SILVER CREEK TRAIL FEASIBILITY STUDY

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TOWN OF HALTON HILLS

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Silver Creek Trail Feasibility Study

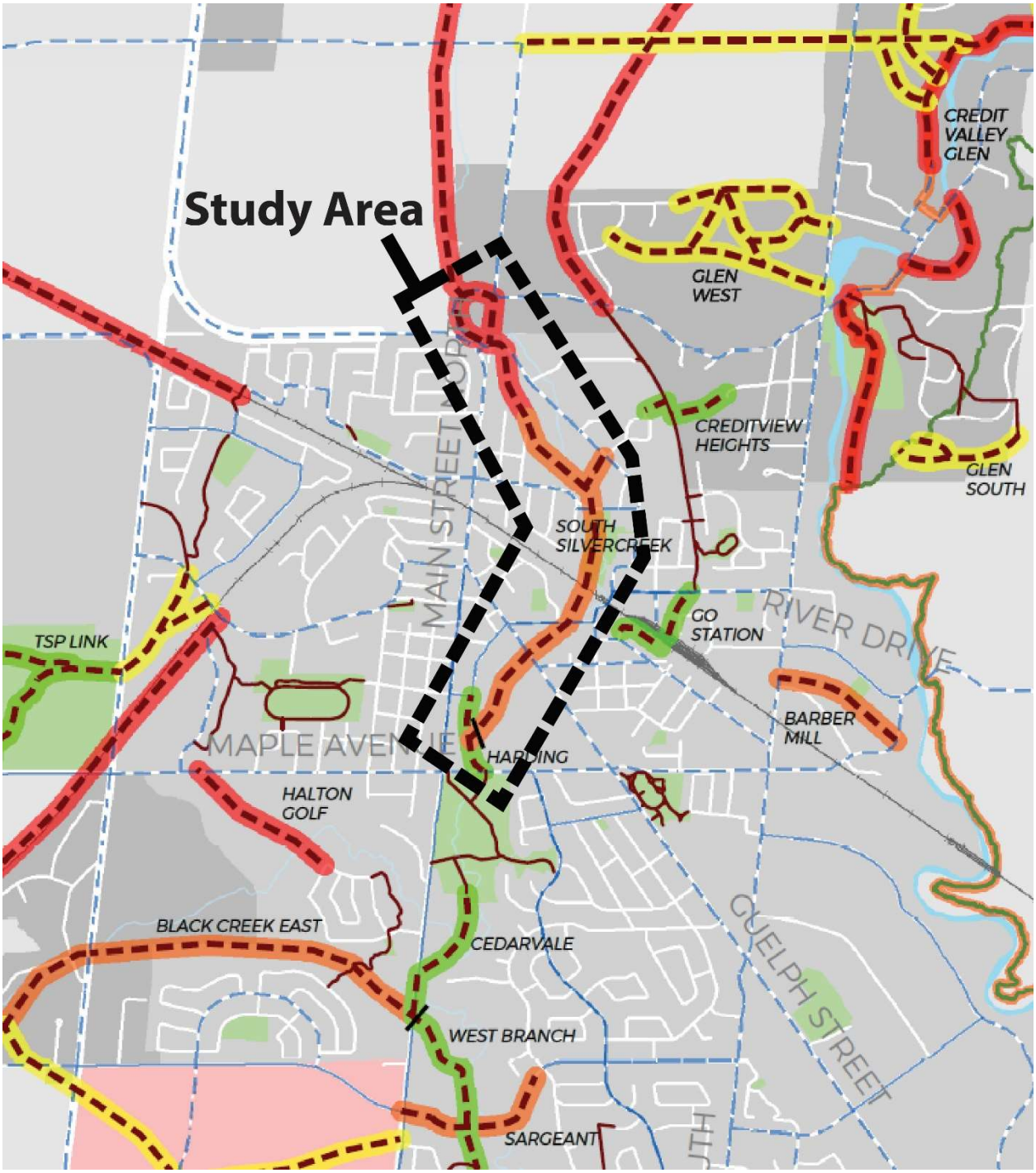
Background:

Identified in the 2018 Active Transportation Masterplan (ATMP), a trail desire line was created through the Silver Creek Valley extending northward from the Hungry Hollow Trails at Cedarvale Park up to Glen Williams and Wildwood Road. This trail was noted as 'long term' in the ATMP with a time horizon of 10+ years (from 2018). To validate if a trail is possible and advance this work, Town staff conducted this feasibility study with specific input from an ecological consultant for a more detailed ecology review. North-South Environmental Inc. was hired to carry out the study of ecological areas within the Silver Creek Valley and provide recommendations related to trail development, permit requirements and the natural heritage system constraints and opportunities for enhancement. (See Appendix 2).

The Silver Creek Valley runs through the Georgetown GO station area/Mill Street Secondary Plan area. This area is anticipated to undergo significant intensification over the coming years and there are a number of active high density residential development applications currently under construction or in the planning stages. It is very important that the existing population and significant number of future residents will have access to quality trails, parks and open space lands for both recreation, connection to nature and commuting requirements. Existing trails within the area include Wildwood Trail to the east and the Hungry Hollow Trail Network to the south. Parkland within the area includes Ewing Street Park and Moya Johnson Parkette. Nearby parks include Cedarvale Park, Henry Sheppard MBE Park, John St Park and Meadowglen Park. Through this study opportunities are explored to connect these existing trail networks, parks and other destinations.

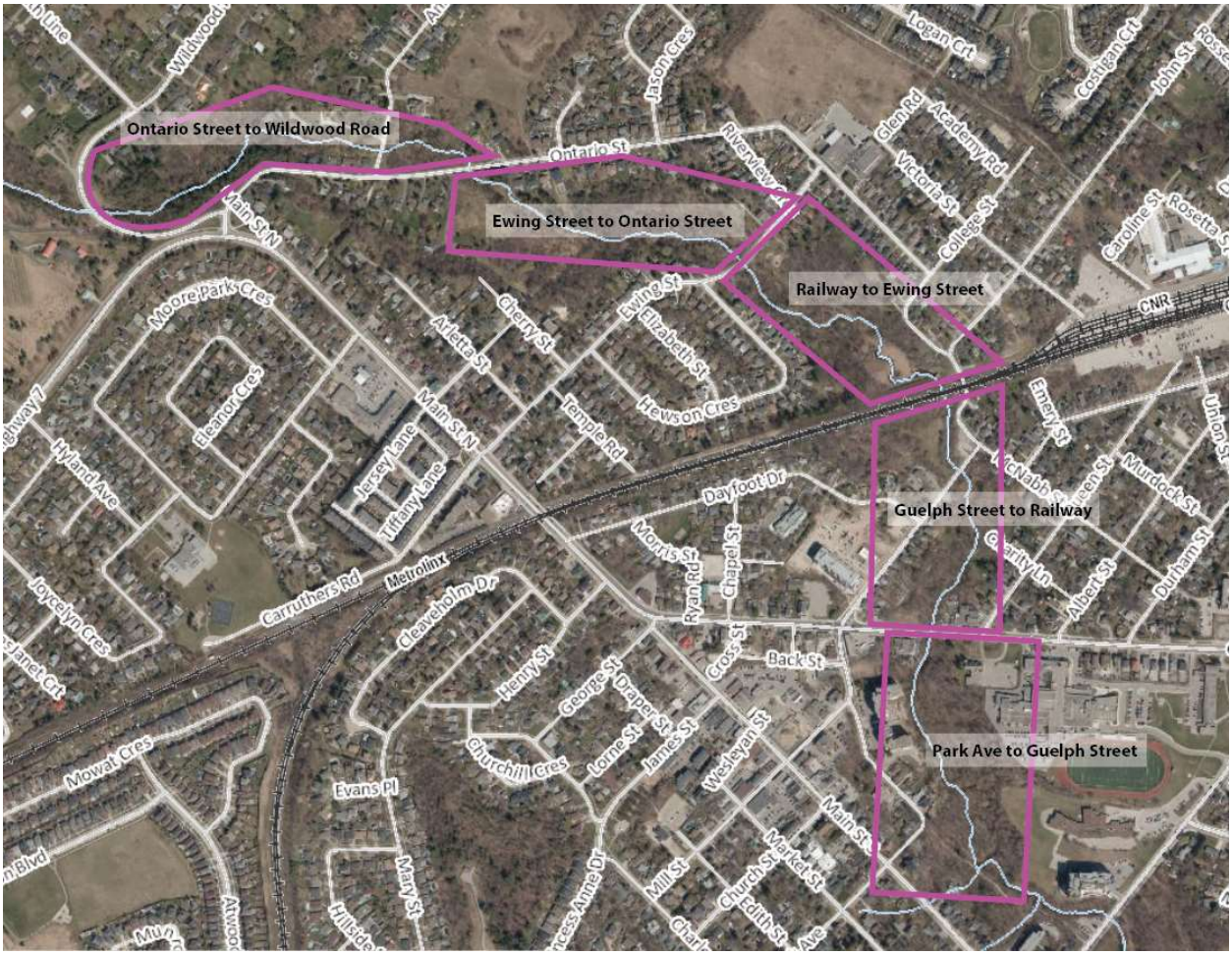
Town staff undertook the review of trail development/constructability, cost estimating, topographic and property ownership considerations, and completed the remaining parts feasibility study.

Figure 1: Active Transportation Masterplan (ATMP) 2018 with study area labelled. The ATMP referred to this trail as 'South Silvercreek'



To carry out the feasibility study, the area was divided into five sections, separated by major roads or railway for purposes of detailed analysis, presentation of findings and recommendations. These sections are shown in Figure 2.

Figure 2: Study area sections



General analysis of the study area:

Based on findings from the North South Environmental work and previous staff knowledge, there are a number of endangered species within portions of the Silver Creek study area. As such, a Ministry of Environment Conservation and Parks permit will be required for trail construction in certain sections in order to comply with the Endangered Species Act. This permit process can take multiple years and there is no certainty of approval to allow for trail development.

The study area is also within the Credit Valley Conservation (CVC) regulated area and a planning permit application is required based on the Conservation Authorities Act. The Town regularly acquires CVC permits for trail development and staff believe that all the foreseen CVC requirements can be addressed to facilitate approval by CVC.

Additional studies and work required to apply for a permit would include but is not limited to:

- Construction drawings and details
- Topographic survey
- Fluvial Geomorphology
- Geotechnical and boreholes
- Tree inventory and preservation plans.

Property ownership considerations also significantly affect the feasibility of each section. See Confidential Appendix 4, which includes property ownership considerations and constraints related to the feasibility of the Trail for Council's information. This report should be reviewed in conjunction with this information.

Analysis of each section:

Technical feasibility was studied for trail development through each of the five sections. Detailed analysis of physical features, opportunities, constraints, general recommendations, high level costs and prioritization for advancing each section is provided as well as summarized into a chart. The Town of Halton Hills Active Transportation Committee was consulted and provided input for prioritization of the sections.

Presentation boards for each section provide a map that shows potential trail alignment, topography, trail surface type as well as character photos of the area to visualize the feasibility of a trail for each section. (See Appendix 1)

Section 1: Park Ave to Guelph St. Section

This section of the study area goes from the existing trail that connects Maple Ave to Park Avenue, up to Guelph Street.

Analysis:

Due to steep slopes and space constraints with topography and existing buildings/property, trail alignment in this location is possible but only along a very specific alignment. It's proposed to connect to the existing limestone screenings trail just south of Park Avenue, cross Silver Creek at an appropriate location with a bridge and then travel along the eastern valley slope, gaining elevation and following the old radial railway alignment. Due to the floodplain elevation of Silver Creek, the trail through the floodplain is required to be boardwalk and then would transition to limestone screenings on the valley slope as it moves to higher elevation. There are two eroded drainage areas along the valley slope that would need to be crossed, using small bridges to span the gap and ensure long term slope stability of the area. Removal of vegetation (mostly shrubs and small trees) would be required as the vegetation of the area is dense. The quality, aesthetic and habitat value of the vegetation is fair, with a variety of invasive species scattered in the area. There is also a fair amount of garbage and areas that have/are being used as bush party hang out areas.

As a benefit to developing trail in this area, the garbage and undesirable uses can be removed as well as invasive species removed to improve the overall health of the forest vegetation.

MECP previously indicated that creek crossings are considered to have a high impact to the endangered Redside Dace which has been identified in Silver Creek. This section from Park Avenue to Guelph Street was part of the MECP permit for Hungry Hollow Trail in 2016 and was removed from the proposal to satisfy the Ministry requirements, which included eliminating a proposed creek crossing to allow the other trail development south of Cedarvale to advance.

The trail to sidewalk connection location on Guelph Street would terminate mid block on a very busy road, so safe crossing of Guelph Street is recommended to be accomplished at the signalized intersection of Mill Street & Guelph or Albert Street in front of Georgetown District High School.

An on-street trail alignment alternative through this section is also shown, using Park Ave and Mill Street to reach Guelph Street. There is no sidewalk between where the existing trail meets Park Ave and the apartments at 60 Park Ave, representing a distance of approximately 115m.

Studies:

Fluvial Geomorphology and meanderbelt study to determine bridge span required and exact crossing location.

Geotechnical Report and boreholes, to determine ground conditions for bridge and boardwalk footings.

Tree inventory and survey, noting removals and tree compensation calculations/requirements.

Major Barriers Summary:

MECP Permit, Property Considerations

Recommendation:

If property considerations are addressed and an MECP permit can be obtained, then trail development is possible in this section. It is recommended to advance the Park Avenue to Guelph Street section as a lower priority and forecast range of 2030 or later.

Cost for development:

$280,000 excluding studies, consulting and MECP Overall Benefit permit compensation.

Timeline/Priority:

Medium – advance in 2030-2032

Section 2: Guelph Street to Railway

This section is within the Georgetown GO Station/Mill Street Secondary Plan area and significant re-development and increase in residential density is in progress.

Analysis:

Existing Town owned alleyway and adjacent Town owned lands (Former United Coop Property) provide an opportunity for potential trail alignment in this section.

Aesthetically the nature and trail experience in this location is poor, and enhancements would be needed for a positive trail experience. There are encroachments, unauthorized uses and dumping that would need to be addressed. The former United Co-op property, although now owned by the Town, is known to be contaminated, and requires clean up prior to any official use for recreational purposes. There is also need to balance the shared use of alleyway with vehicles and pedestrian trail use. Consideration of linear park features along alley could be an additional benefit.

This area is within the Regional floodplain and the northern 2/3 of proposed trail is within the 100 year floodline. While a screenings trail may be feasible, portions may need to be boardwalk due to flood elevations.

Safe crossing of Guelph Street recommended at signalized intersection of Mill Street & Guelph Street or Albert Street (GDHS)

The Metrolinx Railway line is a significant physical barrier at the northern extent of this section. Access is not possible over the railway. The only passage options are through Silver Creek box culvert or the McNabb Street tunnel. Silver Creek box culvert access is very challenging due to steep slopes on either end and being over the watercourse, there are likely also stormwater safety concerns, significant engineering structural and public safety requirements that would have to be overcome with trying to use the box culvert. Access through the McNabb St. tunnel is the most feasible /reasonable option. There are no proper pedestrian facilities through the tunnel and pedestrians have to walk on the narrow single lane road which has a blind corner with mirror and signs to honk at this location. There are some pedestrian safety concerns for walking in the roadway. Further review of vehicular use of tunnel could be merited if future trail connections are to be advanced north of this section.

An on-street alternative is shown which uses Mill Street. Pedestrian facilities between Guelph Street and Dayfoot Drive have been recently constructed. Between Dayfoot Drive and McNabb Street there is only sidewalk on the north side of road and it is old, narrow and in poor condition. Upgrades are planned for this section of road and pedestrian facilities in 2026.

Major Barriers Summary:

Property Considerations, MECP Permit Constraints (Red Side Dace), Contaminated property requirements

Recommendation:

Low potential to advance trails construction at this time due to multiple factors, but as GO Station Area intensifies there will be significantly more pressure for useable green space. On-street pedestrian alternative currently exists, meeting any need/demand there would be for a trail in this section as an active transportation facility. Pedestrian facilities will also be enhanced as Mill Street is re-developed in the coming years. Monitor future developments for opportunities for connections or dedication as part of future development applications. Consider linear park development as part of intensification of area including clean up of contaminated lands. Advance studies and environmental work in order to be able to advance potential trail development at a future time.

Cost for development:

$90,000 excluding studies, consulting and MECP Overall Benefit permit compensation.

ESA Phase 2 Consulting fees (estimated at $25-50,000) and Environmental clean up costs (unknown) not included.

Timeline/Priority:

High – advance in 2026-2029

Section 3: Railway to Ewing Street

Analysis:

This section includes a nice deciduous forest area which is Town owned and is an extension to Ewing Street Park. A network of beaten footpaths through the forest lead from residential backyards and Ewing Street park playground. Some unauthorized yard waste dumping is occurring in the open space areas. There is no pedestrian sidewalk on College St.

Majority of this trail section would be outside of Redside Dace Habitat and only a small section is potentially within the 30m contributing habitat zone. A full MECP permit may be able to be scoped or avoided. A CVC permit would still be required.

Trail location would be above the Regional floodline and a trail design1.8m wide limestone screenings should be feasible for the entire section.

The on-street alternative travels uphill along College Street (no sidewalks) to Ontario Street (no sidewalks, but painted edgeline) to Ewing Street which has a sidewalk on south side. Downhill along sidewalk to Ewing Street Park.

Major Barriers Summary:

No major physical barriers, only property considerations.

Recommendation:

This section would implement a connection between College Street and Ewing Street Park. This would benefit the neighbourhood (intensification areas) regardless of overall trail system feasibility. This section should be advanced coordinated with intensification of GO Station Area.

Cost for development:

$70,000 excluding studies, consulting and MECP Overall Benefit permit compensation (if required).

Timeline/Priority:

High – advance in 2026-2029

Section 4: Ewing Street to Ontario Street

Analysis:

This section is entirely within the river floodplain so boardwalk would be required for the entire length. A bridge to cross the creek would be required in the middle of this section due to location of the creek, proximity to houses and having enough room for the trail.

A significant amount of thick vegetation exists throughout this section and removals would be required in order to develop a trail. The alignment of trail, bridge crossing and vegetation removals could be of impact to endangered species habitat. Through fieldwork carried out for this study, there was no evidence of existing beaten footpaths or current use in this area.

The on street alternative is from Ewing Street (sidewalk on south side only) to Riverview Crescent (no sidewalks) to Ontario Street (sidewalk on north side only). The sidewalk on Ontario Street transitions at the bridge crossing Silver Creek to a line painted on the shoulder of the road.

Major Barriers Summary:

Property Considerations, Significant impacts to natural heritage system.

Recommendation:

Prior to any further trail consideration, further Natural heritage system investigation is required.

Cost for development:

$635,000 excluding studies, consulting and MECP Overall Benefit permit compensation.

Timeline/Priority:

Low – advance in 2033+

Section 5: Ontario Street to Wildwood Road

Analysis:

The valley corridor in this section is very narrow, with extremely steep valley walls and narrow valley floor floodplain. There is limited potential for any trail access in this section.

Due to floodplain elevation, the height of boardwalk would have to be significantly elevated.

Using an on-street alternative, a potential route can terminate at Ann Street (connecting to the Wildwood Trail). There is no proper sidewalk on this section of Ontario Street or Ann Street.

Wildwood Road only has sidewalk on the west side of the road and this section does not have a clear destination point at Wildwood Road.

Major Barriers Summary:

Significant Property Considerations, topographical constraints, high cost of elevated boardwalk and impacts to natural heritage system.

Recommendation:

Trail development not feasible in this section due to constructability, topographic and space constraints. Consider on-road connection to Wildwood Trail via Ann Street as an alternative Trail Route.

Cost for development:

Not priced out due to recommendation not to pursue.

Timeline/Priority:

Not applicable – Do not advance trail development in this section

Summary Chart

Section	Priority timeframe	Cost*	Trail Constraints	Other Considerations
Section 1: Park Ave to Guelph St	Medium – advance in 2030-2032	$280,000	Property Considerations MECP & CVC Permits Complexity with large bridge crossing	2031 capital funding request
Section 2: Guelph St to Railway	High – advance in 2026-2029	$90,000	Property Considerations MECP & CVC Permits	2029 capital funding request User experience, Encroachments, alley, Soil contamination
Section 3: Railway to Ewing St	High – advance in 2026-2029	$70,000	Property Considerations CVC Permits	2028 capital funding request
Section 4: Ewing St to Ontario St	Low – advance in 2033-2036	$635,000	Property Considerations MECP & CVC Permits	2034 capital funding request
Section 5: Ontario St to Wildwood	Not recommended	N/A	Private property, proximity to residential, topography in constrained valley	

*See Appendix 3 for detailed cost estimates.

Conclusion & Recommendations:

Trails are a high priority for residents of the Town of Halton Hills as demonstrated through resident satisfaction surveys and continual feedback about why residents love Halton Hills.

There are numerous physical and natural heritage constraints to implementation of the desired trail through the Study Area, however implementation of a trail system is possible in most sections.

Endangered species within the area include Redside Dace and multiple bat species. Under the Endangered Species Act, a permit process through the Ministry of Environment Conservation & Parks is required. There is no guarantee that approval will be granted to allow for a trail which will be subject to further input and review with MECP staff.

The Town will continue to utilize trail design and construction best practices as it has historically through the development of various trails including the Hungry Hollow Trail network. These best practices include: Minimizing overall footprint of trail, minimizing removals of trees and vegetation, use natural materials to blend with surroundings and provide a positive user experience. Town trails are typically built to be barrier free so there are no steps, gaps or vertical barriers to accessing and utilizing the trail, though not all trails can be constructed at accessible slopes.

Overall staff estimate the total cost to implement the trails (where feasible) would be in the magnitude of $1,115,000.00 including 15% contingency and HST. This value is in 2025 dollars and inflation will need to be accounted for depending on timing for funding for each section. (See Appendix 3 for more detail) This cost estimate does not include any allowance for advancing property considerations. It also does not include any compensation or overall benefit costs that may be required through the MECP permit process.

Budget amounts for each section, as well as for additional studies are recommended to be included in the Towns capital budget forecast for 2026-2035, subject to annual approval and review. Project funding would be based on available funds and resources for a phased implementation. As noted the values are currently listed in 2025 dollars and will be updated in the forecast to reflect future inflation in subsequent years.

It is recommended that Parks & Open Space staff work program and capital budget consider the following timeline and forecast for additional work.

2026 – Further studies, retain consultant for MECP permit and further design ($40,000) and conduct Phase 2 ESA on United Coop lands ($45,000)
2027 – Complete studies and start permits

2028 – Capital project funding for Railway to Ewing St trail ($70,000)

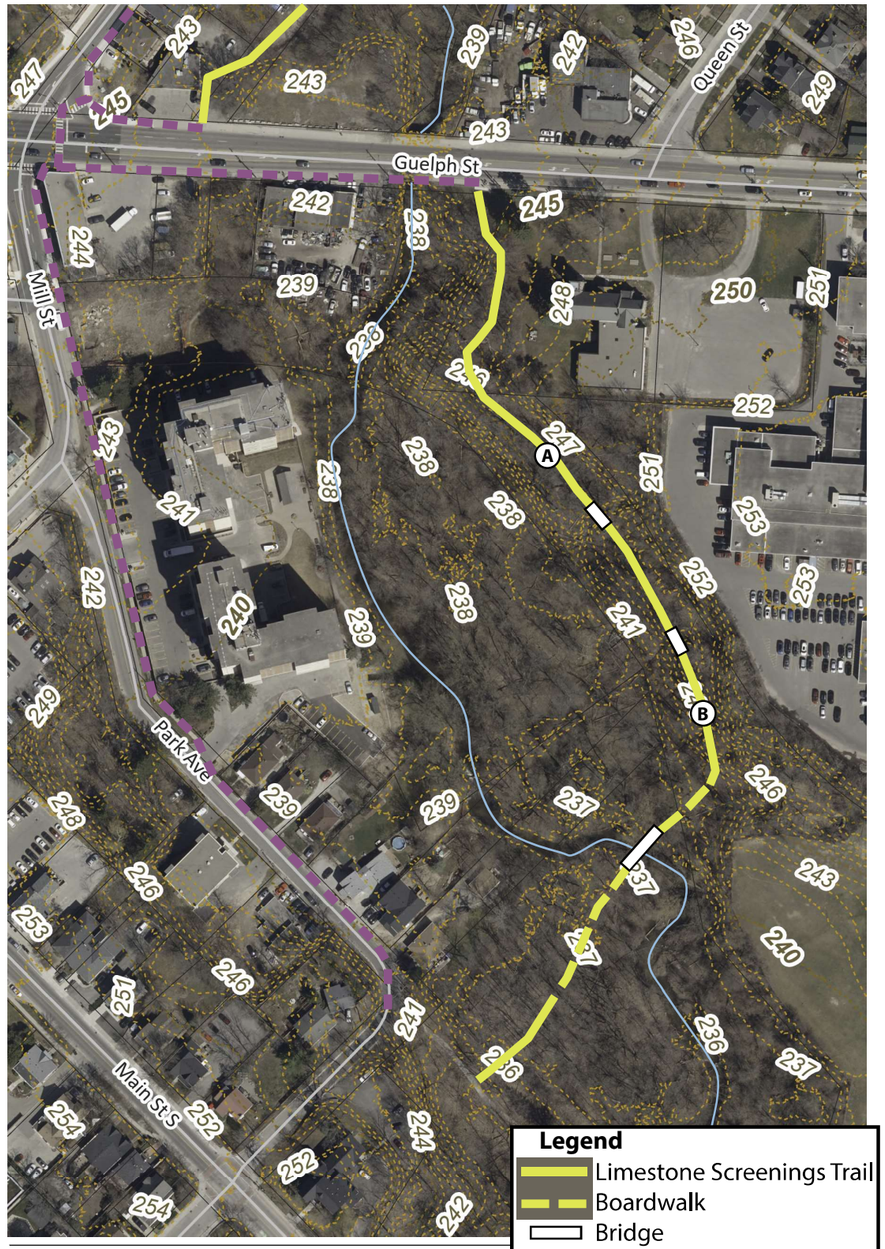
2029 – Capital project funding for Guelph St to Railway ($90,000)

2031 – Capital project funding for Park Ave. to Guelph St. ($280,000)

2034 – Capital project funding for Ewing St. to Ontario St. ($635,000)

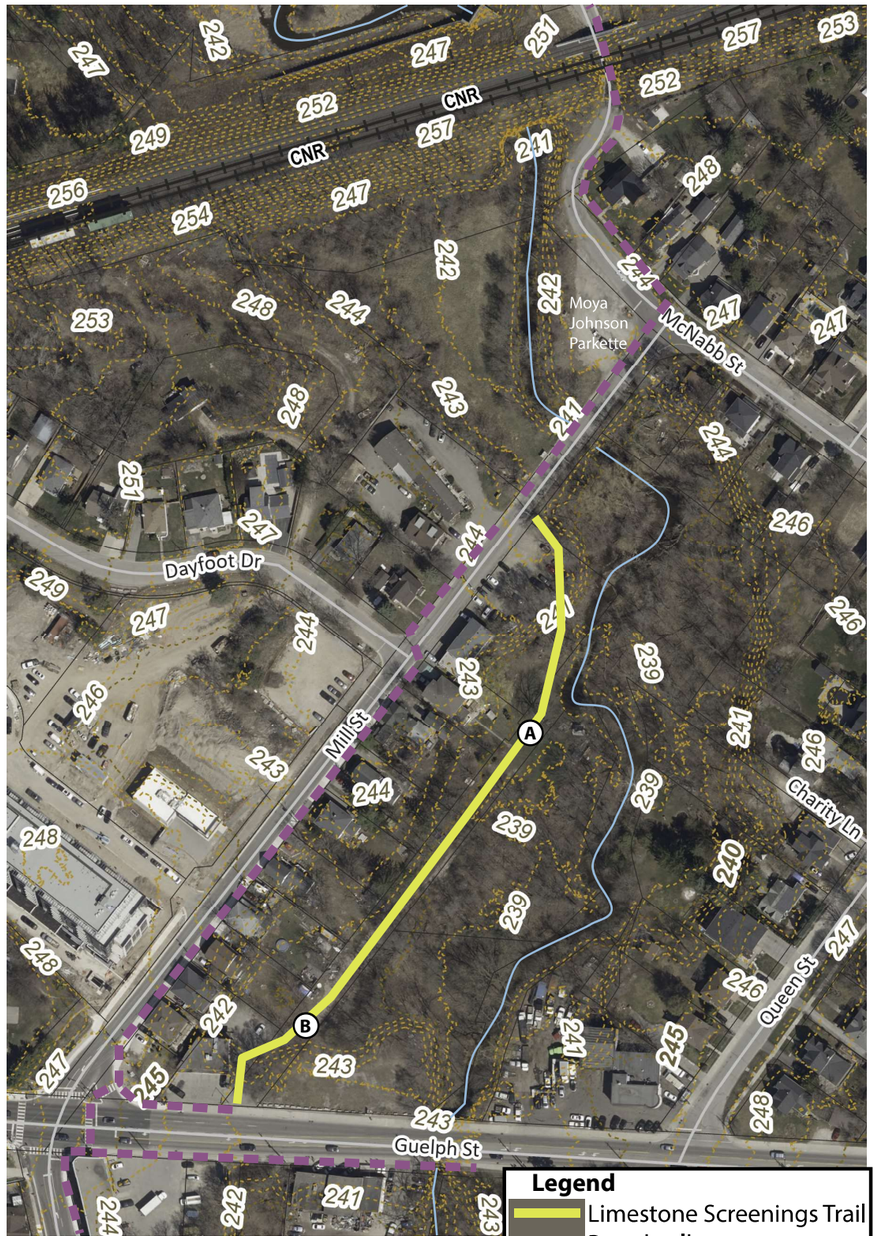
This timing is subject to change based on MECP permit timing and property considerations. Allocation of staff resources are also required to implement this multi-year plan, as Parks & Open Space staff workload is currently at capacity.

Section 1: Park Ave. to Guelph St.



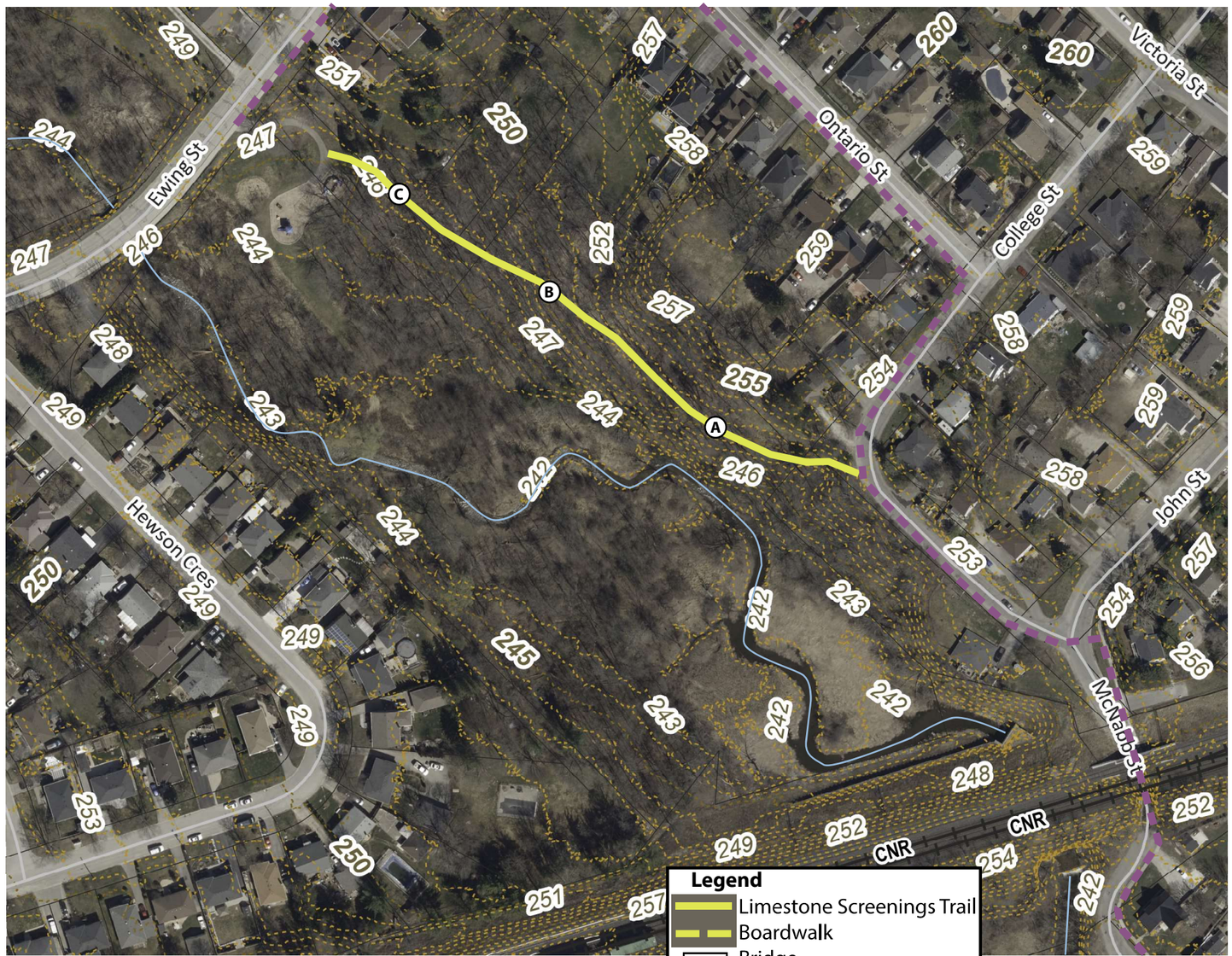
Conceptual trail alignment shown for purposes of feasibility study.

Section 2: Guelph St. to Railway



Conceptual trail alignment shown for purposes of feasibility study.

Section 3: Railway to Ewing St.

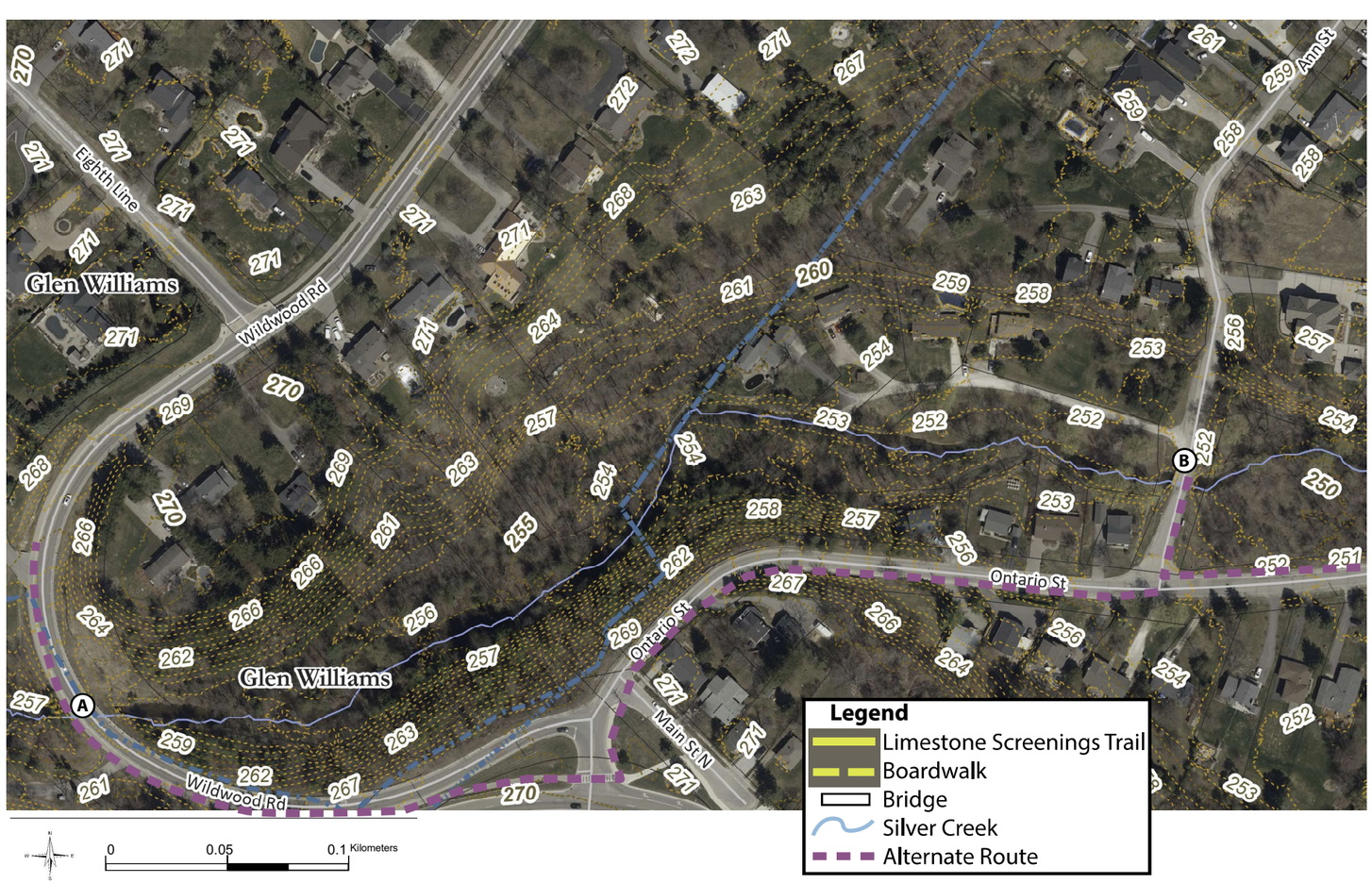


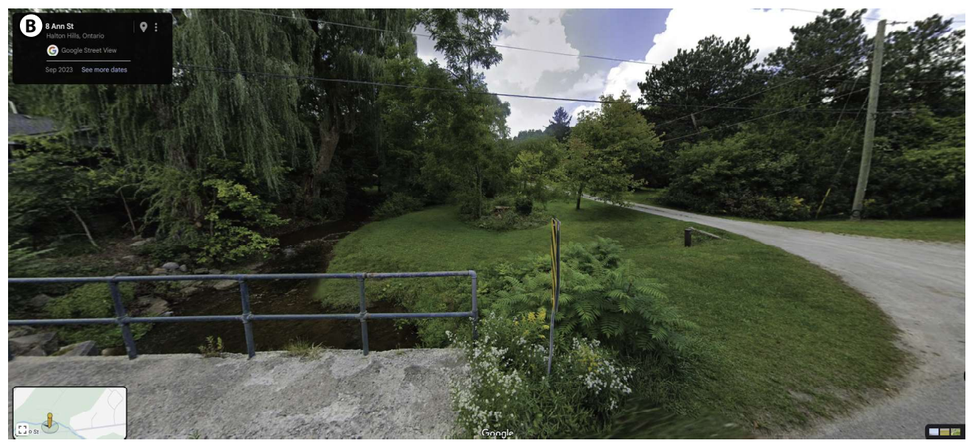
Conceptual trail alignment shown for purposes of feasibility study.

Section 4: Ewing St. to Ontario St.

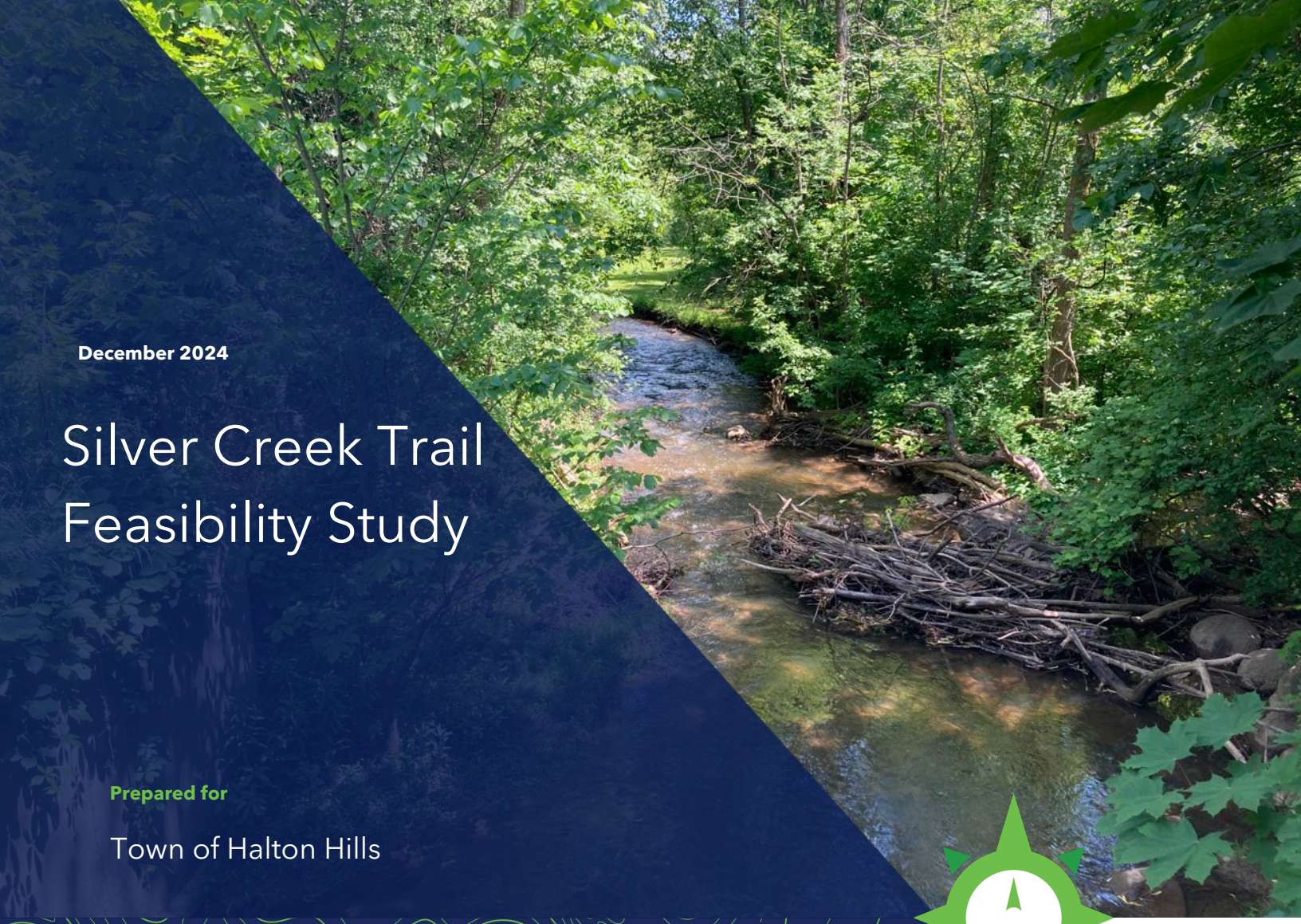
Conceptual trail alignment shown for purposes of feasibility study.

Section 5: Ontario St. to Wildwood Rd.





Trail deemed not feasible through this section.



December 2024

Silver Creek Trail Feasibility Study

Prepared for

Town of Halton Hills

north-south ENVIRONMENTAL

North-South Environmental Inc. • 101B King Street West • Cambridge, Ontario • N3H 1B5

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Cover Photo Credit: North-South Environmental. Location: Silver Creek on Ontario Street between Ann Street and Elena Court, facing south.

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1. Introduction

The Town of Halton Hills is assessing the feasibility of a potential extension of its trail network along Silver Creek in Georgetown, ON. North-South Environmental Inc. (NSE) was retained by the Town of Halton Hills (*the Client*) to complete a natural heritage review as part of this trail feasibility study. The Study Area (approximately 23.5 ha) spans the length of Silver Creek from Wildwood Road in the north to Park Avenue in the south, and consists of watercourse, floodplain, parkland, residential area, and natural cover. There is an existing section of trail between Park Ave and Maple Ave, which is an extension of the Hungry Hollow Trail network. **Figure 1** below shows the Study Area, Silver Creek, and existing Town of Halton Hills trails and parks.

This report identifies relevant environmental legislation, policy, and regulations, and the known natural heritage features within the Study Area. The report also presents the findings from the 2024 field investigations, discusses features that may be constraints to trail development while also identifying opportunities for the trail to protect or enhance natural features. Preliminary natural enhancement opportunities are presented.

Figure 1 | Study Area
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Town Owned Parks
- Town Trails
- Watercourse - Silver Creek

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

2. Methodology

2.1. Agency Consultation

A request for natural heritage data for the Study Area was sent to the Credit Valley Conservation Authority (CVC) and obtained data was included in the species background review. No other agency contact was made for the purposes of this preliminary feasibility study; however, it is assumed that should the project continue and lead to an Environmental Assessment (EA) or detailed design phase, consultation with the Ministry of Natural Resources and Forestry (MNRF), Ministry of the Environment, Conservation and Parks (MECP), Fisheries and Oceans Canada (DFO) and other relevant agencies would be required.

2.2. Background Review and Secondary Sources

A background review of existing data relevant to the Study Area was completed, which included a review of the following:

- MNRF Natural Heritage Information Centre (NHIC) Ontario Specie List (NHIC 2024)
- The MNRF Natural Heritage Areas mapping application (MNRFa 2024)
- Geospatial data from Land Information Ontario (LIO)
- Aerial imagery (current and historic)
- DFO Aquatic Species at Risk mapping (DFO 2024a)
- Fish and Fauna records, as available, from CVC
- Species atlases and citizen science databases such as the Atlas of the Breeding Birds of Ontario (OBBA), Ontario Herpetofauna Atlas, Atlas of the Mammals of Ontario, eBird and iNaturalist
- Applicable planning policies including Town of Halton Hills Official Plan, Halton Region Official Plan, Greenbelt Plan
- Silver Creek Subwatershed Study: Characterization Report Phase 1 (CVC et al. 2002)
- Reports for other projects adjacent to the Study Area
    - Silver Creek Fluvial Geomorphological and Meander Beltwidth Assessment Georgetown, Ontario (Water's Edge 2022)

This information, in addition to the field investigations in the following section, was used to describe the overall existing conditions and identify locations of constraints to trail development.

2.2.1. Screening for Species at Risk and Species of Conservation Concern

Species at Risk includes species designated as extirpated, endangered, threatened and special concern on the Species at Risk in Ontario (SARO) List. Of these, extirpated, endangered and threatened species receive both individual (Section 9) and habitat (Section 10) protections under the

provincial Endangered Species Act (ESA). Special concern species, do not receive protections under these sections of the ESA and as such, are addressed as 'Species of Conservation Concern'.

Species at Risk also includes any fish designated as extirpated, endangered, and/or threatened on Schedule 1 of the federal Species at Risk Act (SARA). For these species, SARA applies anywhere they occur (e.g., includes non-federal land).

Habitat for Species of Conservation Concern is protected as Significant Wildlife Habitat. For the purposes of assessment, Species of Conservation Concern (SCC), include the following:

- Species federally designated as Endangered or Threatened, which don't receive individual (Sections 9) and habitat (Section 10) protections under the ESA;
- Species listed as Special Concern under the ESA on the SARO List; and,
- Species that are assigned a provincial (i.e., sub-national) conservation status rank of S1, S2 or S3 and are not designated as Endangered or Threatened under the ESA.

Species observation records were compiled from sources listed in **Section 2.2** to identify which SAR and SCC that may potentially be present within the Study Area. Once the list of SAR and SCC species was compiled, a screening exercise was completed to rank the probability of presence of each species within the Study Area. This screening was based on the known habitat preferences of each species and cross-references to the ground-truthed conditions to the extent possible, and only includes species designated as Endangered, Threatened, and Special Concern.

The SAR and SCC screening is provided in **Table A3-1** in **Appendix 3**.

2.3. Field Investigations

Field investigations were limited to two reconnaissance site visits by NSE ecologists on June 12th and July 3rd, 2024. The following information was collected: vegetation communities (Ecological Land Classification), botanical inventory, wildlife habitat assessment, incidental species, and site conditions.

2.4. Trail Design

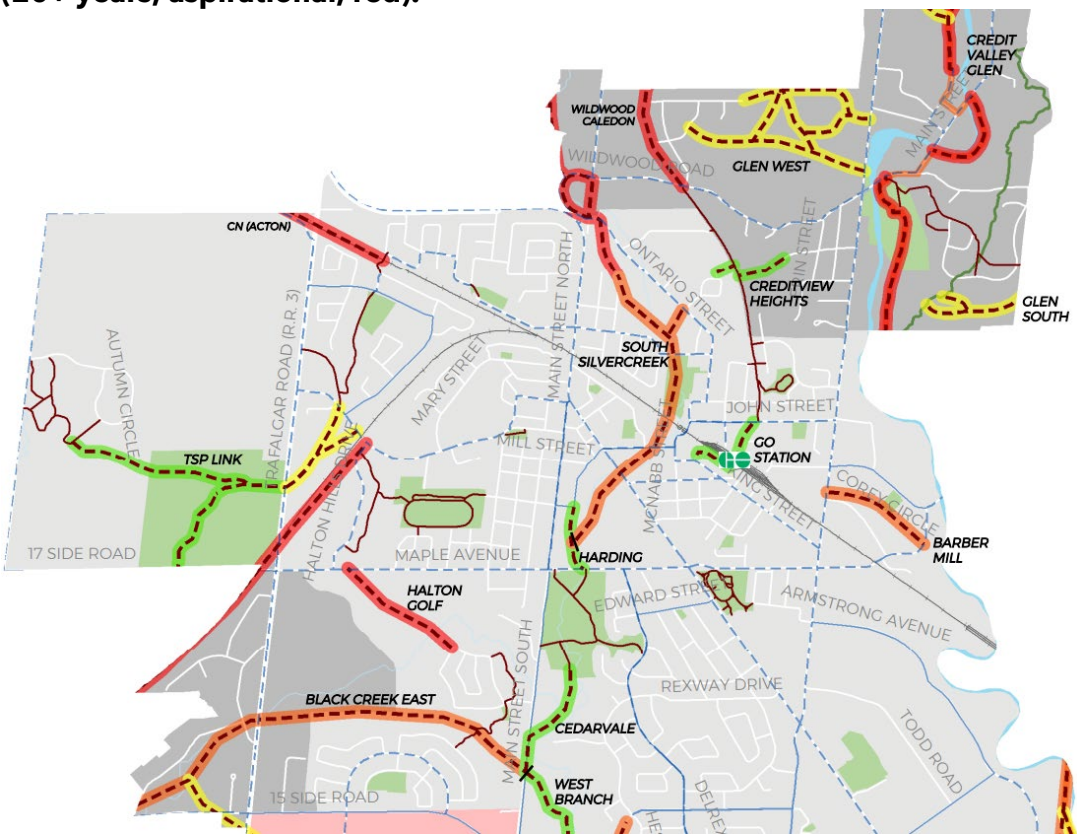
Beyond the scope of this project, the Town will be reviewing additional factors that are critical to trail design. Factors include but are not limited to:

- Property ownership
- Public perception or desire for trail
- Proximity to other areas
- Aesthetic of area (i.e., trail user experience)
- Potential trail alignment

The overall vision for the trail network is illustrated on Map 3b: Proposed Off-Road Phasing of the Halton Hills Active Transportation Master Plan (2020) (a section of this figure is shown as **Figure 2** below). The desired trail is identified primarily as a 'long-term (10+ years)' objective (in orange) with the section at Wildwood Road as a 'long-term (20+ years, Aspirational)' objective in red.

Off-road trails are divided into three types: Primary (Type 1, asphalt), Secondary (Type 2, screenings), and Tertiary (Type 3, beaten footpath). Map 2c shows most of the desired trail identified as Type 2, except for the section near Wildwood Road which is Type 3. Both Secondary and Tertiary trails are intended for open space and natural areas. Anticipated level of use for secondary trails is moderate, suitable for users with some experience. Accessibility requirements are met where feasible; however, maintaining natural heritage values takes precedence. Anticipated level of use for tertiary trails is low to moderate, suitable for users with moderate to high level of trail experience. Maintaining natural heritage values takes precedence over accessibility.

Figure 2. Georgetown – Proposed Off-Road Phasing Map 3b (Town of Halton Hills, 2020). Existing and proposed trails. Proposed trails are colour-coded by phasing, short-term (0-5 years, green), medium-term (6-10 years, yellow), long-term (10+ years, orange), and long-term (20+ years, aspirational, red).



3. Policy & Legislative Context

This section provides an overview of key federal, provincial and local government environmental legislation, policies and regulations that are directly applicable/relevant to the Study Area and potential trail works. The purpose of this section is to identify environmental policy requirements related to the Study Area to ensure that the potential extension of the Silver Creek Trail along Silver Creek is in conformity with applicable legislation, regulations, and policies.

3.1. Federal

3.1.1. Fisheries Act 1985

Fish habitat is present within the Study Area and has potential to be impacted. The *Fisheries Act* (1985) is in place to maintain healthy, sustainable and productive Canadian fisheries through the prevention of pollution, and the protection of fish and their habitat. and applies to all Canadian freshwater and marine fisheries waters. The *Fisheries Act* defines fish habitat as "spawning grounds and other areas, including nursery, rearing, food supply and mitigation areas, on which fish depend directly or indirectly in order to carry out their life processes" [subsection (2)1].

Under the current iteration of the Act, the *Fisheries Act* prohibits the death of fish by means other than fishing [subsection 34.4 (1)] and the harmful alteration, disruption or destruction of fish habitat [HADD; subsection 35. (1)]. A HADD is defined as "any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes" (DFO 2019). Protection provisions for fish and fish habitat exist in the form of standards, codes of practice, and guidelines for projects in and near water. These provide guidance on how to avoid and mitigate impacts to fish and fish habitat and comply with the *Fisheries Act* to avoid causing the death of a fish or HADD of fish habitat from your work, undertaking or activity.

The federal *Fisheries Act* regulates the harm and destruction of fish and fish habitat in Canadian waterways. Under the *Fisheries Act*, certain work, undertakings or activities taking place in or near water that occur within or near water may require review or authorization from the Department of Fisheries and Oceans (DFO). The DFO encourages proponents to implement measures to avoid impacts to fish and fish habitat. If avoidance is not possible, the DFO recommends mitigating impacts to fish and fish habitat and has prepared codes of practice for common works, undertakings and activities.

3.1.2. Migratory Birds Convention Act 1994

Migratory bird habitat is present within the Study Area. The Environment and Climate Change Canada (ECCC) implements the Migratory Birds Convention Act (MBCA; 1994) and Migratory Birds Regulations, (MBR; 2022) to protect most species of migratory birds and their nests and eggs. Under the MBR 2022, it is prohibited to damage, destroy, disturb or remove migratory bird nests when they

contain a live bird or viable egg and prohibit the deposit of harmful substances in waters and areas frequented by migratory birds. For 18 species of migratory birds identified on Schedule 1, the MBR 2022 provides year-round nest protection until they can be deemed abandoned. Schedule 1 includes certain migratory birds who either re-use their own nests from one year to the next (colonial species), or whose nests are commonly re-used by other species of migratory bird species, like Pileated Woodpeckers. If the nest of a Schedule 1 species has not been occupied by a migratory bird for the entirety of the waiting time indicated in the MBR 2022, it is considered to be abandoned, and no longer has high conservation value for migratory birds.

3.1.3. Species at Risk Act 2002

The federal *Species at Risk Act* (SARA) provides legal protection for federally listed SAR on federally owned lands; for aquatic species; and for any federally listed SAR anywhere they occur (including private lands, provincial and territorial lands) when the species is also protected by the MBCA. Species and habitat of species listed on Schedule 1 of SARA are protected from harm or destruction. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recommends species to be listed on Schedule 1 of SARA.

3.2. Provincial

3.2.1. Provincial Planning Statement (PPS) 2024

The Provincial Planning Statement (PPS) (MMAH 2024) was recently updated, these changes come into force on October 20, 2024. The relevant sections outlined below reflect the new PPS 2024 policy.

Section 3.9 Public Spaces, Recreation, Parks, Trails and Open Space states that healthy, active and inclusive communities should be promoted by in part the planning of trails.

Section 4 provides direction for the wise use and management of resources, including the protection of natural areas and features. Natural heritage policies are described in Section 4.1.

Section 4.1.1 states natural features and areas shall be protected for the long term.

Section 4.1.2 of the PPS outlines protection needs related to biodiversity and connectivity, including protection of both ecological features and function required to maintain biodiversity and functional ecological connectivity.

Section 4.1.4 lists significant natural heritage features where development and site alteration are not permitted, including:

- Significant wetlands in Ecoregions 5E, 6E, and 7E, and
- Significant coastal wetlands.

Section 4.1.5 lists significant natural heritage features were development and site alteration are not permitted, unless it has been demonstrated that there will be no negative impact on the natural features or their ecological functions, including:

- Significant woodlands in Ecoregions 6E and 7E,
- Significant valleylands in Ecoregions 6E and 7E,
- Significant wildlife habitat,
- Significant areas of natural and scientific interest, and
- Coastal wetlands in Ecoregions 5E, 6E, and 7E (that are not subject to Policy 2.1.4).

Section 4.1.7 states that development and site alteration shall not be permitted in habitat of endangered and threatened species, except in accordance with provincial and federal requirements.

Section 4.1.8 states that development and site alteration are not permitted on adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5, and 4.1.6 (fish habitat) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

3.2.2. Greenbelt Plan 2017

The entire Study Area falls within the Greenbelt Area Boundary (MMAH 2017), with the majority designated as Urban River Valley and a small section at the most northwestern edge at Wildwood Road designated as Protected Countryside. The Protected Countryside section is also designated as the Greenbelt Natural Heritage System (**Figure 4** in **Appendix 1**). Section 3.3.2 of the Greenbelt Plan (2017) encourages the creation of trails within the Natural Heritage System:

> *The Province should, in partnership with municipalities, conservation authorities, non-government organizations and other interested parties:*
>
> *1. Encourage the development of a system of publicly accessible parkland, open space and trails where people can pursue the types of recreational activities envisaged by this Plan, and to support the connectivity of the Natural Heritage System and the achievement of complete communities in settlement areas across the Greenbelt.*
>
> *2. Encourage the development of a trail plan and a co-ordinated approach to trail planning and development in the Greenbelt to enhance key existing trail networks and to strategically direct more intensive activities away from sensitive landscapes.*
>
> *3. Promote good stewardship practices for public and private lands within the Greenbelt, including clear demarcation of where public access is permitted.*

Additional policies relevant to the Urban River Valley, the Natural System, and Protected may apply.

3.2.3. Endangered Species Act 2007

The provincial *Endangered Species Act* (ESA) provides science-based assessment, automatic species protection, and habitat protection, in order to protect species at risk of disappearing from Ontario. Under Section 9 of the ESA, species are afforded individual protection providing they are listed as Threatened, Endangered, or Extirpated on the Species at Risk in Ontario list. Section 10 of the ESA is in place to protect the habitat of Threatened or Endangered species only; where no damage is permitted to the habitat of those species unless under the authorization of the regulating ministry by way of registration or permit. Destruction of Species at Risk and their habitats constitutes a contravention of the ESA. Species designated as Special Concern are not given species or habitat protection under the ESA.

3.2.4. Fish and Wildlife Conservation Act 1997

The *Fish and Wildlife Conservation Act* (FWCA) prohibits hunting (killing, capturing, injuring and harassing) and trapping of "specially protected wildlife" (Section 5[1]). Specially protected wildlife species are listed in O. Reg 669/98 Wildlife Schedules[1] which lists specific species of the following taxa: mammals (Schedule 6), raptors (Schedule 7), birds (Schedule 8), reptiles (Schedule 9), amphibians (Schedule 10), and invertebrates (Schedule 11).

Section 7 of the FWCA prohibits the destruction, taking or possession of nests or eggs of a wild bird (which includes game birds, specially protected birds, and any other wild bird not protected federally under the *Migratory Birds Convention Act*). The prohibition includes active nests as well as inactive nests for species that show site fidelity (i.e., birds that return to the same nesting site). An authorization to destroy/take/possess nests of eggs may be issued by the MNRF under certain circumstances.

3.2.5. Ontario Forestry Act

The Ontario Forestry Act provides a directive on boundary tree identification and regulates the injury or destruction of boundary trees. A boundary tree is defined in Section 10 (2) as a "tree whose trunk is growing on the boundary between adjoining lands" and "is the common property of the owners of the adjoining lands". Section 10 (3) states that "every person who injures or destroys a tree growing on the boundary between adjoining lands without the consent of the landowners is guilty of an offence under this Act."

This act would apply if tree removals that are boundary trees are planned for this project.

[1] https://www.ontario.ca/laws/regulation/980669

3.3. Conservation Authorities Act, Ontario Regulation 41/24

Ontario Regulation (O. Reg.) 41/24 are the implementing regulations of the *Conservation Authorities Act* (1990), which is administered by the MNRF.

Under Ontario Regulation (O. Reg.) 41/24, Conservation Authorities have the responsibility to regulate activities in natural hazardous areas (i.e., streams, floodplains, wetlands, areas in and near rivers, slopes and a lakes shoreline), or in proximity to these areas. Under O. Reg 41/24, any development or site alteration within a regulated area requires a permit from the local conservation authority. The regulated area limit ('regulation limit') is a 30 m setback from regulated wetlands. The regulated area limit along stream valleys is variable and depends on site characteristics (e.g., floodplain extent, meander belt extent).

Per Section 28.1 (1) of the *Conservation Authorities Act*:

> *A Conservation Authority may issue a permit to a person to engage in an activity that would otherwise be prohibited, if, in the opinion of the authority,*
>
> > *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches, or unstable soil or bedrock;*
> >
> > *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; and*
> >
> > c) *any other requirements that may be prescribed by the regulations are met.*

The Study Area is centered on a watercourse and surrounding area, nearly all of the Study Area falls within areas regulated by Credit Valley Conservation Authority (CVC). A small section along the rail corridor within the Study Area is outside of the regulated areas.

3.4. Municipal

3.4.1. Official Plan for the Halton Planning Area (2024 Consolidation)

As of July 1, 2024, Halton Region Official Plan is now the responsibility of the local municipalities in Halton. The purpose of this document is to provide clear direction for how physical development should occur in Halton to meet the current and future needs of its people and to assist in the delivery of Regional services and responsibilities as set out in the Planning Act, the Municipal Act, and other Provincial legislation. The Study Area is located within Halton's Natural Heritage System, more specifically the Regional Natural Heritage System and the Greenbelt Natural Heritage System. The policies relevant to the Natural Heritage Systems development would apply with specific policies around non-intensive recreation uses such as nature viewing and pedestrian trail activities.

Section 118 (6) states it is the policy of the Region to:

> *Encourage the development of trails within the Regional Natural Heritage System provided that:*
>
> *a) the trails are located on publicly owned lands or are part of the Bruce Trail;*
>
> *b) the trails and associated activities do not impact negatively on ecologically sensitive areas or resource uses such as agricultural operations;*
>
> *c) proper regard is given to the issues of trespassing on private properties and liability in the event of property damages or personal injuries; and*
>
> *d) adjacent landowners potentially affected by the trails are consulted.*

3.4.2. Town of Halton Hills Official Plan (2024 Consolidation)

The Official Plan for the Town of Halton Hills is intended to serve as the basis for making land use decisions while managing growth, as well as to support the Town's natural and cultural heritage, diversity, and civic identity.

The Study Area is located within the Urban Boundary of Georgetown and a small section within the Hamlet of Glen Williams. The Study Area is also located within the Greenlands System. Applicable policies would include policies under Natural Heritage, Greenlands System, Watercourses, and Tree Preservation/Planting.

3.5. Other Policies

3.5.1. Canadian Food Inspection Agency (CFIA) Directive D-03-08

The CFIA regulates the movement of all Ash (*Fraxinus* spp.) material, including logs, bark, branches, fresh leaves, woodchips, and nursery stock to control the spread of a non-native beetle, the Emerald Ash Borer (*Agrilus planipennis*), whose larvae burrow into Ash. To slow the spread of Emerald Ash Borer to new areas, Ash material may not be transported outside of a regulated area into a non-regulated area. People who move regulated materials from regulated areas within the permission of the CFIA could face fines and/or prosecution.

A map of the Emerald Ash Borer Regulated Areas in Canada can be found at: Areas regulated for the emerald ash borer - Canadian Food Inspection Agency (canada.ca).

4. Existing Natural Environment Features

4.1. Ecoregion Context, Physiography, and Hydrology

The Study Area is located in the Oak Ridges Ecodistrict 6E-7, which forms a narrow band from Orangeville (to the west), to the community of Hilton (to the east, north of Brighton). The northern and southern extents of the ecodistrict occur near Duntroon and Halton Hills (Wester et al. 2018).The Study Area is located in the Niagara Escarpment physiographic region (Chapman and Putnam 1984). The Niagara Escarpment, a large ridge formed through the differential erosion of Paleozoic bedrock over millions of years by ice, water, and wind, extends from Niagara River to the northern tip of the Bruce Peninsula and onto the Manitoulin Islands (Wester et al. 2018). In Halton Region, the escarpment runs diagonally from the City of Burlington to Glen Williams. The entire Study Area is located within the Spillways physiographic landform (Chapman and Putnam 1984). Spillways are channels cut by water escaping from a glacially impounded lake or cut by meltwater released from a decaying glacier. Spillways are very permeable and are vulnerable to contamination. These areas are often excellent sources of water as they have a high water table and water is easily accessible. Surficial geology in this area are modern and older alluvial deposits, Paleozoic bedrock, ice-contact stratified deposits, till, and glaciofluvial deposits (gravel) (OGS 2010).

The Study Area is located within the Credit River watershed which spans from Orangeville south to Mississauga and drains into Lake Ontario. The Credit River has a drainage area of 850 square km and a total length of 93 km from northeast of Orangeville to Port Credit, travelling through hilly areas which include moraines and gravel terraces (Chapman and Putman 1984). The Study Area is centered on Silver Creek a tributary of the Credit River located in the Silver Creek Subwatershed (#11) that connects to the Credit River in Norval. The headwaters of the Silver Creek Subwatershed are located within the Town of Erin with the remaining subwatershed located within the Town of Halton Hills, and is greatly influenced by the Niagara Escarpment (CVC et al. 2002). Silver Creek is approximately 20 km in length and has a maximum watercourse elevation of approximately 420 masl at the upstream watershed divide and the lowest elevation is approximately 200 masl at the confluence of the Credit River. Georgetown, located adjacent to Silver Creek, occupies the lower 25% of Subwatershed 11 (CVC et al. 2002).

A slope analysis was conducted using a LiDAR-derived Digital Terrain Model for Peel Region (MNRF 2016b). The Peel LiDAR package was created from flights conducted in May of 2016, with a vertical accuracy of class of 10 cm. The LiDAR-derived DTM has a spatial resolution of 0.5m and was converted to a slope raster (degrees) in ArcGIS Pro. The slope analysis shows that there are some significantly steep slopes and valley features within the Study Area (see **Figure 3A-E** in **Appendix 1**). This may pose challenges for trail alignment. Slopes running parallel to Silver Creek are generally flatter; however, the valley features are an access constraint from the adjacent urban developed areas.

4.2. Identified Natural Heritage Features

4.2.1. Provincially Significant Wetlands (PSW)

There are no Provincially Significant Wetlands (PSW) located within the Study Area. Additionally, there are no non-Provincially or unevaluated wetlands.

4.2.2. Areas of Natural and Scientific Interest (ANSI)

There are no Areas of Natural and Scientific Interest (ANSI) located within the Study Area; however, there several ANSIs nearby located within the Silver Creek Subwatershed:

- Georgetown Credit River Valley
- Silver Creek Valley
- Ballinafad Swamp & Bog
- Brisbane Woods

4.2.3. Natural Heritage Features

The Study Area is located within the Regional Natural Heritage System, the Greenbelt Natural Heritage System, and Halton Region's Greenslands system.

4.3. Species Records Summary

A total of 49 rare species (SAR and SCC) have potential to occur or were previously documented within the Study Area and immediate area, this includes 16 SAR (Threatened and Endangered) and 9 Species of Special Concern . The full results are presented in **Table 1**.

Table 1. Species at Risk and Rare Species from the Background Review

Taxa	Common Name	Scientific Name	S Rank	SARO	Source
Amphibian	Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	iNaturalist, ORAA
Bird	Bank Swallow	*Riparia riparia*	S4B	THR	OBBA
Bird	Barn Swallow	*Hirundo rustica*	S4B	SC	OBBA, eBird, iNaturalist
Bird	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	OBBA, iNaturalist
Bird	Canada Warbler	*Cardellina canadensis*	S5B	SC	OBBA
Bird	Chimney Swift	*Chaetura pelagica*	S3B	THR	NHIC, OBBA, eBird, CVC
Bird	Common Nighthawk	*Chordeiles minor*	S4B	SC	OBBA
Bird	Eastern Meadowlark	*Sturnella magna*	S4B, S3N	THR	OBBA, iNaturalist, eBird
Bird	Eastern Whip-poor-will	*Antrostomus vociferus*	S4B	THR	OBBA
Bird	Eastern Wood-pewee	*Contopus virens*	S4B	SC	NHIC, OBBA, eBird, iNaturalist, CVC
Bird	Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	OBBA

Taxa	Common Name	Scientific Name	S Rank	SARO	Source
Bird	Louisiana Waterthrush	*Parkesia motacilla*	S2B	THR	OBBA
Bird	Purple Martin	*Progne subis*	S3B		OBBA
Bird	Red-headed Woodpecker	*Melanerpes erythocephalus*	S3	END	OBBA
Bird	Semipalmated Sandpiper	*Calidris pusilla*	S2B,S4M		iNaturalist
Bird	Wood Thrush	*Hylocichla mustelina*	S4B	SC	NHIC, OBBA, iNaturalist, CVC
Fish	American Brook Lamprey	*Lethenteron appendix*	S3		MNRF
Fish	Redside Dace	*Clinostomus elongatus*	S1	END	NHIC
Insect	a potter wasp	*Parancistrocerus leionotus*	S2		NHIC, iNaturalist
Insect	American Bumble Bee	*Bombus pensylvanicus*	S3S4		NHIC
Insect	Clymene Moth	*Haploa clymene*	S3S4		iNaturalist
Insect	Fraternal Potter Wasp	*Eumenes fraternus*	S3		iNaturalist
Insect	Giant Leopard Moth	*Hypercompe scribonia*	S3S4		iNaturalist
Insect	Hoary Long-horned Bee	*Peponapis pruinosa*	S2S3		NHIC
Insect	Monarch	*Danuas plexippus*	S2N,S4B	SC	iNaturalist, ON Butterfly Atlas
Insect	Northern Bush Katydid	*Scudderia septentrionalis*	S3		iNaturalist
Insect	Pruinose Squash Bee	*Peponapis pruinosa*	S2S3		iNaturalist
Insect	Rusty-patched Bumble Bee	*Bombus affinis*	S1	END	NHIC
Insect	Swamp Darner	*Epiaeschna heros*	S3S4		iNaturalist
Insect	Walnut Caterpillar Moth	*Datana integerrima*	S3S4		iNaturalist
Insect	Widow Yellowjacket	*Vespula vidua*	S3		iNaturalist
Insect	Yellow-banded Bumble Bee	*Bombus terricola*	S3S5	SC	NHIC, Bumble Bee Watch, iNaturalist
Lichen	a lichen	*Acrocordia conoidea*	S3		iNaturalist
Lichen	False Russell's fishscale lichen	*Psora pseudorussellii*	S3		iNaturalist
Lichen	Speckled Blister Lichen	*Viridothelium virens*	S3		NHIC, iNaturalist
Liverwort	Floating Crystalwort	*Riccia fluitans*	S3		CVC, iNaturalist
Mammal	Eastern Small-footed Myotis	*Myotis leibii*	S2	END	Atlas of the Mammals of Ontario
Mammal	Little Brown Bat	*Myotis lucifugus*	S3	END	iNaturalist, Atlas of the Mammals of Ontario
Mammal	Tricoloured Bat	*Perimyotis subflavus*	S3	END	Atlas of the Mammals of Ontario

Taxa	Common Name	Scientific Name	S Rank	SARO	Source
Mammal	Northern Myotis	*Myotis septentrionalis*	S3	END	Atlas of the Mammals of Ontario
Moss	Alleghany Thamnobryum Moss	*Thamnobryum alleghaniense*	S3		iNaturalist
Plant	Black Ash	*Fraxinus nigra*	S4	END	CVC
Plant	Butternut	*Juglans cinerea*	S2?	END	iNaturalist, CVC
Plant	Eastern Stiff Goldenrod	*Solidago rigida ssp. rigida*	S3		CVC
Plant	Honey Locust	*Gleditsia triacanthos*	S2?		CVC
Plant	Large Toothwort	*Cardamine maxima*	S3		iNaturalist
Plant	Virginia Bluebells	*Mertensia virginica*	S3		NHIC
Reptile	Snapping Turtle	*Chelydra serpentina*	S4	SC	NHIC, ORAA, iNaturalist, CVC

4.4. Vegetation Communities

The CVC has assessed vegetation communities throughout most of the Study Area using Ecological Land Classification (ELC) (Lee et al. 1998) and NSE staff confirmed these classifications (**Figure 5** in **Appendix 1**). Lowercase letter endings were added to the ELC codes to distinguish different communities of the same ecosite type. A few new vegetation communities were delineated north of the rail line. This includes several marsh communities (MAS and MAM) and a Maple Deciduous Woodland (FOD5-1a). The Moist Sugar Maple – Hardwood (FOD6-5a) community's borders were altered as well. There were 20 natural vegetation communities in the Study Area. Two of the communities were inaccessible (FODb and FOD7b) and therefore there is minimal information for these communities. No vegetation communities within the Study Area are considered rare.

4.4.1. FOD7-4a – Moist Black Walnut Lowland Deciduous Forest

This riparian forest community is dominated by Black Walnut (*Juglans nigra*). There were many mature emergent Black Walnuts and Crack Willows (*Salix euxina*), above the canopy layer. The emergent layer with more Black Walnut than Crack Willow, is 25 m or taller and covering about 20% of the community. The main canopy layer is composed of roughly equal parts of Black Walnut and Norway Maple (*Acer platanoides*), with Manitoba Maple (*Acer negundo*), Crack Willow, Sugar Maple (*Acer saccharum*), and American Basswood (*Tilia americana*) as associates. The majority of the canopy is between 15 and 25 m high and covers the entire community. The sub-canopy is mostly composed of Manitoba Maple and Green Ash (*Fraxinus pennsylvanica*), with less Alternate-leaved Dogwood (*Cornus alternifolia*), European Buckthorn (*Rhamnus cathartica*) and American Elm (*Ulmus americana*) present. The subcanopy is also fairly dense, covering 35-60% of the community and is between 5 and 15 m high. The understory, or the shrub layer, is made up of mostly Manitoba Maple, European Buckthorn and Green Ash saplings. The most abundant shrubs were Chokecherry (*Prunus virginiana*) and European Privet (*Ligustrum vulgare*). Riverbank Grape (*Vitis riparia*) and Virginia Creeper

(*Parthenocissus quinquefolia*) vines are also abundant throughout this layer. Overall, this layer is between 1 m and 5 m high and covers 35-60% of the community. The ground layer, below approximately 1 m tall was composed of dense patches of Spotted Jewelweed (*Impatiens capensis*), Purple Jewelweed (*Impatiens glandulifera*), Virginia Waterleaf (*Hydrophyllum virginianum*), Forget-me-not (*Myosotis sp.*), Canada Avens (*Geum canadense*), and Wood Avens (*Geum urbanum*). There were also large patches of Lesser Periwinkle (*Vinca minor*) spreading from adjacent landowners' backyards. The ground layer covers >60% of the surface of the community.

4.4.2. FOD7-3a – Moist Willow Lowland Deciduous Forest

This riparian forest community is dominated by Crack Willow in the canopy. There are several large willows that are emergent, over 20 m tall and cover about 10% of the community. The main canopy is abundant with Crack Willow, with less Norway Maple present. There is also American Elm, Freeman's Maple (*Acer* x *freemanii*), and Black Walnut as associates. The dense canopy covers the entire community and is 10 to 20 m tall. The sub-canopy is composed of Green Ash and Manitoba Maple saplings, Red-osier Dogwood (*Cornus sericea*) and Chokecherry shrubs, and Riverbank Grape growing throughout. This layer is less than 10 m tall and covers 25-35% of the community. The understory is composed of tree saplings, small shrubs and tall herbaceous species, including Green Ash, Manitoba Maple, Red-osier Dogwood, Chokecherry, Multiflora Rose (*Rosa multiflora*), Spotted Joe Pye Weed (*Eutrochium maculatum*). The ground layer has Spotted Jewelweed, Canada Avens, European Buckthorn seedlings, and Broad-leaved Enchanter's Nightshade (*Circaea canadensis*) present. The ground layer is less than 1 m high and covers roughly 25% of the community.

4.4.3. CUM1–1a Mineral Cultural Meadow

This community is a meadow that has a mowed walking strip along its eastern edge. It is composed of typical meadow species. The most abundant of these include Orchard Grass (*Dactylis glomerata*), Smooth Brome (*Bromus inermis*), Timothy (*Phleum pratense*), Kentucky Bluegrass (*Poa pratensis*), Red Clover (*Trifolium pratense*), Ground-ivy (*Glechoma hederacea*), and Field Bindweed (*Convolvulus arevnsis*). The meadow is bordered to the east by a riparian forest (FOD7a) and to the north and west by a Cultural Woodland (CUWa).

4.4.4. FOD7a – Moist Lowland Deciduous Forest

There is a thin riparian forest community on either side of Silver Creek, north of Mill Street and south of the rail line. This community has steep banks and small floodplain area. The slopes are composed of a mixture of Manitoba Maple, Green Ash, Black Walnut, American Elm, and Norway Maple. The shrubs present are Red-osier Dogwood, Alternate-leaved Dogwood, European Buckthorn, and Multiflora Rose. The ground layer is sparse, likely due to erosion, with Greater Celandine (*Chelidonium majus*), Reed Canary Grass (*Phalaris arundinacea*), Broad-leaved Enchanter's Nightshade, and Canada Avens present along the banks and top of slope.

4.4.1. CUW1a – Mineral Cultural Woodland

This Black Walnut woodland was only investigated from the edges as there was no access and has a canopy cover of approximately 60% due to disturbances and encroachment.

4.4.1. CUW1b – Mineral Cultural Woodland

This cultural woodland borders Silver Creek immediately south of Ontario Street. It has a canopy of Manitoba Maple and Weeping Willow (*Salix* x *pendulina*). The canopy covers 35-60% of the community and is 10 to 20 m tall. The sub-canopy is composed of mostly Manitoba Maples, with a lesser amount of Green Ash.

4.4.2. MAS2 – Shallow Marsh

This community is a European Common Reed (*Phragmites australis* ssp. *australis*) marsh. Large dense stands of European Common Reed are present on both sides of the river. This community was only observed using binoculars and a drone.

4.4.3. MAM2-2/MAS2-3 – Meadow Marsh

This small community is composed of dense Reed-canary Grass and scattered Hybrid Cattail (*Typha* × *glauca*), Spotted Joe Pye Weed, and Purple Loosestrife (*Lythrum salicaria*). There is a sparse canopy with European Alder (*Alnus glutinosa*) and Green Ash, 5-10 m tall and covering approximately 20% of the community. The ground layer is very dense, less than 1 m in height, and covers the entire area. It is composed of Field Horsetail (*Equisetum arvense*), Common Buttercup, Retrorse Sedge (*Carex retrorsa*), and Common Marsh Bedstraw (*Galium palustre*).

4.4.4. FOD7b – Moist Lowland Deciduous Forest

This forest is a mix of Black Walnut, Willow, and Manitoba Maple. This community was not accessible and was only investigated using binoculars from College Street.

4.4.5. FOD7-4b – Moist Black Walnut Lowland Deciduous Forest

This community is within Ewing Street Park and is a mature Black Walnut riparian forest that borders Silver Creek and goes partially up the slope towards Ontario Street and College Street. It has a canopy of Black Walnut (20 m in height), which covers the entire community. There is a sparse sub-canopy of Black Walnut and the occasional Manitoba Maple and American Elm, covering 10-25% of the community and are 5-20 m in height. The understorey is dense with Black Raspberry (*Rubus occidentalis*) and Tatarian Honeysuckle (*Lonicera tatarica*) shrubs and Riverbank Grape and Virginia Creeper Vines. This layer covers approximately 50% of the community and is between 1 and 5 m high. The ground layer is very dense with *Geum* spp. (*Geum canadense, Geum urbanum,* and *Geum* × *catlingii*), Common Buttercup (*Ranunculus acris*), Broad-leaved Enchanter's Nightshade, and Orchard Grass.

4.4.6. FOD5-1a – Dry-Fresh Sugar Maple Deciduous Forest

Located up the slope from the FOD7-4b community is a Sugar Maple forest. This small section of the forest is dominated by Sugar Maple in the canopy with occasional Black Cherry (*Prunus serotina*) and Black Walnut. The canopy is covering the entire community and is 15-25 m tall. The sub-canopy is composed of a Sugar Maple and Green Ash, 5-15 m tall, covering >60% of the community. The shrub layer is made up of Chokecherry, Green Ash, and Virginia Creeper, 1-5 m tall and covering 35-60% of the community. The ground layer is sparse, only covering 10-25% and is composed of Virginia Creeper, Pennsylvania Sedge (*Carex pensylvanica*), Canada Avens, and scattered Woodland Sedge (*Carex blanda*).

4.4.7. SWT2a – Mineral Thicket Swamp

This riparian community is a dense European Alder Swamp Thicket. There is a sparse (20% cover) emergent canopy of Crack Willow, Black Walnut, and dead Green Ash snags, about 20 m in height. The main canopy is dense with European Black Alder (*Alnus glutinosa*) and has some regenerating Green Ash and Freeman's Maple sapling. The canopy is 5 to 10 m tall and covers >60% of the community. The sub-canopy is composed of smaller shrubs, Multiflora Rose and Red-osier Dogwood, as well as a dense patch of European Common Reed (*Phragmites australis* ssp. *australis*). This layer covers 35-60% of the community and is 2 to 5 m tall. The understory is composed of taller herbaceous wetland species, such as Spotted Joe Pye Weed, Purple Loosestrife, and Reed Canary Grass, and is between 1 and 2 m tall and covers 35-60% of the community. The ground layer has abundant Spotted Jewelweed, Field Horsetail, Canada Anemone (*Anemonastrum canadense*), and Common Buttercup.

4.4.1. FOD7b – Moist Lowland Deciduous Forest

This community's canopy is composed of a mixture of Eastern White Pine (*Pinus strobus*), willows, and Trembling Aspen (*Populus tremuloides*) and has a sub-canopy of Black Walnut. This community was only observed from a distance with binoculars.

4.4.2. FOD7c – Moist Lowland Deciduous Forest

This riparian forest has emergent Crack Willows over a canopy of Green Ash and Manitoba Maple with scattered Black Walnut. The Crack Willows are between 15 and 20 m tall and cover about 20% of the community. The canopy of ash, maple, and walnut are 10 to 15 m tall, and cover the entire community. The sub-canopy is very dense and dominated by European Buckthorn. There is also Green Ash and Manitoba Maple saplings present. The sub-canopy is dense, covering >60% of the community, and it is 2 to 10 m tall. The understory consists of small trees and shrubs, including European Buckthorn, Red-osier Dogwood, and Green Ash, as well as taller herbaceous species, such as Tall Meadowrue (*Thalictrum pubescens*), Purple Butterbur (*Petasites hybridus*), and Elecampane (*Inula helenium*). This dense layer is 1 to 2 m tall and covers >60% of the community. The ground layer

is very dense (>60% cover) with Virginia Creeper, Goutweed (*Aegopdium podagraria*), Lesser Periwinkle, Dames Rocket (*Hesperis matronalis*), Forget-me-not, and European Buckthorn seedlings.

4.4.3. SWD4a – Deciduous Swamp

This swamp has three main species in the canopy, Green Ash, American Elm, and Crack Willow. The canopy is dense (>60% cover) and is 10 to 20 m in height. The sub-canopy is also dense (>60% cover) and is composed of Pussy Willow (*Salix discolor*), Green Ash, Red-osier Dogwood, and a lesser amount of European Buckthorn and Multiflora Rose (*Rosa multiflora*). The sub-canopy is between 2 and 10 m tall. The Understory is composed of tall herbaceous species, Purple Butterbur (*Petasites hybridus*), Spotted Joe Pye Weed (*Eutrochium maculatum*), Glossy-leaved Aster (*Symphyotrichum firmum*), and a lesser amount of Common Water-parsnip (*Sium suave*). This layer covers 35-60% of the community and is 1-2 m tall. The dense ground layer (>60% cover) and is composed of forget-me-nots (*Myositis* sp.), Canada Anemone (*Anemone canadensis*), and a lesser amount of Rough Avens (*Geum lacianatum*) and Field Horsetail (*Equisetum arvense*).

4.4.4. CUM1-1b – Mineral Cultural Meadow

This meadow is on the northern slope of the railway that bisects McNabb Street. It consists of sparse (<10% cover) Manitoba Maple and Red-osier Dogwood (*Cornus sericea*), between 1 and 5 m tall. The ground layer is composed of a variety of herbaceous species, the most abundant of which are Common Milkweed (*Asclepias syriaca*), goldenrod (*Solidago* sp.), Annual Fleabane (*Erigeron annuus*), Common Timothy (*Phleum pratense*), Smooth Brome (*Bromus inermis*), Wild Chicory (*Cichorum intybus*), and New England Aster (*Symphyotrichum nova-angliae*).

4.4.5. FOD6-5a – Fresh-Moist Sugar Maple Hardwood Deciduous Forest

This forest community is near the top of bank immediately southwest of Georgetown District High School. The most abundant species in the canopy are Sugar Maple, Black Maple (*Acer nigrum*), Black Walnut, and Norway Maple. The trees are mature, approximately 20 m tall and dense cover (>60%). The understorey is dominated by European Buckthorn, Multiflora Rose (*Rosa multiflora*), and Staghorn Sumac (*Rhus typhina*) near the edges. The ground layer has Spotted Jewelweed, Canada Avens, European Buckthorn seedlings, and Broad-leaved Enchanter's Nightshade (*Circaea canadensis*) present.

4.4.6. FODb – Deciduous Forest

This community was inaccessible. The forest canopy is composed of deciduous species, likely similar to the adjacent communities. Canopy species likely include Sugar Maple, Norway Maple, Manitoba Maple, American Basswood, Black Cherry, and ash species.

4.5. Flora

A total of 175 plant species were documented across all the vegetation communities within the Study Area. There were almost equal native (47.7%), and non-native (48.9%) species recorded. There were six species (3.4%) that were only identified to genus, and not included in the native to non-native ratio. A full plant species list is provided in **Table A2-1** in **Appendix 2**.

4.5.1. Rare Plant Species

A total of 12 rare plant species, including local ranks, were recorded during the 2024 field investigations (**Table 2**). Of the 12 species, one is a Species at Risk (SAR), Black Ash (*Fraxinus nigra*), which was documented in the FOD7-4a community (**Figure 6** in **Appendix 1**). No other SAR or Species of Conservation Concern (SCC) (S Rank S1 – S3) were recorded. Four species are considered uncommon and one rare in the Halton Region according to the *Halton Natural Areas Inventory* report (Crins *et al.* 2006). Eight species recorded are considered uncommon or rare within the ecodistrict 6E-7 (Varga *et al.* 2004). One species, Common Bedstraw (*Galium aparine*) considered uncommon within the ecodistrict 6E-7 is also considered to be an agricultural weed in Ontario. From the background review, four SCC species and one SAR are likely to occur in the Study Area (see **Table 1**).

Table 2. Rare and Uncommon Plant Species from 2024 Field Investigations

Common Name	Scientific Name	S Rank[1]	SARO[2]	Halton NAI (Crins et al. 2006)[3]	6E-7 (Varga et al. 2004)[3]
Black Ash	*Fraxinus nigra*	S4	END		
Black Maple	*Acer nigrum*	S4?			R
Bur Oak	*Quercus macrocarpa*	S5			R
Canada Lettuce	*Lactuca canadensis*	S5		U	U
Common Bedstraw[4]	*Galium aparine*	S5			U
Common Juniper	*Juniperus communis*	S5		R	
Giant Goldenrod	*Solidago gigantea*	S5		U	U
Great Ragweed	*Ambrosia trifida*	S5		U	
Rough Avens	*Geum laciniatum*	S4			R
Running Strawberry Bush	*Euonymus obovatus*	S4			R
White Spruce	*Picea glauca*	S5		U	
White Turtlehead	*Chelone glabra*	S5			U

[1]S Rank (Provincial) – S4: Apparently Secure; S5: Secure

[2]Species at Risk in Ontario (SARO) – END: Endangered

[3]U: Uncommon; R: Rare

[4]Considered an agricultural weed (https://www.ontario.ca/document/weed-identification-guide-ontario-crops/cleavers)

4.5.2. Invasive and Aggressive Non-native Plant Species

A total of 13 invasive plant species, as recognized by the Ontario Invasive Plant Council (OIPC), and an additional seven highly aggressive non-native plant species were documented during the field investigations. Three additional species, all recognized as an invasive species by OIPC, were also added to this list as these species were recorded in the CVC data and therefore have a high likelihood of being present in the Study Area. The full list of invasive and aggressive non-native plant species are listed in **Table 3**.

Table 3. Invasive and Aggressive Non-native Plant Species

Common Name	Scientific Name	Recognized as an Invasive Species by OIPC[2]	Recorded During 2024 Surveys (NSE)	Additional Species - High Likelihood of Presence (CVC)[1]
Autumn Olive	*Elaeagnus umbellate*	x		x
Bishop's Goutweed	*Aegopodium podagraria*	x	x	
Creeping (Canada) Thistle	*Cirsium arvense*		x	
Dame's Rocket	*Hesperis matronalis*		x	
English Ivy	*Hedera helix*		x	
European Black Alder	*Alnus glutinosa*	x		x
European Buckthorn	*Rhamnus cathartica*	x	x	
European Common Reed	*Phragmites australis* subsp. *australis*	x	x	
European Privet	*Ligustrum vulgare*		x	
Garlic Mustard	*Alliaria petiolata*	x	x	
Himalayan Balsam	*Impatien glandulifera*	x	x	
Japanese Knotweed	*Reynoutria japonica*	x	x	
Lesser Periwinkle	*Vinca minor*		x	
Multiflora Rose	*Rosa multiflora*	x	x	
Norway Maple	*Acer plantanoides*	x	x	
Purple Butter-bur	*Petasites hydridus*		x	
Purple Loosestrife	*Lythrum salicaria*	x	x	
Reed Canary Grass	*Phalaris arundinacea* ssp. *arundinacea*	x	x	
Non-native Honeysuckles	*Lonicera* spp.	x	x	
White Mulberry	*Morus alba*	x		x
Wild Parsnip	*Pastinaca sativa*	x	x	
Yellow Archangel	*Lamium galeobdolon*		x	
Yellow Iris	*Iris pseudacorus*	x	x	

[1]These species have a high likelihood of presence within the Study Area as they were recorded in the data obtained from CVC for the general area.

[2] Ontario Invasive Plant Council (OIPC) – Invasive Plant List (https://www.ontarioinvasiveplants.ca/invasive-plants/)

4.6. Fauna

A total of 23 fauna species were recorded in the Study Area during field investigations. A full wildlife species list is provided in **Table A2-2** in **Appendix 2**. Survey efforts were targeted to bird species, as such 20 of the 23 total species were birds, including one SAR: Chimney Swift (*Chaetura pelagica*); and one SCC: Eastern Wood-pewee (*Contopus virens*) (location shown on **Figure 6** in **Appendix 1**). Chimney Swift is also provincially rare (S3B) and locally uncommon in the CVC watershed. There were no other provincially or locally rare fauna species. Other incidental species included one insect: Ebony Jewelwing (*Calopteryx maculata*) and two mammals: White-tailed Deer (*Odocoileus virginianus*) and Red Squirrel (*Tamiasciurus hudsonicus*).

Other mobile species adapted to urban environments, such as Coyote (*Canis latrans*), Eastern Chipmunk (*Tamias striatus*), Eastern Cottontail (*Sylviagus floridanus*), Eastern Gray Squirrel (*Sciurus carolinensis*), Groundhog (*Marmota monax*), Meadow Vole (*Microtus pennsylvanicus*), Northern Short-tailed Shrew (*Blarina brevicauda*), Racoon (*Procyon lotor*), Red Fox (*Vulpes vulpes*), and Striped Skunk (*Mephitis mephitis*), are also likely to be found within the Study Area. All of which except the Striped Skunk have been recorded on iNaturalist in the general area. Several bat species are also expected to occur in the Study Area. Big Brown Bat (*Eptesicus fuscus*) and/or Silver-haired Bat (*Lasionycteris noctivagans*) were recorded by CVC, these two species have similar call signatures and can be difficult to identify. Little Brown Myotis (*Myotis lucifugus*), listed as endangered provincially and federally, was recorded on iNaturalist for the general area.

4.7. Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) in the Study Area was assessed using the SWH Criteria Schedules for Ecoregion 6E (MNRF 2015) as well as the SWH Technical Guide (MNR 2000) and the Natural Heritage Reference Manual (NHRM), Second Edition (MNR 2000). Indicator species, ecosites and other characteristics of candidate SWH were reviewed. Where candidate SWH was identified, the criteria to confirm SWH were applied based on the features observed in the Study Area. The entire Study Area was not accessible due to private landownership; therefore additional habitat could be present. The full SWH Screening table is presented in **Table A3-2** in **Appendix 3**.

One type of SWH, Special Concern and Rare Wildlife Species, is confirmed to be present within the Study Area, with potential for 7 additional types of SWH (i.e., 'candidate SWH') to be present:

- Bat Maternity Colonies
- Turtle Wintering Area
- Reptile Hibernaculum
- Waterfowl Nesting Area
- Turtle Nesting Areas
- Marsh Breeding Bird Habitat

- Terrestrial Crayfish

Two SWH were possible to be present:

- Amphibian Breeding Habitat (Wetlands)
- Amphibian Movement Corridors (requires confirmed Amphibian Breeding Habitat)

Additional field studies would be needed to confirm candidate SWH.

4.8. Fish and Aquatic Habitat

Silver Creek, a major tributary of the Credit River is classified as mixed coolwater/coldwater and coldwater fisheries (CVC et al. 2002). From the Aquatic Resource Area line segment (Fish Habitat) dataset (MNRF 2024b), 28 species of fish were recorded for the segment that covers the Study Area. An additional three records included one hybrid (Johnny Darter x Tesselated Darter), identification to genus (*Oncorhynchus* sp.), and identification to family (Sticklebacks). The full list of fish species are shown in **Table A2-3** of **Appendix 2**. Of the 28 species, three species were locally rare (L1-3) with two of these species also provincially rare (S1-3). One SAR was also present: Redside Dace (*Clinostomus elongatus*), an endangered species (**Table 4**).

Table 4. SAR, Provincially and Locally Rare Fish Species present in Study Area.

Common Name	Scientific Name	S Rank[1]	L Rank (CVC 2020)[2]	SARO[3]
American Brook Lamprey	*Lethenteron appendix*	S3	L3	
Brassy Minnow	*Hybognathus hankinsoni*	S5	L3	
Redside Dace	*Clinostomus elongatus*	S1	L1	END

[1]S Rank (Provincial) – S1: Critically imperiled; S3: Vulnerable; S5: Secure

[2]L Rank (CVC 2020) – L1: Locally critically imperiled; L3: Locally Vulnerable

[3]Species at Risk in Ontario (SARO) – END: Endangered

Redside Dace, a small insectivorous fish, is a provincially and federally Endangered fish species and this species is known to inhabit Silver Creek, which is identified as Critical Habitat for this species (DFO 2024b). Redside Dace receives species and habitat protection under the ESA (Government of Ontario 2007) and federally as Silver Creek is mapped as Critical Habitat which is protected under the SARA (Government of Canada 2002). Redside Dace have specific habitat requirements which includes overhanging vegetation, clear coolwater, riffle and pool morphology, and a coarse substrate (i.e., sand and gravel). Riffles are used in late spring and early summer for spawning (MNRF 2016a). Urban development, site grading and excavation activities leading to soil erosion, and loss of habitat are the most significant threats to Redside Dace populations in Ontario. Other contributing threats include intensive agricultural activities and introductions of non-native species.

4.8.1. Redside Dace Habitat Delineation

Redside Dace (*Clinostomus elongatus*) is a provincially and federally Endangered fish species and has species and habitat protection under the ESA (Government of Ontario 2007) and under the SARA (Government of Canada 2002). Regulated habitat for Redside Dace under the ESA is defined in Section 29 of O. Reg. 832/21 under the ESA and critical habitat under the SARA is defined within the species recovery strategy (DFO 2024b) and protected under Section 58(1) under SARA. Regulated habitat and critical habitat for Redside Dace includes the occupied watercourse, its meander belt, and the vegetated area or agricultural lands that are within 30 m (Government of Ontario 2021; Redside Dace Recovery Team 2010).

To determine the meander belt the analysis procedures followed Parish Geomorphic (2001). Inputs into the analysis consisted of digitized watercourses profiles from all available years of imagery (1954, 1999, 2024) and the LiDAR-derived Ontario Digital Terrain Model (0.5 m spatial resolution; MNRF). The Redside Dace occupied watercourse, meander belt and land within 30 m is shown on **Figure 8** of **Appendix 1**.

4.9. Species at Risk and Species of Special Concern Screening

Of the 16 SAR (Threatened and Endangered) and 9 Species of Special Concern (SC) identified from the background review, there were 16 species with a probability of occurrence. Of these, four were low likelihood, six were high likelihood, and another six were confirmed. The full SAR and SC Screening table is presented in **Table A3-1** in **Appendix 3**.

Confirmed species include:

- Black Ash (ESA: Endangered)
- Chimney Swift (ESA and SARA: Threatened)
- Redside Dace (ESA and SARA: Endangered)
- Monarch (ESA: Special Concern; SARA: Endangered)
- Snapping Turtle (ESA and SARA: Special Concern)
- Eastern Wood-pewee (ESA and SARA: Special Concern)

Chimney Swift were observed foraging immediately adjacent to the Study Area; however, there is no nesting habitat within the Study Area as this species requires a chimney or similar structure.

High likelihood of occurrence include the following species:

- Butternut (ESA and SARA: Endangered)
- Jefferson Salamander (ESA and SARA: Endangered)
- Little Brown Myotis (ESA and SARA: Endangered)
- Eastern Small-footed Myotis (ESA: Endangered)

- Northern Myotis (ESA and SARA: Endangered)
- Tri-coloured Bat (ESA and SARA: Endangered)
- Yellow-Banded Bumblebee (ESA and SARA: Special Concern)

Additional field studies would be needed to confirm species presence within existing habitat to determine if the proposed trail works would impact SAR and SC and / or their habitat. Currently the full extent of the proposed activities is unknown, therefore, the full impact to species is also not known. Pending outcomes of this additional work, permitting requirements to support compliance with applicable Species at Risk legislation would be determined.

4.9.1. Future Considerations Regarding SAR bats

COSSARO is responsible for classifying species under the Endangered Species Act, 2007 (ESA) and provides these classifications to the MECP. If the Annual Report identifies any species as extirpated, endangered, threatened, or of special concern, the Ontario Regulation 230/08 – Species at Risk in Ontario (SARO) List must be updated within one year of receiving the report.

On January 31, 2024, the MECP received the Committee on the Status of Species at Risk in Ontario (COSSARO) 2023 Annual Report. This report includes species assessments and classifications for the past year.

The following bat species were recommended for classification as Endangered under the SARO List and are anticipated to receive protection under the ESA:

- Eastern Red Bat (*Lasiurus borealis*)
- Hoary Bat (*Lasiurus cinereus*)
- Silver-haired Bat (*Lasionycteris noctivagans*)

It is anticipated that the MECP will make the necessary amendments to O. Reg. 230/08 by January 31, 2025.

These species have all been recorded in the region and have high probability of occurring within or near the Study Area.

4.10. Overall Site Condition Observations

During the 2024 field investigations, general site condition was assessed noting threats to the natural communities. The Study Area is located in an urban area, surrounded by primarily residential development with several road crossings. As a result of its landscape context and history, it shows clear evidence of disturbance and is significantly impacted by the adjacent land uses.

Threats noted within the Study Area included:

- Invasive and non-native plant species (see **Section 3.5.2**)
- Invasive insect, the Emerald Ash Borer (EAB, *Agrilus planipennis*)
- Highly disturbed areas
    - Often entirely dominated by invasive species and evidence of past physical disturbance (e.g., grading, soil compaction, clearing of vegetation, EAB, etc.).
    - Soil compaction and degradation
    - Downed trees and fallen woody debris including in Silver Creek
- Garbage, dumping, encroachment

A former fuel depot exists between Guelph Street and Mill Street. A study or assessment for soil contamination is expected to be required and there is potential that soil remediation will be required, if a public trail is proposed in this location.

Site Condition is shown on **Figure 7** in **Appendix 1**. As mentioned, access to the entire Study Area was restricted, therefore, the results are only for accessible areas.

5. Potential Constraints and Opportunities

5.1. Potential Constraints & Considerations for Trail Creation

The following represent potential and/or anticipated constraints and other considerations which will have to be addressed in the planning for the creation of a trail within the Study Area:

- Species at Risk Habitat (terrestrial and aquatic)
- Significant Wildlife Habitat (terrestrial and aquatic)
- Areas within the Provincial and/or regional Natural Heritage System, or Greenlands System
- Restrictions to timing and/or constrained areas if tree/vegetation removals are proposed related to:
    - MBCA – Migratory Birds
    - FWCA – Non-migratory birds, raptors, mammals, amphibians, reptiles
    - SWH / SAR - Bat Maternity Colonies

These are discussed in the sub-sections below.

5.1.1. Species at Risk

The greatest constraint is expected to be regulated habitat for Redside Dace, which occupies 82% (19.2 of 23.5 ha) of the Study Area, as shown on **Figure 8** in **Appendix 1**. As such, the entire preferred trail location is within Redside Dace regulated habitat. Permitting and consultation related to regulated habitat is provided in **Section 6**.

Bridges and culverts associated with road and trail crossings can impact Redside Dace habitat. Some designs may restrict flows, prevent light penetration, and/or limit fish passage (MNRF 2016a). Best Management Practices related to stream crossings in Redside Dace habitat from the *Guidance for Development activities in Redside Dace Protected Habitat* (MNRF 2016a) include:

- Minimizing the number of stream crossings (e.g., stream crossings should generally be limited to one per kilometre of stream)
- In-water works must adhere to Redside Dace timing windows (works to occur during July 1 to September 15 to avoid the spawning season and to stabilize the stream corridor before winter)
- Location of new stream crossings should be chosen to:
    - Avoid reaches known to be occupied by Redside Dace;
    - Minimize the width of the crossings;
    - Cross over straight sections of the stream where there is less likelihood for bank erosion; and
    - Cross at areas that have already been disturbed and avoid initiating disturbances in new areas of the stream

Additionally, CVC provides direction on watercourse crossings in the *Technical Guidelines for Watercourse Crossings* (CVC 2019), such as boardwalks through floodplain areas need to be elevated above 100 year storm level. Section 7.1 provides design considerations for low traffic pedestrian crossing. These guidelines are also to be read in conjunction with *Fish and Wildlife Crossing Guidelines* (CVC 2017). Section 9 provides Fish and Wildlife Crossing and Fencing Design and Section 10 provides Best Management Practices.

5.1.2. Significant Wildlife Habitat

Trails are generally permitted in Significant Wildlife Habitat if it can be demonstrated that there will be no negative impacts on the natural features or their ecological functions, or to adjacent lands to features.

5.1.3. Provincial and/or Regional Natural Heritage System and Greenlands System

Generally, trail development within the NHS is encouraged with the following limitations: only on public lands or as part of the Bruce Trail; no negative impact on ecologically sensitive areas; for non-

intensive recreation uses such as nature viewing and pedestrian trail activities; proper regard for private property; and that adjacent landowners potentially affected are consulted.

5.1.4. Timing and Permitting

Timing restrictions and requirements related to permitting are anticipated with the development of a trail. Some potential constraints may be mitigated by trail location and design. **Table 5** in **Section 6** provides more information.

5.2. Enhancement Opportunities

With the proposed trail development, there is an opportunity to enhance features and/or areas within the Study Area. Based on the findings from the 2024 field investigations including observed threats (see **Section 3.10** for Overall Site Condition) enhancements could include the following:

- Removal and treatment of invasive plant species
- Addition of native species plantings in highly disturbed or degraded areas (i.e., areas of invasive plant species removal)
- Removal of garbage and dumping
- Soil remediation in location of former fuel depot
- Restoration of Redside Dace habitat:
    - Bank stabilization by planting native shrubs in riparian areas
    - Enhance riparian buffers (e.g., vegetate areas currently mowed lawn, bare earth, or areas dominated by non-native/invasive species)
    - Plant overhanging vegetation to attract flying insects near stream edge

Implementation of enhancement opportunities should incorporate sustainable trail design and best practices such as:

- Avoid and minimize vegetation and tree removal to maintain environment and desired trail user experience (e.g., minimize trail footprint of activity)
- Avoid significant grading or disturbance which could impact vegetation or lead to future impacts (e.g., erosion)
- Prevent the spread of invasive species by reducing the construction footprint and following clean equipment protocols
- Prevent the disruption of water movement (e.g., water movement down slopes after heavy rain fall)

6. Permitting and Consultation

Required permitting and agency consultation is dependent on the chosen design for trail creation. Possible required permitting and agency consultation for trail creation (including tree removals and vegetation clearing) within the Study Area are outlined in the following table.

Table 5. Possible Required Permitting and Agency Consultation related to Trail Creation.

Triggered Legislation or Policy	Potential Required Action	Specifics / Species Information
Fisheries Act	Consultation required	Where there is potential to harm fish and fish habitat, including aquatic SAR (Redside Dace). A DFO Request for Review will be required. A DFO authorization may be required.
Migratory Bird Convention Act	Consultation not required with avoidance and mitigation	To avoid contravention of the MBCA, vegetation clearing is recommended to occur outside of the active bird nesting season (generally April 1 – August 31). Where this is not possible, nest searches may be considered based on Environment Canada guidelines[3] by a qualified biologist. If a nest is found during nest searches or during construction, the nest must be retained and protected with a buffer.
Species at Risk Act	Consultation required	**Redside Dace** – Consultation with DFO and/or Environment Canada will be required. A SARA permit may be required.
	Consultation / permitting may be required	Possible additional aquatic SAR species (see SAR Screening in **Appendix 3**) may require consultation with DFO and/or Environment Canada (concurrent with the above)
Fish and Wildlife Conservation Act	Consultation required if tree/vegetation removals are required. Permitting may be required.	Type of vegetation and proposed timing will determine which taxa (e.g., birds, mammals, reptiles, etc.) may be affected. Consultation will be required where there is risk to species protected under

[3] Guidelines to reduce risk to migratory birds - Canada.ca

Triggered Legislation or Policy	Potential Required Action	Specifics / Species Information
		the Act. Permitting may be required for potential impact to individuals or their nests.
Endangered Species Act	Consultation / permitting may be required	**Black Ash –** Prohibitions apply to only trees that have a diameter at breast height (DBH) ≥8 cm (measured at 1.37 m), unless the tree is identified as "unhealthy" in a report prepared and submitted by a qualified profession in accordance with the regulation. Prohibitions do not apply to trees with a DBH <8 cm or tree <1.37 m or dead trees. Black Ash habitat is the area within a radial distance of 30 m around each Black Ash tree to which prohibitions apply.
	Consultation required if tree removals are required / permitting may be required	**All SAR Bat Species** - Recommended avoidance (limitation of tree removals) and mitigation (timing windows for tree removals), to be confirmed with MECP consultation.
	Consultation and permit anticipated to be required	**Redside Dace** – Activities that adversely affect Redside Dace or its protected habitat may be permitted by being issued an Overall Benefit Permit (under the ESA). Typically approved Overall Benefit Permits included actions that will improve Redside Dace habitat. If approved, monitoring of created/ restored habitat is required and replacement of habitat is at MECP's discretion. More information provided in **Table 6**.
	Possible consultation and/or permit(s) required	Possibility of other SAR species occurring in the Study Area (see SAR Screening in **Appendix 3**)
Credit Valley Conservation (O. Reg. 41/24)	Consultation and permit anticipated to be required	A permit is anticipated to be required as the Study Area occurs within the regulated area for CVC.

Triggered Legislation or Policy	Potential Required Action	Specifics / Species Information
Ontario Forestry Act	Permit not required if no boundary trees are to be removed	It is the applicant's responsibility to verify ownership of all assessed trees before injury or removal. Landowner permission must be requested prior to injury or removal of boundary / adjacent property trees. Where injury to shared boundary trees or trees on adjacent properties has been identified, the applicant may be required by the Town to provide an assessment of the impact to the long-term health of each tree, to be prepared by a qualified expert (i.e. Certified Arborist).
Canadian Food Inspection Agency (CFIA) Directive D-03-08	Permit not required if ash material is not being transported outside of a regulated area into a non-regulated area[4]	Ash trees (*Fraxinus* spp.) are present within the Study Area, however, it is unknown whether any would need to be removed for the creation of a trail. If ash trees are to be removed, all ash material in Ontario cannot be moved outside of the regulated area into a non-regulated area (i.e., materials cannot be transported from southern Ontario to the area north of Sudbury).

The application process for an Overall Benefit Permit under the Endangered Species Act (ESA) can be lengthy and costly. The Town has typically engaged consultants to assist in navigating the process and complete MECP technical requirements for each new project. The major process steps, consultant involvement and approximate time and costing, and MECP consultation timing is outlined in **Table 6**.

[4] Areas regulated for the emerald ash borer - Canadian Food Inspection Agency (canada.ca).

Table 6. Estimated Timelines and Costs for Permitting related to an Overall Benefit Permit (OBP).

Key Steps	Consultant involvement and approximate preparation time and cost[1]	MECP Processing Time[1]
Phase 1 - Information Gathering: Information Gathering Form (IGF)	~1 month, $1-2k	~1-3 months to provide comments. Timelines may be provided when the form is submitted.
Phase 2 – Activity Review and Assessment: Avoidance Alternatives Form (AAF)	~3-4 months, $3-4k Requires input from Town staff and, in some instances, multiple disciplines to support identification and assessment of alternatives.	6 months Submission of the AAF may be combined with the first draft of the OBP.
Phase 3 – Permit Application and Assessment: Overall Benefit Permit (OBP)	~3-12 months, $10-30k, depending on complexity such as compensation activities occurring offsite. The most complex step of the process. It involves consultation with MECP, confirmation of the level of impact, preparation and submitting. The process typically includes several iterations to arrive at a plan accepted by technical staff (SAR Biologist(s)). MECP may take ~8-12 weeks for each draft review. Once accepted by technical staff, the draft is reviewed by policy staff and additional comments and may be provided. The OBP is revised and resubmitted and may require posting on the Environmental Registry of Ontario (ERO) for 30 days for public input. During this time it is also reviewed by MECP's legal team as this is a legally binding agreement, which may require several rounds. After revisions from the legal team are addressed and the 30 days of public input have been completed the finalized OBP is submitted to the Minister for signing authorization (up to ~3 months).	Acknowledge receipt of OBP application and confirmation application requirements have been met within 60 calendar days of receipt, under normal circumstances. Once complete application has been confirmed, a decision should be given within 3 months. ~6–18 months from submissions to permit. Typically there is several rounds of consultation and communication with MECP.

Key Steps	Consultant involvement and approximate preparation time and cost[1]	MECP Processing Time[1]
	Once signed, the OBP is formally issued.	
Completing Mitigation and Overall Benefit Activities	Project dependant. Typically mitigation and overall benefit activities occur within 1-3 years of the initiation of construction activities (i.e., activities that impact the species and/or its habitat).	n/a
During Construction Monitoring and/or Post-Implementation Mitigation and Overall Benefit Activity Monitoring	Permit dependent. Overall Benefit Permits typically stipulate during and post-construction monitoring. A post-construction monitoring period is generally set to ensure activities are functioning as intended (e.g., survivorship monitoring for plantings, etc.)	n/a
Reporting	Annual reporting on activities and monitoring results, as applicable are required. Reporting costs typically range between $4K and $8K, depending on complexity.	n/a Reports are submitted to MECP, however there is no formal review period or expected response. They document activities of the permit.

[1]The provided timing and costs are approximations and are dependent on the project scale and complexity and the Species at Risk.

7. Conclusion

There are numerous physical and natural heritage constraints to implementation of the desired trail through the Study Area. There are potential avenues for addressing the constraints such as engineering and design for slope and other physical considerations and permitting for Redside Dace. However, these options present several risks and challenges that should be considered in the assessment of feasibility:

- Physical constraints:
    - Presence of contaminated soils is anticipated to require remediation. This will present both timeline and cost risks to trail implementation.
    - Slopes may pose short term and long-term risks to trail implementation. Short-term risks include design costs and timeline and cost for construction. Long-term risks include potential need to monitor slopes in proximity to trail infrastructure for health and safety of trail users.
- Natural Heritage Constraints
    - Application for a permit under the Endangered Species Act does not guarantee an approval will be granted. There is risk that time and costs will be applied to the process of preparing an Overall Benefit Permit and it will not be issued, halting trail implementation.

Compensation habitat and permit timelines will be required for Redside Dace and potentially required for applicable bat species. This is expected to involve the identification of suitable compensation habitat location(s) which are anticipated to be offside or outside of the Study Area and will have associated costs to implementation. It is recommended to review past trail creation projects that occurred in other locations that shared similar constraints to understand estimated costs and timeline implications.

Key ecological considerations for determining trail alignment include:

- Maintaining the ecological integrity of the Silver Creek and associated designated areas
- Critical habitat for Species at Risk (SAR)
- Significant Wildlife Habitat (SWH), and habitat for locally rare species
- Possible tree removal and vegetation clearing
- Disturbance to valley walls and other slopes, especially areas with erosion-prone substrates
- Disturbance to fish and aquatic habitat including any crossings of Silver Creek especially as they relate to impacts to Redside Dace (*Clinostomus elongatus*) habitat
- Trail development and management within the Greenbelt, the Halton Region Greenlands Network or other designated areas should reflect the provincial and municipal policies pertaining to those areas.

Factors that have been excluded or were out of scope in this Study include:

- Property ownership
- Public perception or desire for a trail
- Aesthetic of area (trail user experience)
- Potential trail alignment

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APPENDIX 1 | Report Figures (3-8)

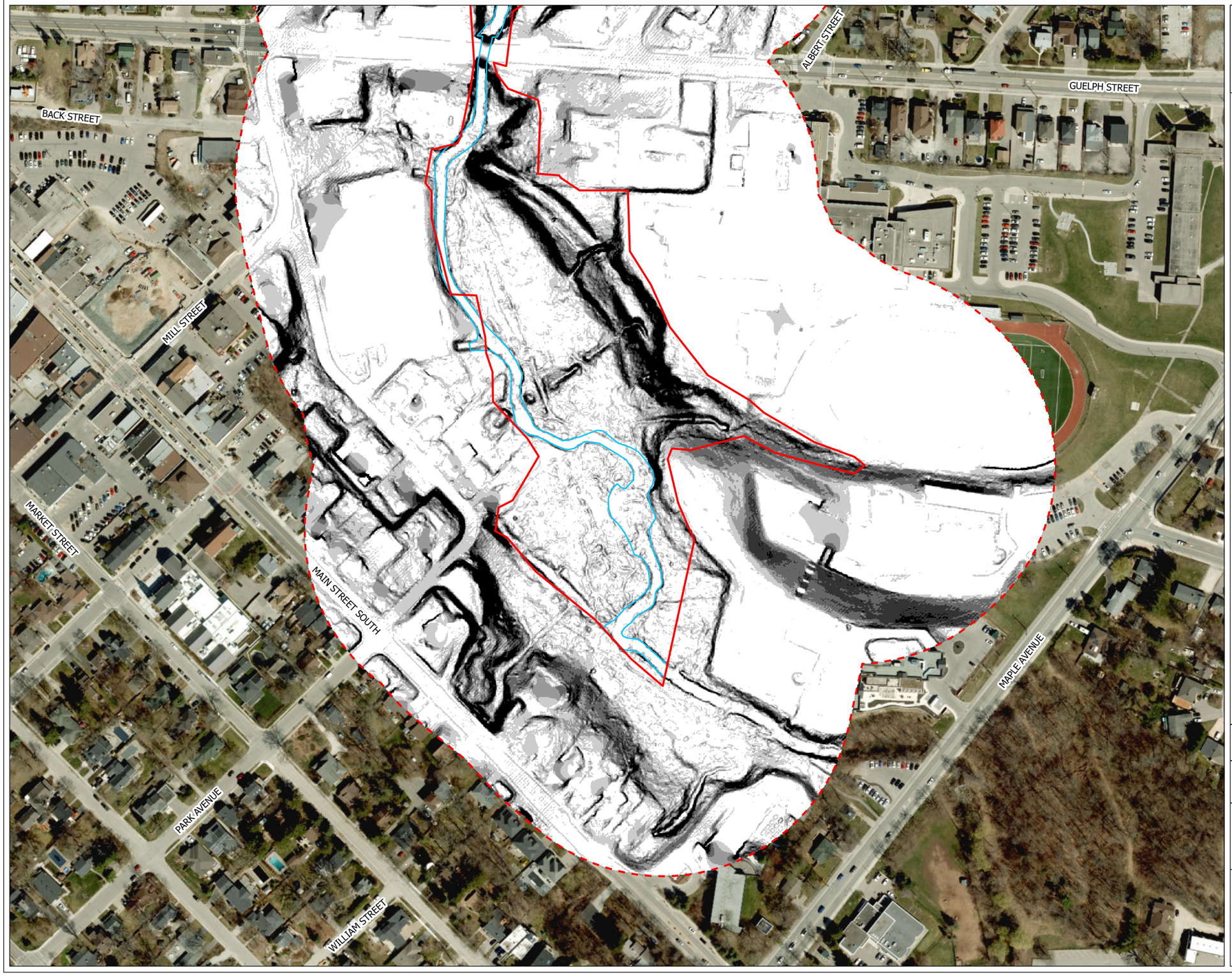

Figure 3A | Slope Analysis
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Silver Creek

Slope (Degrees)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 85

0 100 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

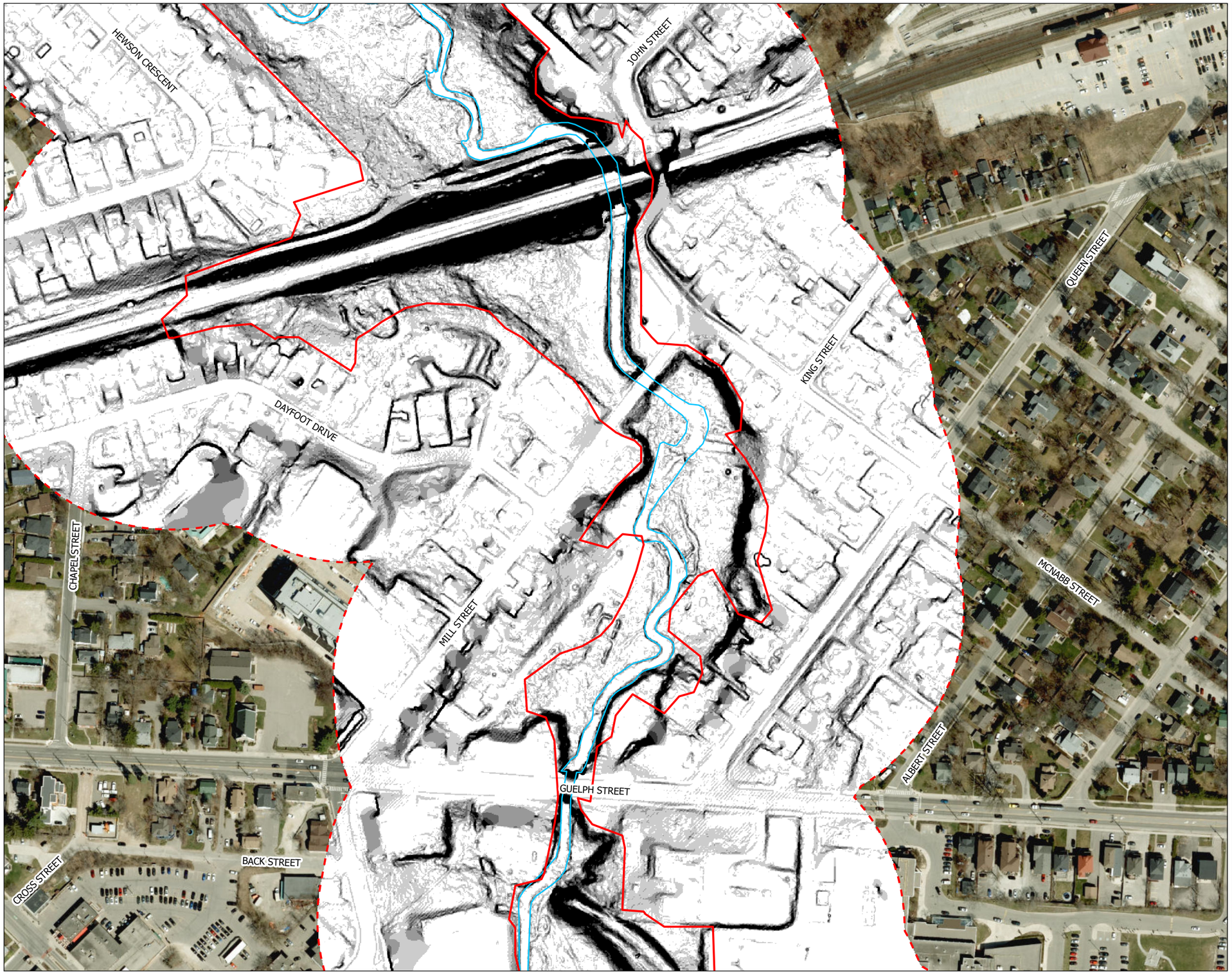

Figure 3B | Slope Analysis
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Silver Creek

Slope (Degrees)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 85

0 100 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

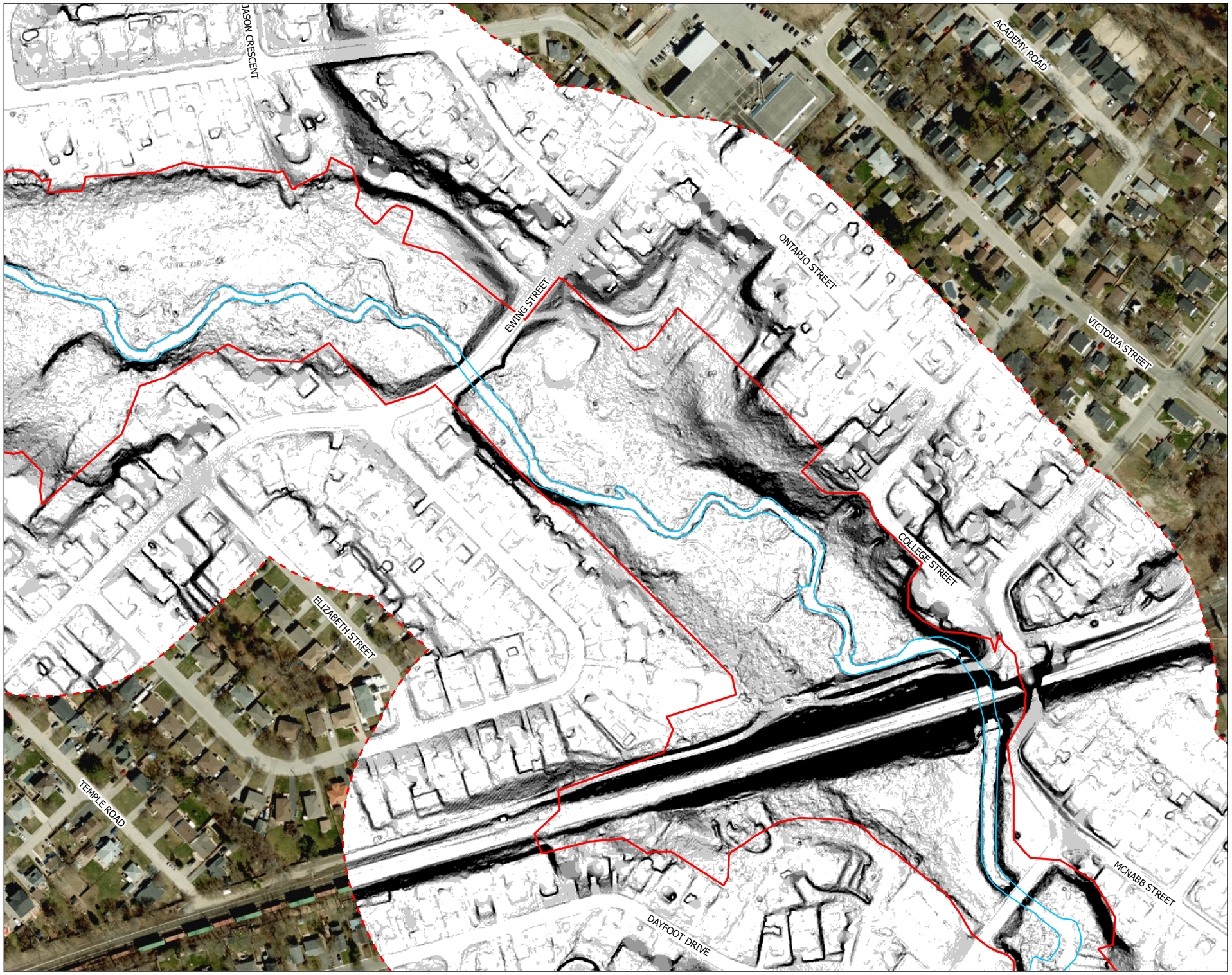

Figure 3C | Slope Analysis
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Silver Creek

Slope (Degrees)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 85

0 100 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

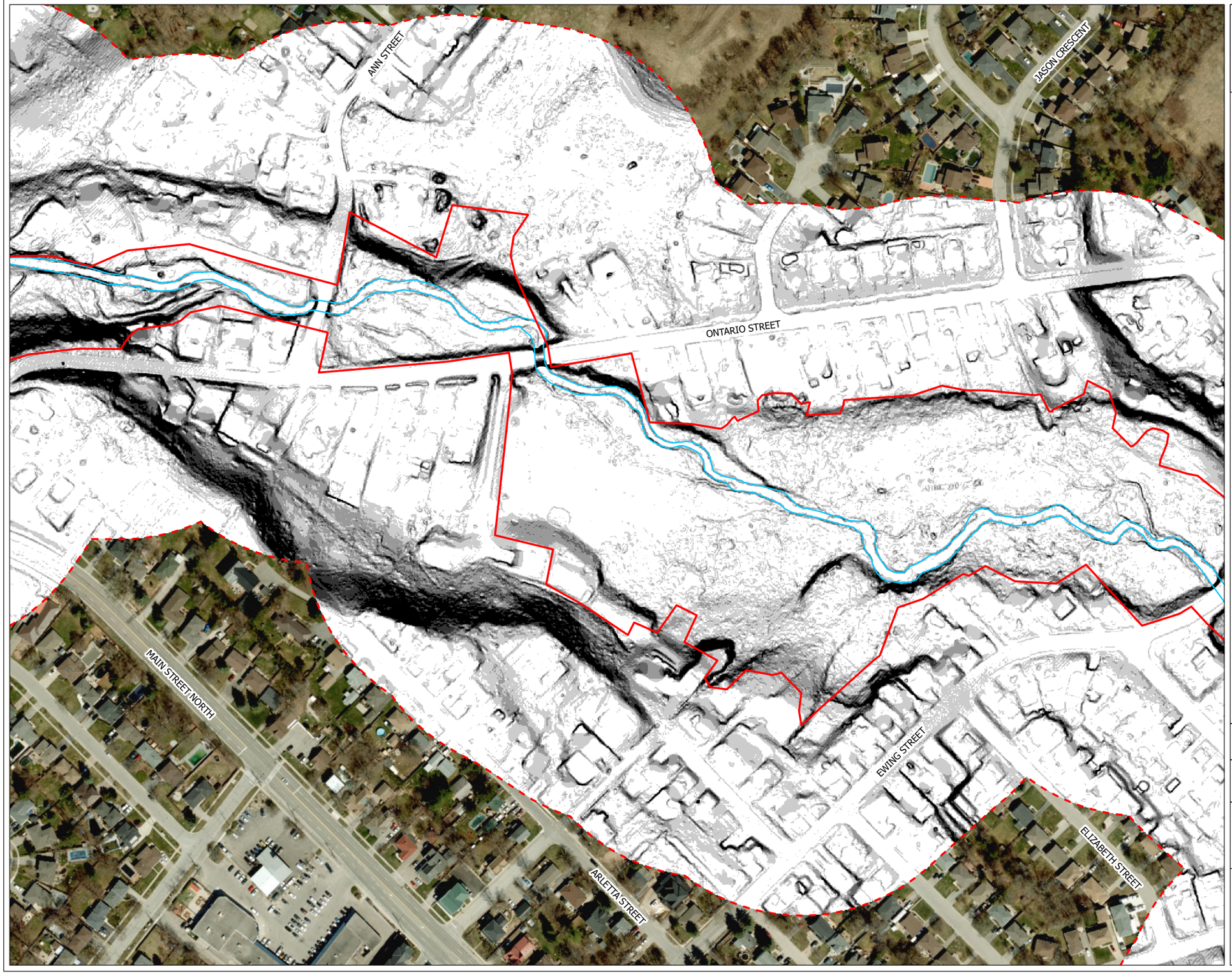

Figure 3D | Slope Analysis
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Silver Creek

Slope (Degrees)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 85

0 100 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

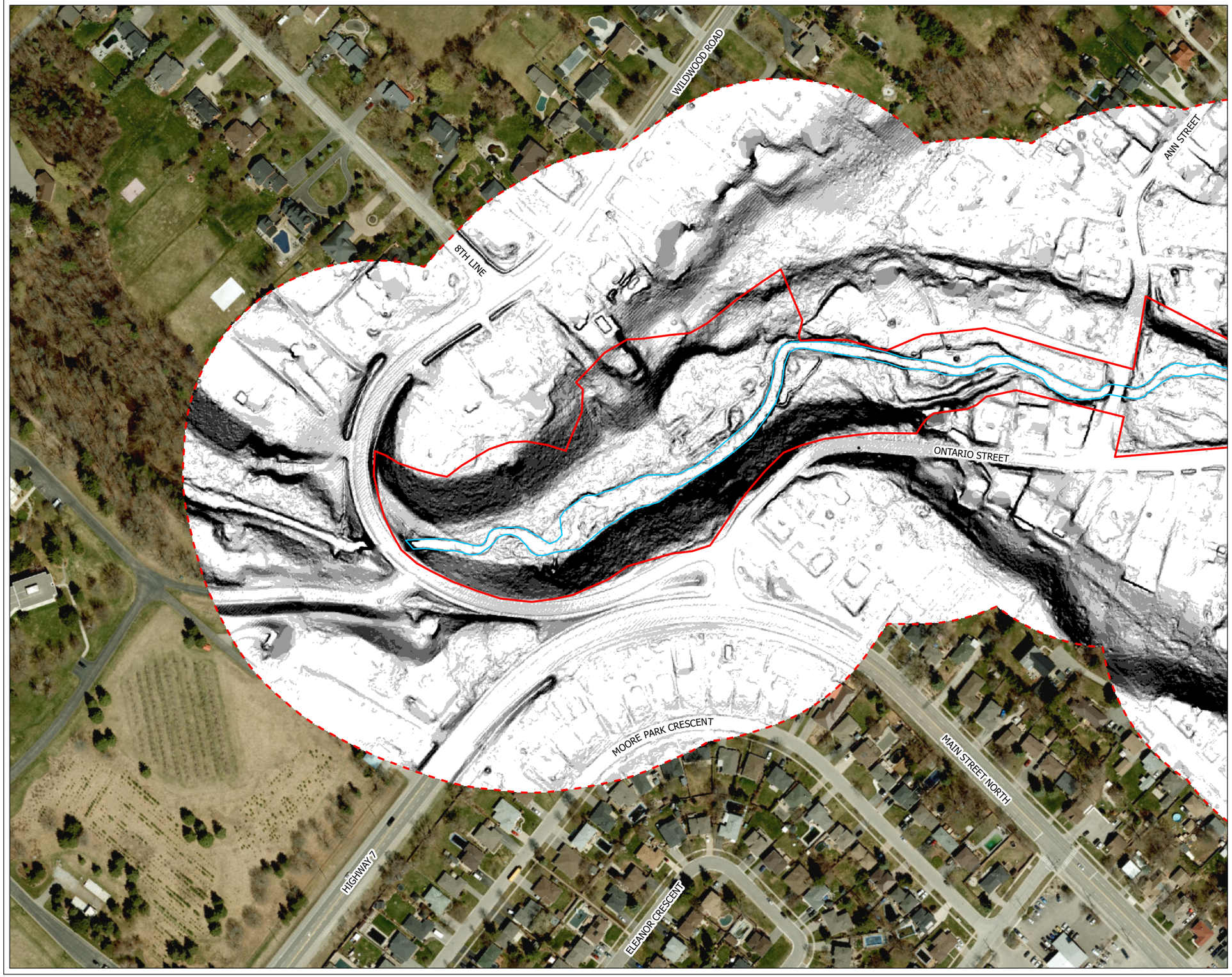

Figure 3E | Slope Analysis
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Silver Creek

Slope (Degrees)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 85

0 100 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

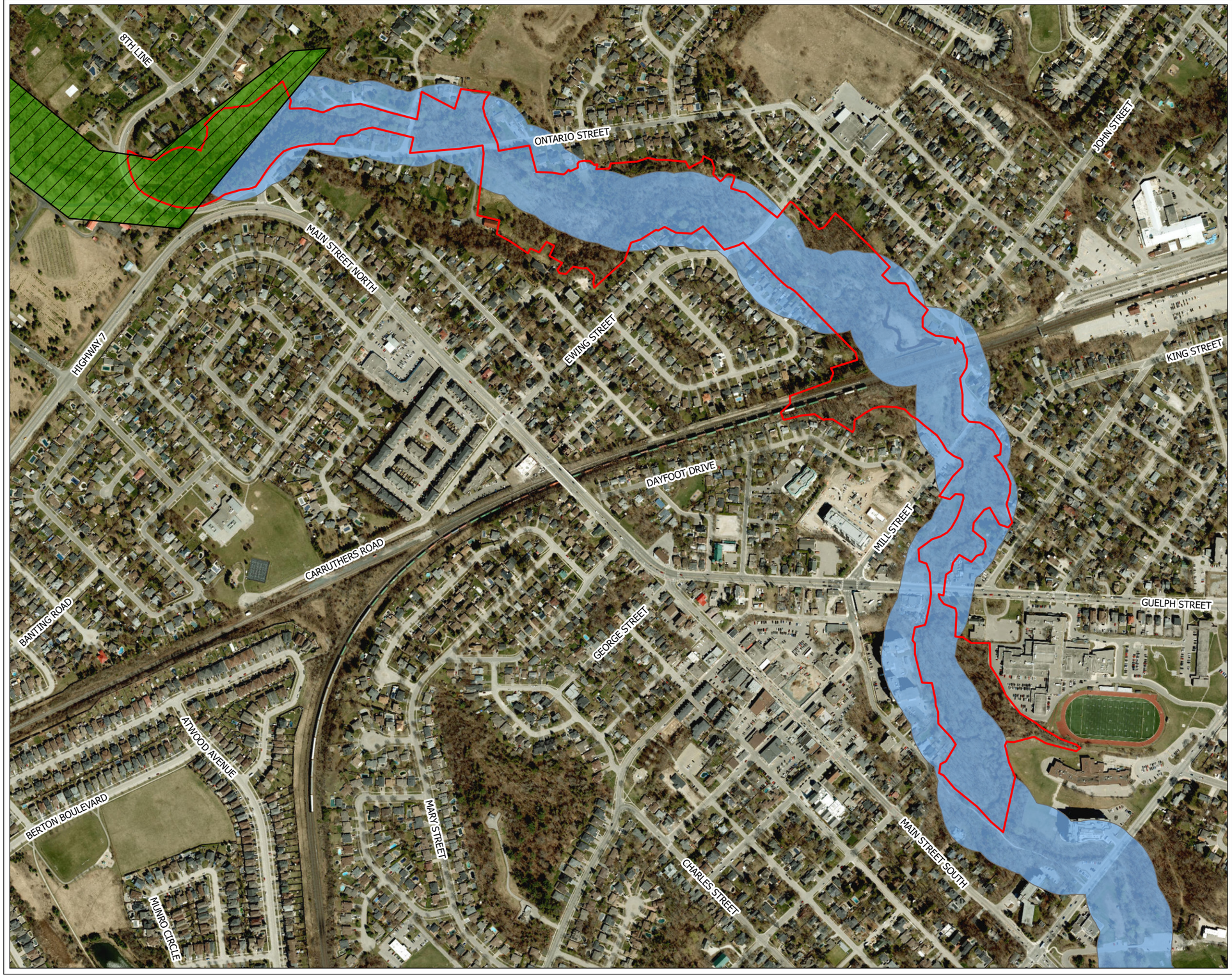

Figure 4 | Provincial NHS & Greenbelt Land Use Designation

Silver Creek Trail, Halton Hills

Legend

- Study Area

Greenbelt Land use Designations

- Protected Countryside
- Urban River Valley

Natural Heritage System

- Enabling Legislation - Greenbelt Act

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

Figure 5 | Vegetation Communities

Silver Creek Trail, Halton Hills

Legend

- Study Area
- Watercourse - Silver Creek
- Ecological Land Classification (ELC)

Vegetation Communities

CUM1–1$_{a/b}$ Mineral Cultural Meadow
CUW1$_{a/b}$ – Mineral Cultural Woodland
FOC$_{a}$ - Coniferous Forest
FOD5-1$_{a}$ – Dry-Fresh Sugar Maple Deciduous Forest
FOD6-5$_{a}$ – Fresh-Moist Sugar Maple Hardwood Deciduous Forest
FOD7-3$_{a}$ – Moist Willow Lowland Deciduous Forest
FOD7-4$_{a/b}$ – Moist Black Walnut Lowland Deciduous Forest
FOD7$_{a/b/c}$ – Moist Lowland Deciduous Forest
FOD$_{a/b}$ – Deciduous Forest
FOM$_{a}$ - Mixed Forest
MAM2-2/MAS2-3 – Meadow Marsh
MAS2 – Shallow Marsh
MOP - Private Open Space
SWD4$_{a}$ – Deciduous Swamp
SWT2$_{a}$ – Mineral Thicket Swamp
TPX - Railroad
URL - Low Density Residential

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

Figure 6 | Significant Flora and Fauna
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Watercourse - Silver Creek

Fauna

- Chimney Swift (*Chaetura pelagica*), SARO: THR
- Eastern Wood-pewee (*Contopus virens*), SARO: SC

Flora

- Black Ash (*Fraxinus nigra*), SARO: END

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

Figure 7 | Site Condition (Invasive Species, Issues, disturbance)

Silver Creek Trail, Halton Hills

Legend

- Study Area
- Watercourse - Silver Creek

Observations

- Deadfall in Stream
- Dumping
- Emerald Ash Borer
- Encroachment
- Garbage
- Highly Disturbed Area
- Invasive Species

Invasive Species - Phragmites

- High Density
- Low Density

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

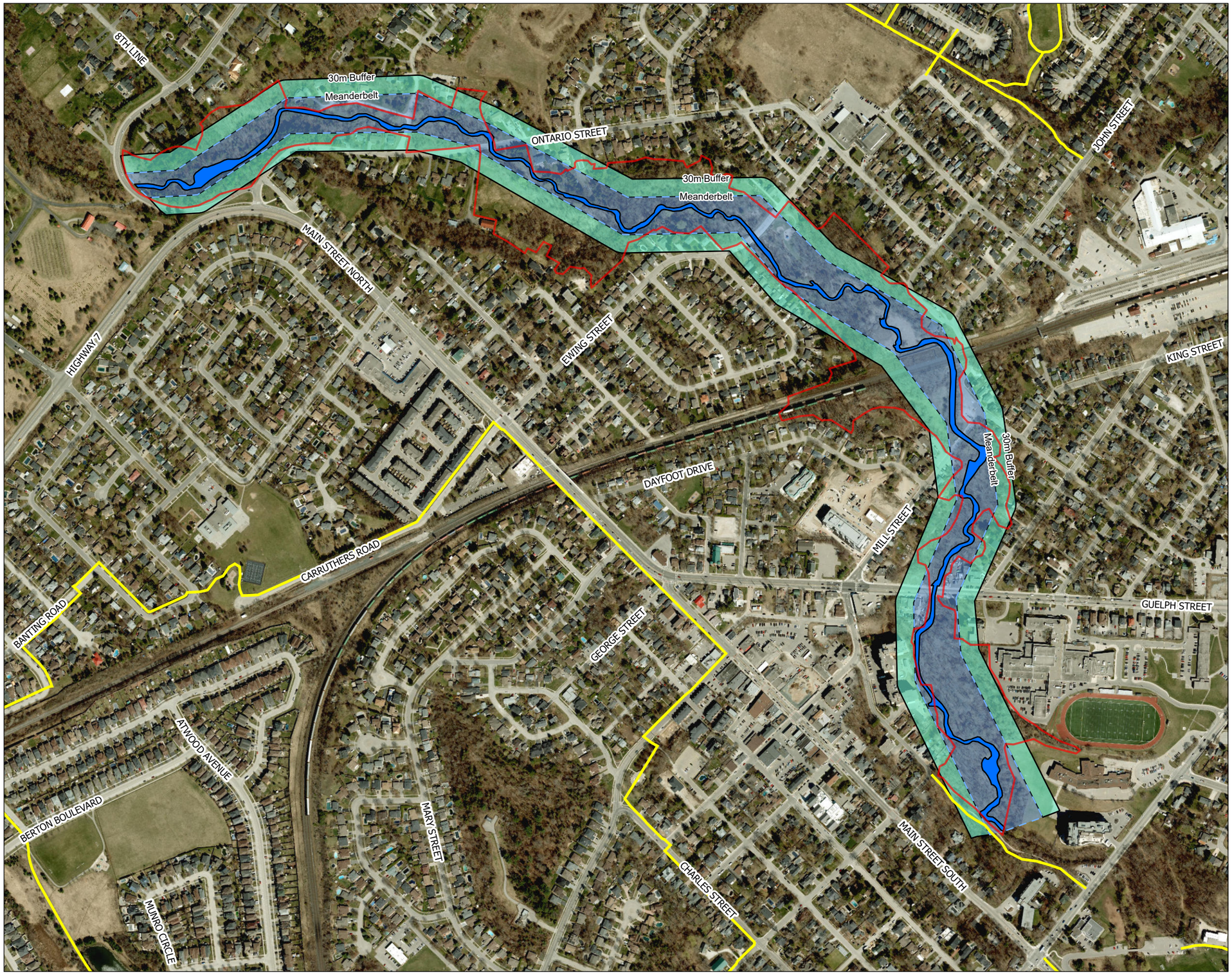

Figure 8 | Meanderbelt Analysis & Red Side Dace Habitat Delineation
Silver Creek Trail, Halton Hills

Legend

- Study Area
- Town Trails

Redside Dace Habitat*

- 1 - Occupied Watercourse
- 2 - Meanderbelt
- 3 - 30m Meanderbelt Buffer

*Regulated habitat and critical habitat for Redside Dace includes the occupied watercourse, its meander belt, and the vegetated area or agricultural lands that are within 30m. It does not include residential or paved areas.

0 100 200 300 400 Meters

Project Number	Date:	N
24-1431	2024-11-19	

north-south ENVIRONMENTAL

APPENDIX 2 | Flora and Fauna Species Lists

A2-1. Full Flora Species List from 2024 Field Investigations.

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community														
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Acer ginnala	Amur Maple	GNR	SNA				Non-Native		X													X				
Acer negundo	Manitoba Maple	G5	S5				Native		X	0	X	X	X			X	X	X	X	X	X					X
Acer nigrum	Black Maple	G5	S4?				Native		R	7						X										
Acer platanoides	Norway Maple	GNR	SNA				Non-Native		X		X					X	X	X		X		X				
Acer saccharum	Sugar Maple	G5	S5				Native			4				X	X			X				X				
Acer x freemanii	Freeman's Maple	GNA	SNA				Non-Native		X	6							X									
Aegopodium podagraria	Goutweed	GNR	SNA				Non-Native		X									X		X						
Aesculus hippocastanum	Horse Chestnut	GNR	SNA				Non-Native		X									X								
Agrimonia gryposepala	Hooked Agrimony	G5	S5				Native		X	2										X						
Agrostis stolonifera	Creeping Bentgrass	G5	SNA				Non-Native		X											X					X	
Ajuga reptans	Creeping Bugleweed	GNR	SNA				Non-Native		X										X							
Alliaria petiolata	Garlic Mustard	GNR	SNA				Non-Native		X								X			X						
Allium cristophii	Star of Persia	GNR	SNA				Non-Native													X						
Allium hollandicum	Dutch Garlic	GNR	SNA				Non-Native													X						
Alnus glutinosa	European Black Alder	GNR	SNA				Non-Native		X														X			X
Ambrosia artemisiifolia	Common Ragweed	G5	S5				Native		X	0		X														
Ambrosia trifida	Great Ragweed	G5	S5				Native	HU	X	0																X
Amphicarpaea bracteata	American Hog-peanut	G5	S5				Native		X	4							X	X		X	X				X	
Anemonastrum canadense	Canada Anemone	G5	S5				Native		X	3								X		X			X		X	X
Anemone virginiana	Tall Anemone	G5	S5				Native		X	4										X						
Arctium minus	Common Burdock	GNR	SNA				Non-Native		X		X							X								
Arisaema triphyllum	Jack-in-the-pulpit	G5	S5				Native			5								X		X						
Asclepias incarnata	Swamp Milkweed	G5	S5				Native			6												X				
Asclepias syriaca	Common Milkweed	G5	S5				Native		X	0		X														

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Bromus inermis	Smooth Brome	G5T5	SNA				Non-Native		X		X	X														
Carex blanda	Woodland Sedge	G5	S5				Native		X	3					X			X	X							
Carex hystericina	Porcupine Sedge	G5	S5				Native		X	5													X			
Carex lacustris	Lake Sedge	G5	S5				Native		X	5															X	
Carex pensylvanica	Pennsylvania Sedge	G5	S5				Native		X	5					X											
Carex retrorsa	Retrorse Sedge	G5	S5				Native		X	5													X			
Carex spicata	Spiked Sedge	GNR	SNA				Non-Native		X										X							X
Catalpa speciosa	Northern Catalpa	G4?	SNA				Non-Native		X										X							
Chelidonium majus	Greater Celandine	GNR	SNA				Non-Native		X		X							X								
Chelone glabra	White Turtlehead	G5	S5				Native		U	7																X
Cichorium intybus	Wild Chicory	GNR	SNA				Non-Native		X			X														
Cicuta maculata	Spotted Water-hemlock	G5	S5				Native			6			X				X						X		X	X
Circaea canadensis	Broad-leaved Enchanter's Nightshade	G5	S5				Native		X	2	X		X					X	X	X					X	
Clematis virginiana	Virginia Clematis	G5	S5				Native		X	3							X						X			
Convallaria majalis	European Lily-of-the-valley	G5	SNA				Non-Native		X									X	X	X						
Convolvulus arvensis	Field Bindweed	GNR	SNA				Non-Native				X															
Cornus alternifolia	Alternate-leaved Dogwood	G5	S5				Native		X	6	X		X					X	X							
Cornus sericea	Red-osier Dogwood	G5	S5				Native		X	2	X	X	X				X	X		X	X		X		X	X
Crataegus monogyna	English Hawthorn	G5	SNA				Non-Native		X									X								
Crataegus sp.	hawthorn																			X						
Crepis tectorum	Narrow-leaved Hawksbeard	GNR	SNA				Non-Native		X										X							
Dactylis glomerata	Orchard Grass	GNR	SNA				Non-Native		X		X							X	X							

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community														
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Daucus carota	Wild Carrot	GNR	SNA				Non-Native		X		X	X								X					
Dipsacus fullonum	Common Teasel	GNR	SNA				Non-Native		X			X	X												X	
Echinocystis lobata	Wild Cucumber	G5	S5				Native		X	3			X				X	X			X					
Elymus repens	Quackgrass	GNR	SNA				Non-Native		X									X								
Epipactis helleborine	Broad-leaved Helleborine	GNR	SNA				Non-Native		X				X				X									
Equisetum arvense	Field Horsetail	G5	S5				Native		X	0			X							X			X		X	
Erigeron annuus	Annual Fleabane	G5	S5				Native		X	0		X														
Erigeron philadelphicus var. philadelphicus	Philadelphia Fleabane	G5T5	S5				Native		X	1									X							
Euonymus obovatus	Running Strawberry-bush	G5	S4				Native		R	6							X									
Eutrochium maculatum	Spotted Joe Pye Weed	G5	S5				Native			3		X	X				X	X		X	X	X	X		X	X
Fragaria virginiana	Wild Strawberry	G5	S5				Native		X	2									X							
Fraxinus americana	White Ash	G4	S4				Native		X	4					X											
Fraxinus nigra	Black Ash	G5	S4		END	THR	Native		X	7								X								
Fraxinus pennsylvanica	Red Ash	G4	S4				Native		X	3			X	X			X	X	X	X	X	X	X		X	
Galium aparine	Common Bedstraw	G5	S5				Native		U	4								X								
Galium palustre	Common Marsh Bedstraw	G5	S5				Native		X	5										X			X			
Geum aleppicum	Yellow Avens	G5	S5				Native		X	2								X								
Geum canadense	Canada Avens	G5	S5				Native		X	3	X				X				X	X					X	
Geum laciniatum	Rough Avens	G5	S4				Native		R	4			X							X					X	
Geum urbanum	Wood Avens	G5	SNA				Non-Native		X									X	X	X						
Geum x catlingii	Catling's Avens	GNA	SNA				Non-Native						X						X							
Glechoma hederacea	Ground-ivy	GNR	SNA				Non-Native		X		X							X		X						

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Glyceria striata	Fowl Mannagrass	G5	S5				Native		X	3			X					X	X	X					X	
Hedera helix	English Ivy	GNR	SNA				Non-Native											X								
Hesperis matronalis	Dame's Rocket	G4G5	SNA				Non-Native		X				X				X	X	X	X	X					X
Hydrophyllum virginianum	Virginia Waterleaf	G5	S5				Native		X	6								X		X						
Hypericum perforatum	Common St. John's-wort	GNR	SNA				Non-Native		X									X								
Impatiens capensis	Spotted Jewelweed	G5	S5				Native		X	4			X				X			X	X				X	X
Impatiens glandulifera	Himalayan Balsam	GNR	SNA				Non-Native		X									X								
Inula helenium	Elecampane	GNR	SNA				Non-Native		X											X					X	X
Iris pseudacorus	Yellow Iris	GNR	SNA				Non-Native		X														X			
Iris sp.	iris																X									
Juglans nigra	Black Walnut	G5	S4?				Native		X	5	X			X	X	X	X	X	X	X	X	X				X
Juncus effusus	Soft Rush	G5	S5				Native			4													X			
Juncus tenuis	Path Rush	GNR	S5				Native		X	0								X	X							
Juniperus communis	Common Juniper	G5	S5				Native	HR		4												X				
Juniperus virginiana	Eastern Red Cedar	G5	S5				Native			4												X				
Lactuca canadensis	Canada Lettuce	G5	S5				Native	HU	U	3	X															
Lamium galeobdolon	Yellow Archangel	GNR	SNA				Non-Native													X						
Leonurus cardiaca	Common Motherwort	GNR	SNA				Non-Native				X							X								
Leucanthemum vulgare	Oxeye Daisy	GNR	SNA				Non-Native		X											X						
Ligustrum vulgare	European Privet	GNR	SNA				Non-Native		X							X		X		X						
Lolium arundinaceum	Tall Ryegrass	GNR	SNA				Non-Native		X											X						
Lonicera tatarica	Tatarian Honeysuckle	GNR	SNA				Non-Native		X		X	X					X	X	X	X			X		X	
Lotus corniculatus	Garden Bird's-foot Trefoil	GNR	SNA				Non-Native		X													X				
Lycopus americanus	American Water-horehound	G5	S5				Native		X	4															X	

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Lycopus europaeus	European Water-horehound	GNR	SNA				Non-Native		X				X													
Lysimachia ciliata	Fringed Yellow Loosestrife	G5	S5				Native		X	4							X								X	
Lysimachia nummularia	Creeping Yellow Loosestrife	GNR	SNA				Non-Native		X									X								
Lythrum salicaria	Purple Loosestrife	G5	SNA				Non-Native		X				X				X			X	X		X			X
Malus pumila	Common Apple	G5	SNA				Non-Native		X											X						
Matteuccia struthiopteris	Ostrich Fern	G5	S5				Native			5								X		X						
Medicago lupulina	Black Medick	GNR	SNA				Non-Native		X		X															
Mentha spicata	Spearmint	GNR	SNA				Non-Native		X				X										X			
Myosotis sp.	forget-me-not												X				X	X	X				X		X	
Nasturtium officinale	Watercress	GNR	SNA				Non-Native										X				X					
Oxalis stricta	Upright Yellow Wood-sorrel	G5	SNA				Non-Native		X									X								
Parthenocissus quinquefolia	Virginia Creeper	G5	S4?				Native	H?		6	X		X	X	X	X	X	X	X	X	X	X			X	
Pastinaca sativa	Wild Parsnip	GNR	SNA				Non-Native		X		X															
Petasites hybridus	Purple Butterbur	GNR	SNA				Non-Native													X	X				X	
Phalaris arundinacea ssp. arundinacea	Reed Canarygrass	G5	S5				Non-Native		X	0	X	X					X	X	X			X	X		X	
Phleum pratense	Common Timothy	GNR	SNA				Non-Native		X		X	X								X						
Phragmites australis ssp. australis	European Reed	G5T5	SNA				Non-Native					X												X		X
Picea abies	Norway Spruce	G5	SNA				Non-Native		X									X				X				
Picea glauca	White Spruce	G5	S5				Native	HU	X	6												X				
Pilea pumila	Dwarf Clearweed	G5	S5				Native		X	5			X					X								
Pinus strobus	Eastern White Pine	G5	S5				Native		X	4				X								X				

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Plantago lanceolata	English Plantain	G5	SNA				Non-Native		X		X															
Plantago rugelii	Rugel's Plantain	G5	S5				Native		X	1	X		X													X
Poa nemoralis	Eurasian Woodland Bluegrass	G5TU	SNA				Non-Native		X									X								
Poa pratensis	Kentucky Bluegrass	G5	S5				Native			0	X								X							
Polygonatum multiflorum	Eurasian Solomon's Seal	GNR	SNA				Non-Native													X						
Populus alba	White Poplar	G5	SNA				Non-Native		X							X										
Populus deltoides	Eastern Cottonwood	G5	S5				Native		X	4								X								
Populus tremuloides	Trembling Aspen	G5	S5				Native		X	2								X							X	
Prunus serotina	Black Cherry	G5	S5				Native		X	3					X			X								
Prunus virginiana	Chokecherry	G5	S5				Native			2	X				X		X	X	X	X	X	X				
Pulmonaria officinalis	Common Lungwort	GNR	SNA				Non-Native		X									X		X						
Quercus macrocarpa	Bur Oak	G5	S5				Native		R	5						X										
Ranunculus acris	Common Buttercup	G5	SNA				Non-Native		X		X		X					X	X	X			X		X	X
Ranunculus repens	Creeping Buttercup	GNR	SNA				Non-Native		X				X				X	X								
Reynoutria japonica	Japanese Knotweed	GNR	SNA				Non-Native		X									X								
Rhamnus cathartica	European Buckthorn	GNR	SNA				Non-Native		X		X		X	X		X	X	X		X	X	X				X
Rhus typhina	Staghorn Sumac	G5	S5				Native			1	X					X	X					X				
Ribes triste	Swamp Red Currant	G5	S5				Native		X	6							X									
Rosa multiflora	Multiflora Rose	GNR	SNA				Non-Native		X		X					X	X			X	X	X			X	X
Rubus occidentalis	Black Raspberry	G5	S5				Native		X	2	X							X	X	X						
Rumex crispus	Curled Dock	GNR	SNA				Non-Native		X			X	X				X				X		X			
Rumex obtusifolius	Bitter Dock	GNR	SNA				Non-Native		X				X													
Sagittaria latifolia	Broad-leaved Arrowhead	G5	S5				Native		X	4											X					

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Salix cordata	Heart-leaved Willow	G4	S4				Native			9										X						
Salix discolor	Pussy Willow	G5	S5				Native		X	3															X	
Salix euxina	Crack Willow	GNR	SNA				Non-Native									X	X	X		X		X				X
Salix sp.	willow																				X					
Salix x pendulina	Weeping Willow	GNA	SNA				Non-Native						X								X					
Sambucus canadensis	Common Elderberry	G5T5	S5				Native		X	5								X								
Scirpus atrovirens	Dark-green Bulrush	G5	S5				Native		X	3			X										X		X	
Securigera varia	Purple Crown-vetch	GNR	SNA				Non-Native		X			X														
Solanum dulcamara	Bittersweet Nightshade	GNR	SNA				Non-Native		X								X				X				X	
Solidago flexicaulis	Zigzag Goldenrod	G5	S5				Native		X	6								X								
Solidago gigantea	Giant Goldenrod	G5	S5				Native	HU	U	4																X
Solidago rugosa	Rough-stemmed Goldenrod	G5	S5				Native			4										X						
Solidago sp.	goldenrod											X						X			X	X				
Symphyotrichum firmum	Glossy-leaved Aster	G5	S4?				Native		X	4															X	
Symphyotrichum novae-angliae	New England Aster	G5	S5				Native		X	2		X	X								X					
Symphyotrichum puniceum	Purple-stemmed Aster	G5	S5				Native			6			X												X	
Symphytum officinale	Common Comfrey	GNR	SNA				Non-Native						X													
Taraxacum officinale	Common Dandelion	G5	SNA				Non-Native		X		X						X	X								
Thalictrum pubescens	Tall Meadow-rue	G5	S5				Native		X	5			X				X	X		X			X		X	
Thuja occidentalis	Eastern White Cedar	G5	S5				Native		X	4				X				X	X	X		X				
Tilia americana	Basswood	G5	S5				Native		X	4			X	X		X	X	X	X	X	X	X				
Tilia cordata	Little-leaved Linden	GNR	SNA				Non-Native		X											X						
Torilis japonica	Erect Hedge-parsley	GNR	SNA				Non-Native		X				X													
Toxicodendron radicans	Poison Ivy	G5	S5				Native			2			X							X		X				X

Scientific Name	Common Name	G Rank	S Rank	SARA	SARO	COSEWIC	Native Status	Halton NAI (Crins et al. 2006)	6E-7 (Varga 2004)		ELC Community															
										CC	CUM1-1a	CUM1-1b	CUW1b	FOCa	FOD5a	FOD6-5	FOD7-3a	FOD7-4a	FOD7-4b	FOD7c	FODa	FOMa	MAM2-2/MAS2-3	MAS2a	SWD4a	SWT2a
Tragopogon dubius	Yellow Goatsbeard	GNR	SNA				Non-Native		X		X															
Trifolium pratense	Red Clover	GNR	SNA				Non-Native		X		X															
Trifolium repens	White Clover	GNR	SNA				Non-Native		X		X															
Tsuga canadensis	Eastern Hemlock	G4G5	S5				Native		X	7				X												
Tussilago farfara	Coltsfoot	GNR	SNA				Non-Native		X												X					X
Typha angustifolia	Narrow-leaved Cattail	G5	SNA				Non-Native		X				X							X						
Typha x glauca	Hybrid Cattail	GNA	SNA				Non-Native		X											X			X			
Ulmus americana	White Elm	G4	S5				Native		X	3	X					X	X		X	X	X	X			X	X
Urtica dioica	Stinging Nettle	G5	SNA				Non-Native				X		X				X	X		X						
Viburnum opulus	Cranberry Viburnum	G5	S5				Native		X	5								X		X					X	
Vicia cracca	Tufted Vetch	GNR	SNA				Non-Native		X		X															
Vinca minor	Lesser Periwinkle	GNR	SNA				Non-Native		X									X		X						
Viola sp.	violet																	X								
Vitis riparia	Riverbank Grape	G5	S5				Native		X	0	X	X				X		X	X	X	X	X				

G Rank: Global Rank
G4: Apparently Secure
G5: Secure
GNA: Not Applicable
GNR: Unranked
S Rank: Sub-national Rank
S4: Apparently Secure
S5: Secure
SNA: Not Applicable
SNR: Unranked
COSEWIC – Committee of the Status of Endangered Wildlife in Canada
THR: Threatened
SARA – Species at Risk Act (Federal)
SARO – Species at Risk in Ontario (Provincial)
END: Endangered
CC (Coefficient of Conservatism) - Higher values indicate species that are more ecologically sensitive and associated with less disturbed habitats.

Halton NAI Ranks
HR: Rare
HU: Uncommon
6E-7 Ranks
X: Common
U: Uncommon
R: Rare

A2-2. Full Fauna Species List from 2024 Field Investigations.

Class	Common Name	Scientific Name	G Rank	S Rank	SARA	SARO	COSEWIC	Halton NAI (2006)	Area Sensitive	ELC Community											
										SWD4a	Off	MAM2-2/MAS2-3	FOMa	FODa	FOD7c	FOD7-4b	FOD7-4a	FOD7-3a	FOCa	CUW1b	CUW1a
Bird	Red-tailed Hawk	*Buteo jamaicensis*	G5	S5		NAR	NAR		FALSE							x					
Bird	Chimney Swift	*Chaetura pelagica*	G4G5	S3B	THR	THR	THR	HU	FALSE		x										
Bird	Cedar Waxwing	*Bombycilla cedrorum*	G5	S5					FALSE								x				
Bird	Northern Cardinal	*Cardinalis cardinalis*	G5	S5					FALSE	x				x	x	x	x		x	x	
Bird	Rose-breasted Grosbeak	*Pheucticus ludovicianus*	G5	S5B					FALSE							x					
Bird	American Crow	*Corvus brachyrhynchos*	G5	S5					FALSE				x				x	x			
Bird	Blue Jay	*Cyanocitta cristata*	G5	S5					FALSE				x	x		x	x				
Bird	American Goldfinch	*Spinus tristis*	G5	S5					FALSE							x	x		x		
Bird	Red-winged Blackbird	*Agelaius phoeniceus*	G5	S5					FALSE	x					x	x				x	
Bird	Common Grackle	*Quiscalus quiscula*	G5	S5					FALSE	x						x					
Bird	Baltimore Oriole	*Icterus galbula*	G5	S4B					FALSE							x					
Bird	Gray Catbird	*Dumetella carolinensis*	G5	S5B,S3N					FALSE											x	
Bird	Black-capped Chickadee	*Poecile atricapillus*	G5	S5					FALSE					x			x				
Bird	Song Sparrow	*Melospiza melodia*	G5	S5					FALSE	x				x		x				x	
Bird	Downy Woodpecker	*Dryobates pubescens*	G5	S5					FALSE	x							x				
Bird	White-breasted Nuthatch	*Sitta carolinensis*	G5	S5					TRUE					x			x				
Bird	House Wren	*Troglodytes aedon*	G5	S5B					FALSE				x	x		x					
Bird	American Robin	*Turdus migratorius*	G5	S5					FALSE								x		x		
Bird	Eastern Wood-pewee	*Contopus virens*	G5	S4B	SC	SC	SC		FALSE							x	x				

Class	Common Name	Scientific Name	G Rank	S Rank	SARA	SARO	COSEWIC	Halton NAI (2006)	Area Sensitive	ELC Community											
										SWD4a	Off	MAM2-2/MAS2-3	FOMa	FODa	FOD7c	FOD7-4b	FOD7-4a	FOD7-3a	FOCa	CUW1b	CUW1a
Bird	Eastern Phoebe	*Sayornis phoebe*	G5	S5B					FALSE				x		x	x					x
Insect	Ebony Jewelwing	*Calopteryx maculata*	G5	S5													x				
Mammal	White-tailed Deer	*Odocoileus virginianus*	G5	S5								x									
Mammal	Red Squirrel	*Tamiasciurus hudsonicus*	G5	S5													x				

G Rank: Global Rank
G4: Apparently Secure
G5: Secure
S Rank: Sub-national Rank
S3: Vulnerable
S4: Apparently Secure
S5: Secure
COSEWIC – Committee of the Status of Endangered Wildlife in Canada
NAR: Not at Risk
SC: Special Concern
THR: Threatened
SARA – Species at Risk Act (Federal)
SC: Special Concern
THR: Threatened
SARO – Species at Risk in Ontario (Provincial)
NAR: Not at Risk
SC: Special Concern
THR: Threatened

CC (Coefficient of Conservatism) - Higher values indicate species that are more ecologically sensitive and associated with less disturbed habitats.
Halton NAI
U: Uncommon
Area Sensitive: Wildlife species that require large areas of suitable habitat (MNRF Significant Wildlife Habitat Technical Guide)

Table A2-3. Fish Species from the Aquatic Resource Area line segment (Fish Habitat) dataset (MNRF 2024b) for the Study Area.

Common Name	Scientific Name	S Rank[1]	L Rank (CVC 2020)[2]	SARO[3]	SARA[4]
American Brook Lamprey	*Lethenteron appendix*	S3	L3		
Atlantic Salmon	*Salmo salar*	SNA	LX		
Blacknose Dace	*Rhinichthys obtusus*	S5	L5		
Bluntnose Minnow	*Pimephales notatus*	S5	L4		
Brassy Minnow	*Hybognathus hankinsoni*	S5	L3		
Brook Stickleback	*Culaea inconstans*	S5	L4		
Brook Trout	*Salvelinus fontinalis fontinalis*	S5	LNA		
Brown Bullhead	*Ameiurus nebulosus*	S5	L4		
Brown Trout	*Salmo trutta*	SNA	LNA		
Central Mudminnow	*Umbra limi*	S5	L5		
Chinook Salmon	*Oncorhynchus tshawytscha*	SNA	LNA		
Common Shiner	*Luxilus cornutus*	S5	L4		
Creek Chub	*Semotilus atromaculatus*	S5	L5		
Fantail Darter	*Etheostoma flabellare*	S4	L4		
Fathead Minnow	*Pimephales promelas*	S5	L5		
Goldfish	*Carassius auratus*	SNA	LNA		
Johnny Darter	*Etheostoma nigrum*	S5	L4		
Johnny Darter x Tesselated Darter					
Longnose Dace	*Rhinichthys cataractae*	S5	L4		
Mottled Sculpin	*Cottus bairdii*	S5	L4		
Northern Hog Sucker	*Hypentelium nigricans*	S4	L4		
Northern Pearl Dace	*Margariscus nachtriebi*	S5	L4		
Northern Redbelly Dace	*Chrosomus eos*	S5	L4		
Oncorhynchus sp.	*Oncorhynchus sp.*				
Pumpkinseed	*Lepomis gibbosus*	S5	L5		
Rainbow Darter	*Etheostoma caeruleum*	S4	L4		
Rainbow Trout	*Oncorhynchus mykiss*	SNA			
Redside Dace	*Clinostomus elongatus*	S1	L1	END	END
Sticklebacks					
Stonecat	*Noturus flavus*	S4	L4		
White Sucker	*Catostomus commersonii*	S5	L4		

[1]S Rank (Provincial) – S1: Critically Imperiled; S3: Vulnerable; S4: Apparently Secure; S5: Secure; SNA: Not Applicable
[2]L Rank (CVC 2020) - L1: Critically Imperiled; L3: Vulnerable; L4: Apparently Secure; L5: Secure; LNA: Not Applicable
[3]Species at Risk in Ontario (SARO) – END: Endangered
[4]Species at Risk Act (SARA) – END: Endangered

APPENDIX 3 | SAR and SCC Screening & Significant Wildlife Habitat Screening

Endangered and Threatened Species						
Species	**Source**	**Status**	**Habitat Description**	**Habitat Present on Site**	**Probability of Occurrence and Rationale**	**Potential to be Impacted by Proposed Activities**
Insects						
Rusty-patched Bumble Bee *Bombus affinis*	NHIC	SARO - END SARA- END COSEWIC- END	Found in open habitat such as mixed farmland, urban settings, savannah, open woods and sand dunes. The most recent sightings have been in oak savannah, which contains both woodland and grassland flora and fauna (MECP, 2021)	**YES -** Study Area includes urban areas and open woods with close proximitity to farmland.	**LOW -** No recent sightings in the Region. Historic sightings only.	**NONE -** Species not present in the Study Area (or Region).
Black Ash *Fraxinus nigra*	iNat	SARO- END SARA - COSEWIC - THR	Occurs in moist to wet sites such as swamps, bogs, and riparian areas (COSSARO, 2021).	**YES -** Riparian area for Silver Creek present onsite.	**CONFIRMED -** Seedings and saplings were documented in the FOD7-4a community.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.
Butternut *Juglans cinerea*	iNat	SARO- END SARA - END COSEWIC - END	Deciduous forests with moist, well-drained soil. Often found along streams and on well drained gravel sites. (OMNR, 2013)	**YES -** Riparian area for Silver Creek present onsite.	**HIGH -** Suitable habitat (stream) present. Hybrid Butternut shells were found during 2024 field investigations.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.
Amphibians						
Jefferson Salamander *Ambystoma jeffersonianum*	ORAA, iNat	SARO- END SARA- END COSEWIC - END	Damp shady deciduous forest, swamps, moist pasture, lakeshores; temporary woodland pools for breeding; hides under leaf litter, stones or in decomposing logs (OMNR, 2000)	**YES -** Shaded decidious areas present in study area. Vernal pools are also likely to be present.	**HIGH -** Recent nearby records.	**UNKNOWN -** Full extent of proposed activities are unknown.
Birds						
Bank Swallow *Riparia riparia*	OBBA	SARO-THR SARA-THR (under consideration) COSEWIC- SC	Sand, clay or gravel riverbanks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are a limited factor for species presence (OMNR, 2000).	**NO -** No steep sand, clay, or gravel sided landforms were observed during surveys	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site
Bobolink *Dolichonyx oryzivorus*	OBBA, iNat	SARO- THR SARA- THR COSEWIC- THR	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha (OMNR, 2000).	**NO -** Site does not contain grassland, hayfields, meadows, fields, or marshes.	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site
Chimney Swift *Chaetura pelagica*	NHIC, OBBA, eBird, CVC	SARO- THR SARA- THR COSEWIC- THR	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water (OMNR, 2000).	**NO -** No nesting habitat within the Study Area, as there are no structures present. The Study Area provides foraging habitat.	**CONFIRMED -** Four individuals flying/foraging immediatetly adjacent to the Study Area, observed during 2024 field investigations. Several other recent sighting in the area.	**NONE -** There are no structures within the Study Area.
Eastern Meadowlark *Sturnella magna*	OBBA, iNat	SARO- THR SARA- THR COSEWIC- THR	Generally prefers large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha. In migration and winter uses freshwater marshes and grasslands (OMNR 2000).	**NO -** Site does not contain grassland, hayfields, meadows, fields, or marshes.	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site

Eastern Whip-poor-will *Antrostomus vociferus*	OBBA	SARO- THR SARA- THR COSEWIC- THR	Dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaflitter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests; may require 500 to 1000 ha to maintain population (OMNR 2000)	**NO -** Site does not contain enough forested area (>100 ha) to provide habitat.	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site
Louisiana Waterthrush *Parkesia motacilla*	OBBA, iNat	SARO- THR SARA- THR COSEWIC- THR	Prefers wooded ravines with running streams; also woodlands swamps; large tracts of mature deciduous or mixed forests; canopy cover is essential; has strong affinity to nest sites; nests on ground (OMNR, 2000)	**YES -** Ravines and deciduous forest are present in the study area.	**LOW -** Ravines are present in the study area and deciduous forest may provide marginal suitable habitat due to size and shape.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.
Red-headed Woodpecker *Melanerpes erythrocephalus*	OBBA, iNat	SARO- END SARA- END COSEWIC- END	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory (OMNR, 2000)	**YES -** Site contains decidious forested edge with creek.	**LOW -** Suitable habitat is marginal. Decidious forest edge located onsite, however size may not be sufficient.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.
Fish						
Redside Dace *Clinostomus elongatus*	DFO	SARO- END SARA- END COSEWIC- END	Inhabits pools and slow moving areas of small streams, where overhanging bushes and trees offer cover; where the bottom is composed of rocks, gravel or sand; and where the water is clear (COSEWIC, 2017)	**YES -** Site contains a creek with overhanging cover.	**CONFIRMED -** Redside Dace is confirmed to occur in Silver Creek.	**HIGH -** High likelihood of impact to habitat for Redside Dace; however, the full extent of proposed activities are unknown.
Eastern Small-footed Myotis *Myotis leibii*	Atlas of the Mammals of Ontario	SARO - END SARA - N/A COSEWIC- N/A	Winter habitat is in caves and abandoned mines. Summer habitat for roosting and maternity sites is poorly understood. In Ontario this species has been observed roosting in buildings, on rock outcrops, and in rock piles (MECP, 2022)	**POSSIBLE -** This species is habitat is poorly understood; however, there are recent records from Halton Region.	**MODERATE -** Possible suitable habitat and recent records from Halton Region.	**UNKNOWN -** MECP consultation required if tree removals are required to determine full requirements (e.g., field investigations, permit/authorization) to ensure work does nto contravene the ESA. Tree removals should occur outside of the active bat season (i.e., not removed between April 1 and September 30).
Little Brown Myotis *Myotis lucifugus*	iNat, Atlas of the Mammals of Ontario	SARO- END SARA- END COSEWIC- END	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy (OMNR 2000)	**YES -** Forested areas and possible hollow trees within the Study Area	**HIGH -** Suitable habitat present study area riparian zone and adjacent woodlots, foraging habitat exists over Silver Creek.	**UNKNOWN -** MECP consultation required if tree removals are required to determine full requirements (e.g., field investigations, permit/authorization) to ensure work does nto contravene the ESA. Tree removals should occur outside of the active bat season (i.e., not removed between April 1 and September 30).

Tricoloured Bat *Perimyotis subflavus*	Atlas of the Mammals of Ontario	SARO- END SARA- END COSEWIC- END	Found in a variety of forested habitats. Forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter (MECP 2021)	**YES -** Forested habitat and water present on and adjacent to site.	**HIGH -** Suitable habitat present study area riparian zone and adjacent woodlots, foraging habitat exists over Silver Creek.	**UNKNOWN -** MECP consultation required if tree removals are required to determine full requirements (e.g., field investigations, permit/authorization) to ensure work does nto contravene the ESA. Tree removals should occur outside of the active bat season (i.e., not removed between April 1 and September 30).
Northern Myotis *Myotis septentrionalis*	Atlas of the Mammals of Ontario	SARO- END SARA- END COSEWIC- END	"hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy" (OMNR 2000)	**YES -** Forested areas and possible hollow trees within the Study Area	**HIGH -** Suitable habitat present study area riparian zone and adjacent woodlots, foraging habitat exists over Silver Creek.	**UNKNOWN -** MECP consultation required if tree removals are required to determine full requirements (e.g., field investigations, permit/authorization) to ensure work does nto contravene the ESA. Tree removals should occur outside of the active bat season (i.e., not removed between April 1 and September 30).
Special Concern Species						
Species	**Source**	**Status**	**Habitat Description**	**Habitat Present on Site**	**Probabiltiy of Occurrence and Rationale**	**Potential to be Impacted by Proposed Activities**
Insects						
Monarch *Danaus plexippus*	NHIC, iNat, Ontario Butterfly Atlas	SARO – SC SARA – END COSEWIC- END	Breeding habitat is confined to where milkweed grows, since the leaves of these plants are the sole food of the caterpillars. Different species of milkweed grow in a variety of environments, including meadows, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairies, river banks, irrigation ditches, arid valleys and south facing hillsides. Nectaring habitat ranges from native grasslands to home gardens with adult butterflies nectaring on a wide variety of flowers including Goldenrods, Asters and Milkweeds. (Environment Canada 2014)	**YES -** Breeding habitat (Common and Swamp Milkweed) present within Study Area. Foraging habitat also present within the Study Area.	**CONFIRMED -** Recent records within the Study Area.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with vegetation removals. Mitigation would include vegetation removals occurring outside of the breeding and migration windows.
Yellow-banded Bumblebee *Bombus terricola*	iNat	SARO- SC SARO- SC COSEWIC- SC	Forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions. It can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands and urban areas. Nest sites are often underground in abandoned rodent burrows or decomposing logs (MECP, 2021)	**YES -** Study Area is a mix of urban woodlands, meadow, and residential areas.	**HIGH -** Recent records immediately adjacent to Study Area.	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with vegetation removals.
Reptiles						
Snapping Turtle *Chelydra serpentina*	ORAA, iNat	SARO- SC SARA- SC COSEWIC- SC	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha (OMNR 2000).	**YES -** Permanent freshwater on site, banks of river may provide suitable nesting habitat.	**CONFIRMED -** Suitable habitat is present. There is a recent record of an adult Snapping Turtle from within the Study Area.	**UNKNOWN -** Full extent of proposed activities are unknown. Proposed activites may impact habitat depending on extent of disturbance to riparian and marsh areas.
Birds						

Barn Swallow *Hirundo rustica*	OBBA, eBird, iNat	SARO- SC SARA- THR COSEWIC- THR	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water (OMNR 2000)	**NO -** Study area is an urban woodlot with a creek. Farmland, rural areas, cliffs, caves, rock formations and open country not on site.	**NONE -** Study area is an urban woodlot with a creek. Farmland, rural areas, cliffs, caves, rock formations and open country not on site.	**NONE -** No suitable habitat on site
Canada Warbler *Cardellina canadensis*	iNat	SARO-SC SARA-THR COSEWIC- SC	The Canada Warbler breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer. Dense shrub and understory vegetation help conceal Canada Warbler nests that are usually located on or near the ground on mossy logs or roots, along stream banks or on hummocks. It winters in South America. In its wintering range in South America, the Canada Warbler prefers the dense shrub understories of mature cloud and rain forests, second-growth forests, as well as coffee plantations and farm field edges (MECP, 2021).	**NO -** Suitable habitat not present on site.	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site
Common Nighthawk *Chordeiles minor*	OBBA	SARO- SC SARA- THR COSEWIC- SC	Generally prefer open, vegetation-free habitats including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and riverbanks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops) (Environment Canada 2016).	**NO -** No open vegetation-free habitats, but mixed forest present and site is adjacent to urban area with school (flat rooftop) nearby.	**NONE -** No suitable habitat present on site	**NONE -** No suitable habitat on site
Eastern Wood-Pewee *Contopus virens*	NHIC, OBBA, eBird, iNat	SARO- SC SARA- SC COSEWIC- SC	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks (OMNR, 2000)	**YES -** Deciduous forests of suitable sizes present on site.	**CONFIRMED -** This species was recorded during the 2024 field investigations, singing during the breeding season from two communities (FOD7-4a, FOD7-4b).	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.
Wood Thrush *Hylocichla mustelina*	NHIC, OBBA, iNat	SARO-SC SARA- THR COSEWIC- THR	Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges (OMNR, 2000).	**POSSIBLE -** Mature deciduos forests and swamp are present in the Study Area, however, it is in an urban area and are areas are highly disturbed.	**LOW -** No recent records from within the Study Area, however, there are two recent records from the surrounding area which likely	**UNKNOWN -** Full extent of proposed activities are unknown. Possibility of impact with tree removals.

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale:** 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 [cxlviii]. <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 •Sites documented through water fowl 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" •Any mixed species aggregations of 100 or more individuals required. •The flooded field ecosite habitat plus a 100-300m radius area, dependent on local site conditions and adjacent land use is the significant wildlife habitat. •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 Index #7 provides development effects and mitigation measures.	**ABSENT -** No wetland or open fields present in Study Area
Waterfowl Stopover and Staging Areas (Aquatic) **Rationale:** 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 or more of listed species for 7 days, results in > 700 waterfowl use days. •Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH •The combined area of the ELC ecosites and a 100m radius area is the SWH •Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •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 Index #7 provides development effects and mitigation measures.	**ABSENT –** No mapped NHIC Waterfowl Concentration Area. MAS2 and SWD4 communities and watercourse present within Study Area; however, not at the size and condition needed to support the numbers required to meet the criteria.

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH	Confirmed SWH	

		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	Assessment of Habitat in Study Area
Shorebird Migratory Stopover Area **Rationale:** 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 Ruddy Turnstone Sanderling Dunlin	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. Information Sources •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 •Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWHMiST Index #8 provides development effects and mitigation measures.	**ABSENT** – No habitat present within the Study Area
Raptor Wintering Area **Rationale:** Sites used by multiple species, ahigh number of individuals and used annually are most significant	Rough-legged Hawk Red -tailed Hawk Northern Harrier American Kestrel Snowy Owl **Special Concern:** 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. Bald Eagle: Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area)	•The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. •Raptor wintering sites (hawk/owl) need to be > 20 ha cxlvi ii, 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 cxlix Information Sources: •OMNRF Ecologist or Biologist •Field Naturalist Clubs •Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area •Data from Bird Studies Canada •Results of Christmas Bird Counts •Reports and other information available from Conservation Authorities.	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 of the listed hawk/owl species. •To be significant a site must be used regularly (3 in 5 years) 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" •SWHMiST Index #10 and #11 provides development effects and mitigation measures.	**ABSENT -** Upland not present, Study Area is mostly forested with limited adjacent fields. Overall size requirement not met.

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Bat Hibernacula **Rationale**: Bat hibernacula are rare habitats in all 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 for most development types and 1000m for wind farms. •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". •SWHMiST Index #1 provides development effects and mitigation measures.	**ABSENT –** The Study Area does not contain any known caves, mine shafts, or underground foundations.
Bat Maternity Colonies **Rationale:** Known locations of forested bat maternity colonies are 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 (buildings are not considered to be SWH). •Maternity roosts are not found in caves and mines in Ontario. •Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees •Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. •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 <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". •SWHMiST Index #12 provides development effects and mitigation measures.	**CANDIDATE** - Tree cavities likely present within the Study Area.

Seasonal Concentration Areas of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Turtle Wintering Areas **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle **Special Concern:** 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 areas such as deeper rivers or streams and lakes with current can also be used as over- wintering habitat.	•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 •Man -made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> •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 •Field Naturalist clubs •Natural Heritage Information Center (NHIC)	•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. •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). •Congregation of turtles is more common where wintering areas are limited and therefore significant. •SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	**CANDIDATE -** Permanent freshwater on site in the form of marshes and the river.
Reptile Hibernaculum **Rationale:** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **Special Concern:** Milksnake Eastern Ribbonsnake <u>Lizard:</u> **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, Cave, and Alvar sites may be directly related to these habitats. Observations or 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 or naturalized locations. The existence of features that go below 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. •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. <u>Information Sources</u> •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 available from Conservation Authorities. •Field Naturalists clubs •University herpetologists •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 (e.g. 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 30 m radius area is the SWH •SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula. •Presence of any active hibernaculum for skink is significant.	**CANDIDATE –** Potential habitat could be present within the Study Area. No ideal habitat is present (i.e. there are no rock piles, rock fissures, or crumbling foundations); however, snake hibernacula can be present in various habitats with features permitting snakes to move below the frost line (e.g. animal burrows, buried rock piles)

				•SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	

Seasonal Concentration Areas of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **Rationale:** 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 population 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. <u>Information Sources</u> •Reports and other information available from Conservation Authorities. •Ontario Breeding Bird Atlas •Bird Studies Canada; NatureCountshttp://www.birdscanada.org/birdmon/ •Field Naturalist Clubs.	Studies confirming: •Presence of 1 or more nesting sites with 8 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 •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" •SWHMiST Index #4 provides development effects and mitigation measures	**ABSENT –** No eroding bluffs or riverbanks present.
Colonially -Nesting Bird Breeding Habitat (Tree/Shrubs) **Rationale:** 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 15 m from ground, near the top of the tree. <u>Information Sources</u> •Ontario Breeding Bird Atlas colonial nest records. •Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). •Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony •Aerial photographs can help identify large heronries. •Reports and other information available from CAs. •MNRF District Offices. •Local naturalist clubs	Studies confirming: •Presence of 5 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 •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 •SWHMiST Index #5 provides development effects and mitigation measures.	**ABSENT –** Suitable habitat is marginal, wetland communities are not near large open bodies of water. No colonies observed.

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Colonially -Nesting Bird Breeding Habitat (Ground) **Rationale:** Colonies are important to local bird population, 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 low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> •Ontario Breeding Bird Atlas, 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. •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 radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH •Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" •SWHMiST Index #6 provides development effects and mitigation measures.	**ABSENT -** No suitable ecosites present, site is located in an urban residential area and contains a small creek with tree canopy.
Migratory Butterfly Stopover Areas **Rationale:** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral **Special Concern:** Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site 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 [cxlv iii, 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, significant variation can occur between years and multiple years of sampling should occur. •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 Index #16 provides development effects and mitigation measures.	**ABSENT -** Study Area is >5km from Lake Ontario.

Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Landbird Migratory Stopover Areas **Rationale:** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website:http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 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 in size and within 5 km of Lake Ontario. •If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant •Sites have a variety of habitats; forest, grassland and wetland complexes. •The largest sites are more significant •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH. <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 habitat 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" •SWHMiST Index #9 provides development effects and mitigation measures.	**ABSENT** - Woodlot is >5km from Lake Ontario.
Deer Yarding Areas **Rationale:** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer 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.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM FOC SWM SWC Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	•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 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 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm 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%. •OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual" •Woodlots with high densities of deer due to artificial feeding are not significant.	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 minimum criteria for a deer yard to be considered as SWH. •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. •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 Index #2 provides development effects and mitigation measures.	**ABSENT** - Area not mapped by MECP as Deer Wintering Habitat.

Seasonal Concentration Areas of Animals					
Wildlife Habitat	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Deer Winter Congregation Areas **Rationale:** 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 to reduce or avoid the impacts of winter conditions [cxlviii].	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha 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 Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. •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. •Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources •MNRF District Offices. •LIO/NRVIS	Studies confirm: •Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. •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 MNRF •Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. •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 Index #2 provides development effects and mitigation measures.	**ABSENT** - Area not mapped by MECP as Deer Wintering Habitat.

Specialized Habitat for Wildlife

Habitat Type	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Nesting Area **Rationale:** 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 PSWs**	A waterfowl nesting area extends 120 m 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 120 m of each individual wetland where waterfowl nesting is known to occur. •Upland areas should be at least 120 m wide so that predators such as racoons, 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 Conservation Authorities.	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" •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 120 m i from the wetland and will provide enough habitat for waterfowl to successfully nest. •SWHMiST Index #25 provides development effects and mitigation measures.	**CANDIDATE –** MAS2, MAM2, and SWD4 communities are present and meet size requirements; however adjacent woodlands are <120 m wide.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **Rationale**: Nest sites are fairly uncommon in Eco -region 6E and are used annually by the se species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey **Special Concern:** 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. •Check the Ontario Breeding Bird Atlas ccv or Rare Breeding Birds in Ontario for species documented •Reports and other information available from Conservation Authorities. •Field Naturalists clubs	Studies confirm the use of these nests by: •One or more active Osprey or Bald Eagle nests in an area. •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 300 m radius around the nest or the contiguous woodland stand is the SWH ci, maintaining undisturbed shorelines with large trees within this area is important. •For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. 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 •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. •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" •SWHMiST Index # 26 provides development effects and mitigation measure	**ABSENT -** FOD community exists on site, area contains a creek with a riparian zone. The Study Area's portion of Silver Creek is likely unsuitable, as it is mostly narrow, shallow, covered in the forest canopy. No suitable open water present.

Specialized Habitat for Wildlife

Habitat Type	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Woodland Raptor Nesting Habitat Rationale: 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 >10 ha of interior habitat. Interior habitat determined with a 200m buffer •Stick nests found in a variety of intermediate-aged to mature coniferous, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers 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. Information Sources •OMNRF Districts. •Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. •Check data from Bird Studies Canada. •Reports and other information available from Conservation Authorities.	Studies confirm: •Presence of 1 or more active nests from species list is considered significant. •Red -shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH ci. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) •Barred Owl – A 200m radius around the nest is the SWH. •Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. •Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. •SWHMiST Index #27 provides development effects and mitigation measures.	**ABSENT –** Study Area does not meet the criteria. No interior habitat is present.
Turtle Nesting Areas **Rationale:** These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle **Special Concern:** Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) 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	Studies confirm: •Presence of 5 or more nesting Midland Painted Turtles •One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. •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. •Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. •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 Index #28 provides development effects and mitigation measures for turtle nesting habitat	**CANDIDATE** - Permanent freshwater within Study Area, open sunny areas present in sections near the section of the site adjacent to College and John Streets.

Seeps and Springs **Rationale:** 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. •Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. <u>Information Sources</u> •Topographical Map. •Thermography. •Hydrological surveys conducted by Conservation Authorities 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 or an eco-element within 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. •SWHMiST Index #30 provides development effect and mitigation measures	**ABSENT -** Study Area does not meet the habitat criteria.

Specialized Habitat for Wildlife

Habitat Type	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Breeding Habitat (Woodland) **Rationale:** 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 amphibian	•Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). 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 <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 •Ontario Vernal Pool Association: http://www.ontariovernalpools.org	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) or 2 or more of the listed frog species with Call Level Codes of 3. •A combination of observational study and call count surveys 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 wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. •SWHMiST Index #14 provides development effects and mitigation measures.	**ABSENT –** No ephemeral pools were observed during the field studies which occurred during the summer. It is possible pools exist in areas not surveyed and/or present during the spring.

Amphibian Breeding Habitat (Wetlands) **Rationale:** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog 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>500m^2 (about 25m diameter), 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. •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 Conservation Authorities.	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 with at least 20 individuals (adults or eggs masses) 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 ii will be required during the spring (March-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 Index #15 provides development effects and mitigation measures.	**POSSIBLE –** Swamps and marshes are present within the Study Area; however, wetland ecosites are not isolated from the woodland ecosites. Additional studies needed.

Specialized Habitat for Wildlife

Habitat Type	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment of Habitat in Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Woodland Area - Sensitive Bird Breeding Habitat **Rationale:** 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. •Interior forest habitat is at least 200 m from forest edge habitat.[clxiv] <u>Information Sources</u> •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 determine what forests were of greatest value to interior species •Reports and other information available from Conservation Authorities.	Studies confirm: •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” •SWHMiST Index #34 provides development effects and mitigation measures.	**ABSENT -** Forests are <30 ha and no interior forest present.

Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Habitat Type	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Marsh Breeding Bird Habitat **Rationale:** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied -billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** 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. •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> •OMNRF District and wetland evaluations. •Field Naturalist clubs •Natural Heritage Information Center (NHIC) Records. •Reports and other information available from Conservation Authorities. •Ontario Breeding Bird Atlas.	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. •Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. •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" •SWHMiST Index #35 provides development effects and mitigation measures	**CANDIDATE –** Marshes with shallow water and emergent aquatic vegetation present within Study Area.
Open Country Bird Breeding Habitat Rationale; 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 SparrowVesper SparrowNorthern Harrier Savannah Sparrow **Special Concern:** Short-eared Owl	CUM1CUM2	•Large grassland areas (includes natural and cultural fields and meadows) >30 ha •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). •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. •Local bird clubs. •Ontario Breeding Bird Atlas •Reports and other information available from Conservation Authorities.	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 Owls 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" •SWHMiST Index #32 provides development effects and mitigation measures	**ABSENT -** No grassland present within the Study Area.

Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Habitat Type	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Shrub/Early Successional Bird Breeding Habitat **Rationale;** 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.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** 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 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). •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. •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 •Reports and other information available from Conservation Authorities.	Field Studies confirm: •Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. •A habitat 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" •SWHMiST Index #33 provides development effects and mitigation measures.	**ABSENT –** Study Area does not meet the habitat criteria.
Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish; (Cambarus Diogenes)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. •Constructs burrows in marshes, mudflats, meadows, 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. <u>Information Sources</u> •Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: •Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites •Area of ELC ecosite or an eco-element area of meadow marsh or swamp within the larger ecosite area is the SWH. •Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult •SWHMiST Index #36 provides development effects and mitigation measures.	**CANDIDATE –** Swamps and marshes are present on Study Area.

Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Habitat Type	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Special Concern and Rare Wildlife Species **Rationale:** 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 Information Sources •Natural Heritage Information Centre (NHIC) will have 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 •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 be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. •SWHMiST Index #37 provides development effects and mitigation measures.	**CONFIRMED –** Eastern Wood-pewee were recorded during 2024 field investigations and there are recent observations of Monarch and Snapping Turtle from the Study Area. Possibility of additional species with further surveys.

Rare Vegetation Communities					
Rare Vegetation Community	**ELC Ecosite Codes**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		Habitat Description	**Detailed Information and Sources**	**Defining Criteria**	
Cliffs and Talus Slopes **Rationale:** Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS 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 available on their website •Field Naturalist clubs •Conservation Authorities	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes •SWHMiST Index #21 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.
Sand Barren **Rationale:** 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. 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%.	A sand barren area >0.5ha in size. <u>Information Sources</u> •OMNRF Districts. •Natural Heritage Information Center (NHIC) has location information available on their website. •Field Naturalist clubs •Conservation Authorities	•Confirm any ELC Vegetation Type for Sand Barrens •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •SWHMiST Index #20 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.
Alvar **Rationale:** Alvars are extremely rare habitats in Eco- region 6E. Most alvars in Ontario are in Eco regions 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) *Eleocharis compressa* 4) *Scutellaria parvula* 5) *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6E[cxlix]	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 plants. Undisturbed alvars can be phyto- and zoogeographically 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. <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 available on their website •OMNRF Districts •Field Naturalist clubs. •Conservation Authorities.	•Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses •SWHMiST Index #17 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.

Rare Vegetation Communities					
Rare Vegetation Community	**ELC Ecosite Codes**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		Habitat Description	**Detailed Information and Sources**	**Defining Criteria**	
Old Growth Forest **Rationale:** 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 areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. Information Sources •OMNRF Forest Resource Inventory mapping •OMNRF Districts. •Field Naturalist clubs •Conservation Authorities •Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. •Municipal forestry departments	Field Studies will determine: •If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat •The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) •The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. •Determine ELC vegetation types for the forest forest area containing the old growth characteristics [lxxviii] •SWHMiST Index #23 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.
Savannah **Rationale:** 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 available on their website •OMNRF Districts •Feld Naturalist clubs. •Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •SWHMiST Index #18 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.

Rare Vegetation Communities					
Rare Vegetation Community	**ELC Ecosite Codes**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		Habitat Description	**Detailed Information and Sources**	**Defining Criteria**	
Tallgrass Prairie **Rationale:** 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> •Natural Heritage Information Center (NHIC) has location information available on their website •OMNRF Districts •Feld Naturalist clubs. •Conservation Authorities.	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •SWHMiS Index #19 provides development effects and mitigation measures.	**ABSENT -** Study Area does not meet the habitat criteria.
Other Rare Vegetation Communities **Rationale:** 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 . 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 The OMNRF/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 •Feld Naturalist 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. •Area of the ELC Vegetation Type polygon is the SWH. •SWHMiST Index #37 provides development effects and mitigation measures.	**ABSENT –** Study Area does not meet the habitat criteria.

Animal Movement Corridors					
Habitat Type	**Wildlife Species**	**Candidate SWH**		**Confirmed SWH**	**Assessment of Habitat in Study Area**
		ELC Ecosite Codes	**Habitat Criteria and Information Sources**	**Defining Criteria**	
Amphibian Movement Corridors **Rationale;** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue -spotted Salamander Gray Treefrog 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. 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. <u>Information Sources</u> •MNRF District Office. •Natural Heritage Information Center (NHIC). •Reports and other information available from Conservation Authorities. •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. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant •Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. •Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. •SWHMiST Index #40 provides development effects and mitigation measures	**POSSIBLE -** Ecosites with water present on site. Amphibian breeding habitat areas must be confirmed first to determine if this habitat is applicable. Detailed amphibian habitat and breeding surveys are required for confirmation.
Deer Movement Corridors **Rationale:** 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 corridor	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. •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. •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 Conservation Authorities. •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 habitat should be unbroken by roads and residential areas. •Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway Shorter corridors are more significant than longer corridors. •SWHMiST Index #39 provides development effects and mitigation measures	**ABSENT –** Study Area not mapped by MECP as Deer Wintering Habitat.

Appendix 3: Cost Estimates

Silver Creek Trail Feasibility Study Cost Estimate

Consulting, Studies & Permit applications	$	40,000.00	For entire study area, per NSE report
Section 1 - Park Ave to Guelph St	$	280,000.00	
Section 2 - Guelph St to Railway	$	90,000.00	
Section 3 - Railway to Ewing St	$	70,000.00	
Section 4 - Ewing St to Ontario St	$	635,000.00	
Section 5 - Eqing to Wildowood	$	-	Deemed not feasible
	$	1,115,000.00*	Price includes 15% contingency, HST and rounded to nearest $5000

*Costs do not include any property considerations or any MECP overall benefit permit compensation requirements.

In 2025 dollars. Need to account for inflation depending on timing for funding of each section

SEE INDIVIDUAL SECTION PAGES FOR MORE DETAILED COSTING

Park Ave to Guelph St Section

PART 0: Consulting and Permits				
Consultant Fees	1	ls		$0.00
Permits (CVC)	1	ls	1500	$1,500.00
PART 1: General				
Bonding & Insurance	1	ls	$ 4,000.00	$4,000.00
Mobilization and Demobilization	1	ls	$ 10,000.00	$10,000.00
PART 2: Site Preparation, ESC and Removals				
Supply, Install, Maintain & Remove Temporary Erosion, Sediment Contr	1	ls	$ 1,000.00	$1,000.00
Tree, Vegetation, clearing and Removals	1	ls	$ 15,000.00	$15,000.00
Tree protection	1	ls	$ 1,000.00	$1,000.00
PART 3: Site Works				
Rough Grading for trail (1.8m wide x270m long)	486	m2	$ 10.00	$4,860.00
Supply and Install Limestone Screenings Trail (1.8m wide x 270m long)	486	m2	$ 45.00	$21,870.00
Supply and Install Steep slope trail (1.8m wide x Xm long)	0	m2	$ 140.00	$0.00
Supply and Install 300mm culvert, 3.5m long	0	ls	$ 3,500.00	$0.00
Bridge (estimate 18m long w footings)	1	ls	$ 65,000.00	$65,000.00
Smaller bridge crossings on slope	2	ea	$ 10,000.00	$20,000.00
Restoration - Topsoil and seed disturbed areas along trail	1	ls	$ 5,000.00	$5,000.00
Supply and Install Boardwalk Wood and Fasteners (1.8m x 80m)	80	lm	$ 400.00	$32,000.00
Supply and Install Helical Piers and brackets for boardwalk and elevatec	52	ea	$ 480.00	$24,960.00
PART 4: Planting				
Supply and Install Trees (45mm cal)	20	ea	$ 300.00	$6,000.00
Supply and Install Shrubs (1 Gal pot)	50	ea	$ 65.00	$3,250.00
Contingency 15%				$32,316.00
Subtotal				$247,756.00
HST (13%)				$32,208.28
Grand Total for this section				**$279,964.28**

Park Ave to Guelph St Section

PART 0: Consulting and Permits					
Consultant Fees	1	ls			$0.00
Permits (CVC)	1	ls		1500	$1,500.00
PART 1: General					
Bonding & Insurance	1	ls	$	2,000.00	$2,000.00
Mobilization and Demobilization	1	ls	$	5,000.00	$5,000.00
PART 2: Site Preparation, ESC and Removals					
Supply, Install, Maintain & Remove Temporary Erosion, Sediment Contr	1	ls	$	1,000.00	$1,000.00
Tree, Vegetation, clearing and Removals	1	ls	$	5,000.00	$5,000.00
Tree protection	1	ls	$	1,000.00	$1,000.00
PART 3: Site Works					
Rough Grading for trail (1.8m wide x245m long)	441	m2	$	10.00	$4,410.00
Supply and Install Limestone Screenings Trail (1.8m wide x 200m long)	360	m2	$	45.00	$16,200.00
Supply and Install Steep slope trail (1.8m wide x 45m long)	83	m2	$	140.00	$11,620.00
Supply and Install 300mm culvert, 3.5m long	1	ls	$	3,500.00	$3,500.00
Restoration - Topsoil and seed disturbed areas along trail	1	ls	$	5,000.00	$5,000.00
Supply and Install Boardwalk Wood and Fasteners (1.8m x 64m)	0	lm	$	400.00	$0.00
Supply and Install Helical Piers and brackets for boardwalk and elevatec	0	ea	$	480.00	$0.00
PART 4: Planting					
Supply and Install Trees (45mm cal)	25	ea	$	300.00	$7,500.00
Supply and Install Shrubs (1 Gal pot)	50	ea	$	65.00	$3,250.00
Contingency 15%					$10,047.00
Subtotal					$77,027.00
HST (13%)					$10,013.51
Grand Total for this section					**$87,040.51**

Phase 2 ESA costs plus clean up $30,000

Park Ave to Guelph St Section

PART 0: Consulting and Permits					
Consultant Fees	1	ls			$0.00
Permits (CVC)	1	ls		1500	$1,500.00
PART 1: General					
Bonding & Insurance	1	ls	$	2,000.00	$2,000.00
Mobilization and Demobilization	1	ls	$	5,000.00	$5,000.00
PART 2: Site Preparation, ESC and Removals					
Supply, Install, Maintain & Remove Temporary Erosion, Sediment Contr	1	ls	$	1,000.00	$1,000.00
Tree, Vegetation, clearing and Removals	1	ls	$	8,000.00	$8,000.00
Tree protection	1	ls	$	2,000.00	$2,000.00
PART 3: Site Works					
Rough Grading for trail (1.8m wide x210m long)	378	m2	$	10.00	$3,780.00
Supply and Install Limestone Screenings Trail (1.8m wide x 210m long)	378	m2	$	45.00	$17,010.00
Supply and Install Steep slope trail (1.8m wide x 0m long)	0	m2	$	140.00	$0.00
Supply and Install 300mm culvert, 3.5m long	0	ls	$	3,500.00	$0.00
Restoration - Topsoil and seed disturbed areas along trail	1	ls	$	5,000.00	$5,000.00
Supply and Install Boardwalk Wood and Fasteners (1.8m x 64m)	0	lm	$	400.00	$0.00
Supply and Install Helical Piers and brackets for boardwalk and elevatec	0	ea	$	480.00	$0.00
PART 4: Planting					
Supply and Install Trees (45mm cal)	10	ea	$	300.00	$3,000.00
Supply and Install Shrubs (1 Gal pot)	20	ea	$	65.00	$1,300.00
Contingency 15%					$7,438.50
Subtotal					$57,028.50
HST (13%)					$7,413.71
Grand Total for this section					**$64,442.21**

Park Ave to Guelph St Section

PART 0: Consulting and Permits				
Consultant Fees	1	ls		$0.00
Permits (CVC)	1	ls	1500	$1,500.00
PART 1: General				
Bonding & Insurance	1	ls	$ 4,000.00	$4,000.00
Mobilization and Demobilization	1	ls	$ 10,000.00	$10,000.00
PART 2: Site Preparation, ESC and Removals				
Supply, Install, Maintain & Remove Temporary Erosion, Sediment Contr	1	ls	$ 1,000.00	$1,000.00
Tree, Vegetation, clearing and Removals	1	ls	$ 20,000.00	$20,000.00
Tree protection	1	ls	$ 1,000.00	$1,000.00
PART 3: Site Works				
Rough Grading for trail	1	ls	$ 1,000.00	$1,000.00
Supply and Install Limestone Screenings Trail approaches to boardwalk	1	ls	$ 5,000.00	$5,000.00
Supply and Install Steep slope trail (1.8m wide x 46m long)	0	m2	$ 140.00	$0.00
Supply and Install 300mm culvert, 3.5m long	0	ls	$ 3,500.00	$0.00
Bridge (estimate 18m long w footings)	1	ls	$ 65,000.00	$65,000.00
Restoration - Topsoil and seed disturbed areas along trail	1	ls	$ 5,000.00	$5,000.00
Supply and Install Boardwalk Wood and Fasteners (1.8m x 500m)	500	lm	$ 400.00	$200,000.00
Supply and Install Helical Piers and brackets for boardwalk and elevatec	328	ea	$ 480.00	$157,440.00
PART 4: Planting				
Supply and Install Trees (45mm cal)	33	ea	$ 300.00	$9,900.00
Supply and Install Shrubs (1 Gal pot)	98	ea	$ 65.00	$6,370.00
Contingency 15%				$73,081.50
Subtotal				$560,291.50
HST (13%)				$72,837.90
Grand Total for this section				**$633,129.40**