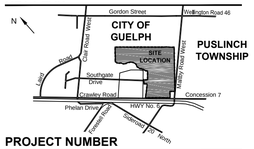

PROJECT NUMBER

60682143

SHEET TITLE

TRAFFIC GEOMETRIC PLAN

SHEET NUMBER

TGP-1