Appendix F-5

Terrestrial & Aquatic Environment Existing Conditions Report

Terrestrial and Aquatic Environment Existing Conditions Report - Draft

Walker South Landfill Phase 2 Environmental Assessment

Walker Environmental

June 08, 2026

The Power of Commitment

Project name		Walker Sunrise					
Document title		Terrestrial and Aquatic Environment Existing Conditions Report - Draft | Walker South Landfill Phase 2 Environmental Assessment					
Project number		12567140-RPT-2					
File name		12567140-RPT-2-Existing Condition Report- Natural Environment_V5					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S3	A	Keenan Shelly Simon Chute	Lisa Horn	On File	Nicole Charlton	On File	Jan 20, 2025
S3	B	Keenan Shelly Simon Chute	Lisa Horn	On File	Nicole Charlton	On File	Feb 24, 2025
S3	C	Keenan Shelly Simon Chute	Lisa Horn	On File	Nicole Charlton	On File	Mar 3, 2025
S3	D	Simon Chute Katrina Greenfield	Amy Douglas Kelly Evertsen	On File	Nicole Charlton	On File	Jun 4, 2026
S3	E	Simon Chute Katrina Greenfield	Amy Douglas Kelly Evertsen	On File	Nicole Charlton	On File	Jun 8, 2026

GHD

455 Phillip Street, Unit 100A

Waterloo, Ontario N2L 3X2, Canada

T +1 519 884 0510 | **F** +1 519 884 0525 | **E** info-northamerica@ghd.com | **ghd.com**

Contents

Table index

Figure index (following text)

Appendices

1. Introduction

This report provides an overview of the existing terrestrial and aquatic conditions within the study areas for the South Landfill Phase 2 Environmental Assessment (EA). The Minister of the Environment, Conservation and Parks (Minister) Approved Terms of Reference (ToR) for the EA included a preliminary description of the existing environmental conditions and made a commitment to expand upon this description during the EA.

Walker Environmental Group (Walker) initiated a Comprehensive EA under the Ontario *EA Act* seeking approval to expand the capacity of its existing South Landfill located at the Walker Resource Management Campus (Campus) in Niagara Falls. The South Landfill is an essential component of the Campus since commencing operations in 2009 under Environmental Compliance Approval (ECA) No. 008-78RKAM, as amended. It provides safe, reliable, and affordable disposal capacity for solid, non-hazardous waste from residential and industrial, commercial, and institutional (IC&I) sources serving clients within the City of Niagara Falls, the Regional Municipality of Niagara, and the Province of Ontario.

The South Landfill has an approved disposal capacity of approximately 17.7 million cubic metres (m^3) and is currently anticipated to reach maximum capacity by 2029 to 2031.

The proposed Phase 2 of the South Landfill would extend its approved capacity by approximately 18 to 20 million m^3 over a 20-year period, ensuring Walker can continue to provide essential residual waste disposal services to its existing customer base. Walker is proposing to locate the additional disposal capacity (Phase 2) to the east of the existing South Landfill within the area currently occupied by Walker's Southeast Quarry. The proposal would maintain the existing landfill service area, as well as the annual volume of solid, non-hazardous waste from the sources currently accepted.

The *EA Act* requires that proponents describe the environment that may potentially be affected or may reasonably be expected to be affected, directly or indirectly, by the Alternative Methods of Carrying Out the Undertaking (Alternative Methods) proposed as part of an EA. The description of the existing environmental conditions will provide the baseline for the assessment of potential effects for the proposed Undertaking, which will be conducted during the EA. This report focuses on characterizing the existing conditions within the study areas for the South Landfill Phase 2 EA for the terrestrial and aquatic environment.

2. Study Areas

From a terrestrial and aquatic environment perspective, the characterization of existing conditions within the following study areas are appropriate to this EA:

- **Site Study Area (SSA):** The SSA is consistent across all technical disciplines and encompasses a total of 81.30 ha of land owned and operated by Walker. The SSA includes the current quarry extraction limit and encompasses the proposed Limit of Fill and the buffer area, and aligns with the proposed Waste Disposal Site Limit Boundary. As the quarry itself is operating under an existing Aggregate Resources Act (ARA) license and approvals, ecological studies were primarily confined to the buffer portion of the SSA and the LSA. While the SSA captures the core area of the proposed landfill development, certain ancillary features related to the landfill are proposed to be located outside the SSA. These features will be addressed within the broader LSA.
- **Local Study Area (LSA):** Includes all lands within a 1 kilometre (km) radius of the SSA boundaries.

Although field investigations are focused in the areas more likely to be affected by the proposed project (i.e., in the areas of the LSA that border the SSA), a 1 km LSA allowed for a more complete investigation of potentially sensitive ecological receptors. The LSA and SSA comprise the terrestrial and aquatic environment study areas and are illustrated in **Figure 1**.

3. Methodology

3.1 Secondary Source Review

Available secondary sources of information were collected and reviewed to characterize terrestrial and aquatic environment existing conditions within the study areas. Secondary sources were reviewed in 2023 and again in 2025. **Table 3.1** presents the sources of secondary information collected and reviewed.

Table 3.1 Secondary Source Information Reviewed

Source	Information Reviewed
Ministry of Environment, Conservation, and Parks (MECP)	– Protected Species in Ontario List (O. Reg. 60/26) records for the study areas
Committee on the Status of Species at Risk in Ontario (COSSARO)	– COSSARO records for the study areas
Ministry of Natural Resources (MNR)	– Natural Heritage Features data layers from Geospatial Ontario (GEO) and the Natural Heritage Information Centre (NHIC) database – Aquatic Resource Area (ARA) data
Fisheries and Oceans Canada (DFO)	– Species at Risk Fish and Mussel Maps
Niagara Peninsula Conservation Authority (NPCA)	– Applicable regulations and policies – Regulated Areas and Watershed Explorer mapping (Niagara Peninsula Conservation Authority 2024) – Natural heritage databases and species records for the study areas – Beaverdams and Shriners Creek Watershed Plans
Niagara Region Open Data	– Contemporary Mapping of Watercourses Dataset – Permanent or Intermittent Watercourses mapping – Waterbodies mapping – Shoreline Areas mapping – Quaternary Watersheds mapping – Other Wetlands Non-provincially significant wetland (PSW) mapping – Other Woodlands mapping – Linkages mapping – Significant Woodlands mapping – Ecological Land Classification (Niagara Peninsula Conservation Authority 2020)
Niagara Escarpment Plan (NEP)	– Applicable NEP Designation Mapping for the study areas
Niagara Official Plan 2022 (May 2024 Consolidation)	– Land Use Designations – Applicable Schedules and Natural Heritage Systems Mapping
City of Niagara Falls Official Plan 1993 (Office Consolidation January 1, 2024)	– Land Use Designations – Applicable Schedules and Natural Heritage Systems Mapping
Ontario Breeding Bird Atlas (OBBA)	– Breeding bird data for the squares that include the study areas
Ontario Butterfly Atlas (OBA)	– Species records for the squares that include the study areas
Ontario Reptile and Amphibian Atlas (ORAA)	– Species records for the squares that include the study areas
Distribution and Status of the Vascular Plants of Southwestern Ontario (Oldham 1993)	– Species records and rarity of vascular plants within local landscape
List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E) (Oldham 2017)	– Species records and rarity of vascular plants within local landscape

Source	Information Reviewed
eBird	– Species records for Species at Risk or locally rare species
iNaturalist	– Species records for Species at Risk or locally rare species
Atlas of Canada	– Toporama map for applicable designations and features
Other	– Draft List of Plant Species of Importance to the Community of Six Nations – Previous site surveys – Site investigations – Natural Environment Existing Conditions – Facility Layout and Figures

3.2 Agency Consultation

GHD consulted with a number of review agencies throughout the EA to request natural environmental information. The Ministry of Natural Resources' (MNR) Natural Heritage Information Centre (NHIC) was consulted on November 28, 2024, to request available natural heritage information, Species at Risk (SAR) records, and relevant wildlife records for the study areas. As of April 15, 2026, response has not yet been received. Information from Niagara Peninsula Conservation Authority (NPCA) was requested on April 22, 2024, and a response was received on June 6, 2024, including aquatic and terrestrial natural heritage data and mapping.

3.2.1 Indigenous Peoples

Walker acknowledges the unique rights, interests, knowledge and history of Indigenous peoples. Walker maintains mutually respectful relationships with Indigenous communities across present day Canada, where it continuously incorporates Indigenous views, perspectives, knowledge and procurement into its day-to-day operations.

As part of the Walker South Landfill Phase 2 EA, Walker was delegated the Duty to Consult with two Indigenous communities and organizations. Walker engaged and continues in the process of consulting with these Indigenous communities and organizations, which are listed below (**Table 3.2**). Additionally, given Walker's long-term and standing relationships with the Niagara Region Métis Council and the Niagara Region Native Centre, Walker communicated the announcement of the project and sought their input.

Table 3.2 Indigenous Communities Engaged, Consultation Ongoing

Indigenous Communities and Organizations
Mississaugas of the Credit First Nation
Six Nations of the Grand River – **Elected Council** – **Haudenosaunee Confederacy Chiefs Council (as represented by Haudenosaunee Development Institute [HDI])**

In response to Indigenous input on the EA's ToR, additional field investigations were proposed to be completed in 2025, which are outlined in **Table 3.3.**

3.3 Field Study Methodology

GHD staff conducted various field investigations in 2023 to identify habitats, species and features present within the study areas (**Table 3.3**). In response to Indigenous input on the EA's ToR, additional field surveys were conducted in 2025 to create a robust understanding of baseline conditions. Surveys conducted in 2023 and 2025 are outlined in **Table 3.3.**

Field surveys were conducted within the LSA, in areas outside of the Southeast Quarry Limit but adjacent to the SSA, to accurately characterize the neighbouring habitat and natural features present. Limited investigations were conducted within the SSA due to active operation of the quarry and limited suitable habitat; however, the buffer within

the SSA was surveyed and incidental observations were collected at all field visits (discussed in **Section 4.2.6**). For all field surveys conducted in 2025, an invitation to attend was extended to the Indigenous Communities and Organizations outlined in **Table 3.2**. Field surveys attended by Indigenous Communities and Organizations are identified in **Table 3.3**. Methodologies for field surveys are detailed in the following sections.

Table 3.3 Field Investigations

Field Investigation	Dates	GHD Staff
Amphibian Call Count Surveys	2023-04-11 2023-05-08 2023-05-29 2025-04-14* 2025-05-12* 2025-06-05*	Jenn Christie, Keenan Shelly, Laura Lawlor, Simon Chute, Justin de Vuyst, James Martin
Aquatic Habitat Assessment	2023-05-30 2025-05-28*	Jordan Widmaier, Katrina Greenfield, Shannon Davidson
Wetland Limit Confirmation	2025-10-28*	Nicole Charlton
Breeding Bird Surveys	2023-05-24 2023-06-29 2025-06-04* 2025-06-30*	Jason Caldwell, Jenn Christie, Mariann Lobbezoo, James Martin
Ecological Land Classification (ELC) and Botanical Inventory	2023-05-24 2023-06-29 2023-09-26 2025-05-22* 2025-07-16* 2025-09-19*	Jason Caldwell, Jenn Christie, Keenan Shelly, Simon Chute, James Martin, Mariann Lobbezoo
Snake Coverboard Surveys	2023-05-24 2023-05-29 2023-06-29 2023-09-26 2025-04-16* 2025-05-12* 2025-05-22* 2025-06-05* 2025-06-11* 2025-06-30* 2025-07-16* 2025-09-19*	Jason Caldwell, Jenn Christie, Keenan Shelly, Simon Chute, Justin de Vuyst, James Martin, Mariann Lobbezoo
Winter Reconnaissance and Animal Track Survey	2025-02-24	Mariann Lobbezoo
Bat Habitat Assessment	2025-04-16*	Simon Chute, Justin de Vuyst
Bat Acoustic Monitoring	2025-06-11* to 2025-06-30*	Justin de Vuyst, James Martin, Mariann Lobbezoo
Notes * = field survey was attended by HDI staff		

3.3.1 Terrestrial Habitat and Species

3.3.1.1 Vegetation Communities and Botanical Inventory

Vegetation communities within the SSA and LSA were mapped and described following the *First Approximation – ELC System for Southern Ontario* (Lee et al., 1998). A botanical inventory (including a search for rare plant species) was completed for each Ecological Land Classification (ELC) unit where access permitted within the LSA. The vegetation inventory was compiled and refined by incidental observations recorded throughout all field visits.

3.3.1.2 Amphibian Call Surveys

Amphibian call count (ACC) surveys were conducted to determine the presence and abundance of frogs and toads within the study areas. These surveys followed the methods described in the *Ontario Marsh Monitoring Program* (MMP; BSC 2009) for amphibian surveys. In 2023, four stations were surveyed within the SSA and LSA. These four stations, along with one additional station, were re-surveyed in 2025 (**Figure 2**).

In 2023 and 2025, three visits were conducted between April and June during appropriate night-time air temperatures, with surveys commencing a half hour after sunset and ceasing before midnight. At each station, experienced surveyors waited for 2 minutes in silence before starting the survey, then listened for frog and toad calls for a period of 3 minutes. The survey was focused on a semi-circle area with a radius of 100 m, recording any frogs and toads heard within and outside of that survey area, and estimating the location where the calls originated. The abundance of frogs and toads calling was based on standardized abundance codes, applied on a per-species basis: 1) few individuals calling, no call overlap, number of individuals can be accurately counted; 2) moderate number of individuals calling with some overlap, an accurate estimate of individuals calling can be made; and 3) full chorus, counting or estimating number of individuals calling is not possible.

During the first survey, night-time temperatures should be a minimum of 5 degrees Celsius (°C) with low wind and no precipitation:

– In 2023, this survey was conducted on April 11, 2023, at a temperature of 15°C, with no wind or precipitation.
– In 2025, this survey was conducted on April 14, 2025, at a temperature of 14°C, with wind between 6 to 11 kilometres per hour (km/h), and no precipitation.

During the second survey, night-time temperatures should be between 10 – 15°C with low wind and no precipitation:

– In 2023, this survey was conducted on May 8, 2023, at temperatures between 12 – 15°C, with wind between 6 – 19 km/h, and no precipitation.
– In 2025, this survey was conducted on May 12, 2025, at a temperature of 20°C, with no wind or precipitation.

During the third survey, night-time temperatures should be at least 17°C:

– In 2023, this survey was conducted on May 29, 2023, at temperatures between 19 – 21°C, with no wind or precipitation.
– In 2025, this survey was conducted on June 5, 2025, at a temperature of 17°C, with no wind or precipitation.

3.3.1.3 Breeding Bird Surveys

Breeding bird surveys (BBS) were conducted in accordance with the *Ontario Breeding Bird Atlas Survey* protocols (Cadman et al. 2021). These surveys occur during the breeding bird season when most birds are on their territories engaged in breeding activities. The first visit occurs between May 24 to June 15 and the second visit between June 15 and July 10. These surveys commence a half hour before sunrise and include the 5 hours following.

A point count methodology was utilized, where a point count location was surveyed for 10 minutes and all the species seen and heard were recorded. Breeding evidence was recorded to determine whether the species was a possible, probable, or confirmed breeder. Point count locations were situated to ensure representation of all habitat types within the study areas. Incidental species observations were also collected on all visits.

A total of eight BBS point count locations were established and surveyed in the SSA and LSA in 2023 to capture all habitat conditions. These eight BBS stations, along with one additional station, were re-surveyed in 2025 (**Figure 2**).

In 2023, the first survey was conducted on May 24, 2023, from 5:20 am until 10:00 am. The weather conditions were between 13 – 16°C, 0 – 80 percent cloud cover, with 1 – 19 km/h winds, and no precipitation. The second survey was conducted on June 29, 2023, from 5:30 am until 7:30 am. The weather conditions were between 13 – 15°C, 0 – 20 percent cloud cover, with 2 – 5 km/h winds, and no precipitation.

In 2025, the first survey was conducted on June 4, 2025, from 5:30 am until 9:30 am. The weather conditions were between 19 – 22°C, 10 percent cloud cover, with 1 – 19 km/h winds, and no precipitation. The second survey was conducted on June 30, 2025, from 6:00 am until 9:45 am. The weather conditions were between 17 – 24°C, 0-10 percent cloud cover, with 1 – 11 km/h winds, and no precipitation.

3.3.1.4 Snake Coverboard Surveys

Based on the correspondence with MECP and available background information, GHD ecologists conducted surveys throughout the LSA to determine presence of snakes (including SAR) in accordance with the *Survey Protocol for Ontario's Species at Risk Snakes* (Government of Ontario 2021), with survey methods adapted from the protocol to fit the project needs. In 2023, artificial coverboard objects (ACO) were deployed in three locations throughout the SSA and LSA on May 24, 2023, and monitored through to September 26, 2023 (**Figure 2**). In 2025, ACO were deployed in the same three general locations throughout the SSA and LSA on April 16, 2025, and monitored through to September 19, 2025 (**Figure 2**). ACO surveys are a standard, effective method for carrying out presence/absence surveys for snakes.

Prior to initial site visits in 2023, aerial photographs were reviewed to identify potential habitat (e.g., open-canopy and semi-open habitat, edge habitats) within the SSA and LSA. All suitable habitat was characterized and mapped to inform the ACO survey design. To capture all habitat types within the study areas, a total of 12 ACO were deployed in 2023 across three locations of the LSA. Similarly, in 2025, 19 ACO were deployed across the same three general locations within the LSA (**Figure 2**). The ACO were cut from 0.5-inch-thick plywood boards with dimensions of 100 centimetres (cm) x 100 cm. By placing numerous (i.e., three to seven) ACO per location within suitable habitat, it increased the capture potential within microhabitats of each location to promote chances of detecting snake species.

Across both monitoring years, each ACO was labelled with the object's ID name as well as contact information that correlated to the GHD staff member that was conducting the surveys. As part of ACO installation, excess weedy vegetation was removed to provide a relatively flush connection with the ground while still maintaining suitable habitat at each board.

In 2023, a total of three surveys of all ACO were carried out by GHD ecologists, while in 2025, a total of four surveys of all ACO were carried out from spring until late summer during the reptile active season. Surveys were conducted in accordance with the protocol when air temperature were between 10 – 25°C in sunny conditions or between 15 – 30°C in overcast conditions. Surveys were completed during daylight hours when visibility of reptiles was at its highest. Timing during the day was variable as it was dependant on conditions during the day. The surveys were typically completed between 8 am and 12 pm or 5 pm and 8 pm with no surveys being carried out on days with wind speeds higher than 24 km/h. During other field investigations conducted by GHD ecologists on-site, ACO inspections were performed; however, environmental conditions did not consistently meet protocol requirements for these to be considered official snake coverboard surveys.

3.3.1.5 SAR Bat Surveys

There are seven species of bats in Ontario that have been listed as endangered (END) provincially, including the little brown myotis (*Myotis lucifugus*; END federally), eastern small-footed myotis (*Myotis leibii*; not assessed federally), northern myotis (*Myotis septentrionalis*; END federally), tri-colored bat (*Perimyotis subflavus*; END federally), eastern red bat (*Lasiurus borealis*; not listed federally), silver-haired bat (*Lasionycteris noctivagans*; not listed federally), and hoary bat (*Lasiurus cinereus*; not listed federally). These receive species and general habitat protection under the provincial *Species Conservation Act* (SCA; 2025).

Many of the seven SAR bats in Ontario have different roosting habitat characteristics. Little brown myotis, northern myotis, and silver-haired bats roost in tree cavities, crevices, and under loose exfoliating bark in wooded areas located near water (Humphrey & Fotherby 2019). Deciduous species with decay characteristics are often ideal for roost sites; however, coniferous species may be used depending on roost-tree characteristics such as tree size, height, roost aspect, and cavity temperature (COSEWIC 2023). The tri-colored bat most often roosts in foliage (both dead and alive) within or below the canopy. Often, oak species (*Quercus* spp.) are utilized for roosting because the leaves are retained longer in the fall season; however, maple species (*Acer* spp.) are also used (Humphrey & Fotherby 2019). Eastern red bats and hoary bats may use both deciduous and coniferous forests of any age class, though they may avoid coniferous species when suitable deciduous species are present. As well, they tend to prefer large diameter and tall trees, reaching or exceeding the surrounding canopy. Eastern red bats may also use shrubs for roosting (COSEWIC 2023). Eastern small-footed myotis roost in sunny, cave, karst, and rocky open habitats, such as along talus slopes or within rock crevices, and occasionally in buildings (Humphrey 2017).

The location of suitable bat maternity roosting habitat, including snags, was identified following the modified methodology of the *MECP Bats & Treed Habitat – Maternity Roost Surveys* protocol (MECP 2022). This scoped assessment provided the likelihood that appropriate habitat for SAR bats was present; however, it did not confirm the presence or absence of any bat species.

3.3.1.5.1 Bat Maternity Roost Habitat Assessment

On April 14, 2025, GHD conducted snag tree surveys during leaf-off conditions following Phase II of the MECP 2022 protocol: *Identification of Suitable Maternity Roost Trees*. Identifying suitable roost trees for little brown myotis, northern myotis, and silver-haired bat includes recording the location of all snags that exhibit appropriate attributes including cavities, loose bark, cracks, or knot holes. Identifying suitable roost trees for eastern red bat and hoary bat includes recording the location of large diameter and tall trees, reaching or exceeding the surrounding canopy. Additionally, roost habitat for eastern red bat and hoary bat may include shrub communities and areas of dense tree foliage. Identifying suitable roost trees for tri-colored bats includes recording the location of any oak trees greater than 10 cm diameter at breast height (DBH), maple trees greater than 10 cm DBH if the tree includes dead/dying leaf clusters, and any maple tree greater than 25 cm DBH. Suitable roosting features for eastern small-footed myotis were surveyed for and recorded during all site investigations.

3.3.1.5.2 Bat Acoustic Surveys

GHD installed a total of five (5) acoustic monitoring devices (bat detectors; IDs: PTBO_01, PTBO_02, WATS_01, WATS_03, WATS_05) within and adjacent the SSA, at five locations (**Figure 2**). Acoustic monitoring was conducted from June 11 to June 30, 2025, which satisfied the minimum of 10 nights during the maternity roosting period (according to protocol). The bat detectors were deployed where potentially suitable roosting habitat (i.e., cavity trees and snags) were identified, and where SAR bats are most likely to occur with the study areas.

The bat detectors (SM4BAT+ model from Wildlife Acoustics) were set to record nightly from 30 minutes before sunset to 30 minutes after sunrise. The bat detectors were set to record wave files of up to 15 seconds in duration any time a sound in the frequencies typically emitted by bats was detected.

A three-step process was utilized to analyze acoustic data to achieve the highest confidence in classification:

1. The recorded ultrasonic data was analyzed in Sonobat 4 using the SonoVet and SonoBatch North northeastern US and Southern Ontario classifier to assign species identifications to each file. In accordance with the protocol, ten nights within the period of deployment (June 11 – June 30, 2025) were selected as appropriate nights for call analysis based on observations of suitable weather.
2. The SAR bat calls identified by the program were manually verified by a qualified ecologist. Manual vetting occurs to confirm the patterns are consistent with the typical characteristics of a call for each species. Manual vetting and confirmation of the call characteristics was undertaken for each SAR species recorded.
3. Where a recorded call was not consistent with the known typical characteristics of a bat species, or the recording was outside of the software's classification confidence range, the analyser classified the call as high frequency (HiF), low frequency (LoF), or as "Not Applicable (NA)". NA recordings can result from background noise such as

vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone. An extensive review of the NA files was conducted to verify if calls could be identified as SAR bats.

3.3.1.6 Significant Wildlife Habitat

After the background review and field inventories, GHD ecologists analyzed the information they collected to determine which, if any, Significant Wildlife Habitat (SWH) features could be confirmed based on their observations. The SSA and LSA were assessed for habitat identified within the criteria outlined in applicable guidance documents (i.e., Natural Heritage Reference Manual [OMNR 2010]; Significant Wildlife Habitat Technical Guidelines [OMNR 2000]; and Significant Wildlife Habitat Criteria for Ecoregion 7E [MNRF 2015]). The analysis was conducted using the criteria for Significant Wildlife Habitat in Ecoregion 7E.

There are four categories of SWH:

– Seasonal Concentration Areas of Animals
– Rare Vegetation Communities or Specialized Habitat for Wildlife
– Habitat for Species of Conservation Concern (SCC)
– Animal Movement Corridors

Each of these categories includes various SWH types and specific criteria to evaluate their significance. These four categories were assessed based on aerial photography, background review, and field investigations.

3.3.1.7 Species at Risk Screening

Prior to conducting the field surveys, a screening of SAR with potential to be present within the study areas was completed.

For the purposes of this report, SAR include those species listed as END or Threatened (THR) under the provincial SCA as well as species listed as END or THR under the federal *Species at Risk Act* (SARA). For clarity, federal SAR includes aquatic species and migratory birds, which may also be subject to the *Fisheries Act* (FA) and the *Migratory Birds Convention Act* (MBCA), respectively.

As defined by the Natural Heritage Reference Manual (NHRM; [OMNR 2010]), SCC are species that are rare or are substantially declining, listed as Special Concern (SC) by the Committee on the Status of Species at Risk in Ontario (COSSARO [COSSARO 2026]), have an S-Rank of S1 to S3, and species identified as nationally END or THR by COSEWIC but are not protected in regulation under the SCA. Although SCC are not afforded protection under the SCA, their habitat may be considered Significant Wildlife Habitat (SWH) under the Provincial Planning Statement (PPS [MMAH 2024]).

3.3.2 Wetlands

A formal wetland delineation as per the *Ontario Wetland Evaluation System (OWES): Southern Manual* (Ontario 2014) was not completed in 2023 nor in 2025. Relevant natural heritage mapping was reviewed to determine the presence of mapped wetlands within the study areas, and the ELC and botanical field investigations also identified the presence of wetland vegetation communities within the study areas. In 2025, an OWES certified ecologist completed a site walk and an informal wetland delineation/confirmation; however, the limits were not confirmed with regulatory agencies (e.g., NPCA).

3.3.3 Aquatic Habitat Assessment

3.3.3.1 Aquatic Habitat and Fish Community

The aquatic habitat was assessed within the Ten Mile Creek watercourse in the LSA using a modified version of the *Ontario Stream Assessment Protocol* (OSAP [Stanfield 2017]). The assessed area was split into three reaches. The objective of this assessment was to characterize the local aquatic habitat. Characteristics of high-quality aquatic

habitat include natural sinuosity with a well-defined riffle/pool sequence, variability in water depth and bed substrate, naturally occurring woody debris, undercut banks and natural riparian vegetation overhanging the banks that provides food for various aquatic organisms. The greater the quantity of preferred habitat features present, the higher potential aquatic habitat ranking.

Data collected included documentation and assessment of the following watercourse conditions:

– General watercourse characteristics (i.e., stream pattern, general gradient and flow).
– Channel characteristics (i.e., wetted width and depth, bankfull width and depth, and depth of riffles/pools/run).
– Geomorphic features (i.e., riffles, pools, and runs).
– Substrate and bank materials.
– Other pertinent habitat features (i.e., spawning, nursery and refuge areas, barriers to fish movement, and macrophyte growth).
– Disturbances and evidence of past habitat alterations (i.e., channelization, channel hardening or straightening).
– Existing structures within the watercourse (i.e., culverts, corrugated steel pipes [CSP]).

After the completion of the aquatic habitat assessment, field data was summarized to determine the habitat potential.

Existing fish community data for the Ten Mile Creek was gathered through review of secondary source information from the NPCA, Fisheries and Oceans Canada (DFO), MNR Aquatic Resources Area (ARA), and Niagara Region Open Data. Based on the available data set, GHD did not conduct fish community sampling within the study areas.

3.3.3.2 Surface Water Quality

Surface water quality parameters were measured using an in-situ Horiba U-52 Water Quality Meter. Parameters collected included temperature, pH, conductivity, turbidity, dissolved oxygen, total dissolved solids, and salinity. The *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (Canadian Council of Ministers of the Environment 2024) were used to interpret water quality data.

3.3.3.3 Headwater Drainage Feature Assessment

Potential Headwater Drainage Features (HDFs) were identified within the study areas but were not subjected to a detailed HDF assessment in accordance with the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (TRCA and CVC, 2014).

A full HDF assessment was not requested as part of the current scope; therefore, limited site assessment was completed at one location where features were observed. Field investigations were undertaken during the second assessment window (late April to May).

Additional site visits within other prescribed timing windows (i.e., Late March to mid April and July to August) may be required to confirm flow regime and complete feature classification, in accordance with the TRCA/CVC guidelines, to support the development of appropriate mitigations and management measures.

4. Characterization of the Existing Environment

4.1 Designated Features

The LSA contains natural landscape features with varying levels of provincial significance (**Figure 3**).

Two non-provincially significant wetland complexes are found within the LSA: the Ten Mile Creek Wetland Complex and the Shriners Creek Wetland Complex. The Ten Mile Creek Wetland Complex is found on the north and east sides

of the LSA, directly bordering much of the SSA. The historic flow pathway of the Ten Mile Creek has been adjusted and realigned southward to facilitate quarry operations in the current SSA, though online mapping still shows the creek and wetland complex entering the SSA on its east side. The Shriners Creek Wetland Complex is present in the southeast portion of the LSA and travels south towards Highway 57.

Portions of the north, south, and east sides of the LSA are classified as Stratum 2 white-tailed deer (*Odocoileus virginianus*) wintering area as delineated by the MNR. These areas are tied to the larger wooded communities within the LSA.

Northern and western portions of the LSA fall within the Niagara Escarpment Plan Designation Boundary (NEPDB), though the SSA is located entirely outside of the NEPDB. Designations within the LSA include Escarpment Protection Area, Escarpment Natural Area, Escarpment Rural Area, Escarpment Resource Extraction Area, and Urban Area. The entirety of the LSA that is included within the NEPDB is also included within the Greenbelt Boundary (Niagara Escarpment Commission 2026).

Various wetlands, waterways, and waterbodies scattered across the LSA are considered NPCA Regulated Area. Many of the evaluated, non-provincially significant wetlands within the LSA are considered locally significant by the NPCA. The NPCA also designates much of the SSA as well as the western and northern portions of the LSA as Highly Vulnerable Aquifer areas (NPCA 2025). As mentioned above, a portion of Ten Mile Creek and its associated NPCA regulated area is shown traversing the eastern side of the SSA, although this section of mapping is outdated as the watercourse was realigned through previous works.

Portions of the SSA and LSA have been designated by the Niagara Official Plan (2024):

– Under Schedule B as Niagara Escarpment Plan Area.
– Under Schedule C-1 as Natural Environment System Overlay.
– Under Schedule C-2 as Linkages, Significant Woodlands, Other Woodlands, and Other Wetlands.
– Under Schedule C-3 as Significant Groundwater Area and Highly Vulnerable Aquifers.
– Under Schedule D as within the Welland Canal North, Four Mile Creek, Niagara-on-the-Lake quaternary watersheds, and within the Lake Ontario tertiary watershed.

Portions of the SSA and LSA have been designated by the Niagara Falls Official Plan (2024):

– Under Schedule A as Environmental Conservation Area, Environmental Protection Area, Extractive Industrial, Niagara Escarpment Plan Area, and Good General Agriculture.
– Under Schedule A-1 as Environmental Protection Area, Environmental and Conservation Area.
– Under Schedule A-2 as Rural Area.
– Under Appendix III as outside of the Urban Area Boundary and containing multiple Wooded and Treed Sites.
– Under Schedule III-A as Top of Slope, NPCA Regulated Wetland >/= 2 ha, and Regulated Floodplain.
– Under Schedule III-B as Adjacent Lands to natural features identified under Schedule III-A.
– Under Schedule III-C as Locally Significant Wetland, NPCA Wetland < 2 ha, Significant Woodland, and Fish Habitat.

4.2 Terrestrial Habitat and Species

4.2.1 Vegetation Communities and Botanical Inventory

Spring vegetation surveys were conducted on May 24, 2023, and May 22, 2025; summer vegetation surveys were conducted on June 29, 2023, and July 16, 2025; fall vegetation surveys were conducted on September 26, 2023, and September 19, 2025. Surveys included botanical inventories and ELC of the study areas, primarily focusing on accessible areas of the LSA. These surveys determined that the LSA was dominated by agricultural lands under active row crops, cultural meadows, forests, and wetlands. The areas on the north, east, and south sides of the LSA provided relatively high habitat heterogeneity for a wide array of potential SAR in the area. A total of 16 vegetation

communities were observed during field investigations. The full botanical inventory is presented in **Appendix A**. A photographic log of SSA and LSA conditions, including observed vegetation communities, is presented in **Appendix B**. ELC communities are shown on **Figure 4**.

4.2.1.1 Upland Communities

AG: Agriculture

This community comprises large portions of the LSA and consists of land being managed for agricultural purposes. The agricultural communities that were accessed during 2023 and 2025 field surveys were heavily disturbed and therefore no formal vegetation survey was conducted in these communities.

CUM1-1: Dry – Moist Old Field Meadow

This community is common and present within multiple areas of the SSA and LSA, most notably along the southern border of the SSA and LSA, as well as within numerous areas along the eastern and northern portions of the LSA. This community is dominated by commonly occurring grass and forb species including white clover (*Trifolium repens*), creeping thistle (*Cirsium arvense*), reed canary grass (*Phalaris arundinacea*), Kentucky bluegrass (*Poa pratensis ssp. pratensis*), Canada goldenrod (*Solidago canadensis*), common dandelion (*Taraxacum officinale*), common timothy (*Phleum pratense ssp. pratense*), and red clover (*Trifolium pratense*). The vegetation within this community type forms dense ground cover, with sparse shrub and tree species including back spruce (*Picea mariana*), multiflora rose (*Rosa multiflora*), and eastern cottonwood (*Populus deltoides ssp. deltoides*). Invasive species of note within this community include phragmites/European reed (*Phragmites australis*) and European buckthorn (*Rhamnus cathartica*). A native plant of note within this community is common milkweed (*Asclepias syriaca*), the larval foodplant for monarch butterflies (*Danaus plexippus*).

CUP: Mixed Plantation

This community is present in the eastern portion of the LSA. The canopy is dominated by Norway spruce (*Picea abies*) and trembling aspen (*Populus tremuloides*) and the community comprises an anthropogenically planted woodlot.

CUP2-1: Black Walnut – White Pine Mixed Plantation

This community is located within the eastern portion of the LSA. The canopy is dominated by black walnut (*Juglans nigra*) and white pine (*Pinus strobus*), and contains green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), and occasional pin oak (*Quercus ellipsoidalis*) trees. Invasive European buckthorn forms a dense understory with abundant thicket creeper (*Parthenocissus vitacea*). This community has moderately sparse ground cover consisting of Canada goldenrod and other commonly occurring forb species.

CUP3-8: White Spruce – European Larch Coniferous Plantation

This community comprises a small area within the northeastern portion of the LSA. The canopy is dominated by white spruce (*Picea glauca*) and Norway spruce (*Picea abies*). The community contains a moderately dense understory of staghorn sumac (*Rhus typhina*) and European buckthorn, while the sparse ground cover is comprised of tall goldenrod (*Solidago altissima var. altissima*), riverbank grape (*Vitis riparia*), and other commonly occurring grass and forb species.

CUT1: Mineral Cultural Thicket

This community is present in numerous areas throughout the LSA, including the northern, northeastern, eastern, and southern portion of the LSA, in some cases along the boundary of the SSA. The community is comprised of young trees including trembling aspen (*Populus tremuloides*), silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides ssp. deltoides*), white ash (*Fraxinus americana*), and balsam poplar (*Populus balsamifera*). The understory includes species such as staghorn sumac, red-osier dogwood (*Cornus stolonifera*), grey dogwood (*Cornus racemosa*), and dog rose (*Rosa canina*). Ground cover is moderately dense and consists of New England aster (*Symphyotrichum novae-angliae*), purple crown vetch (*Securigera varia*), and tall goldenrod. Invasive European buckthorn was observed in this community.

A butternut (*Juglans cinerea*) hybridity assessment was completed for potential butternuts observed within this community in the northern extent of the LSA. It was determined that the trees are hybrid butternuts and not protected under the SCA.

FOD: Deciduous Forest

This community comprises a large forested area within the northwestern extent of the LSA. In this area, additional works are proposed to facilitate the installation of a new forcemain along its existing alignment for leachate management. This mid-age forest is comprised of moderately dense trees, with a canopy of eastern cottonwood, black walnut, crack willow (*Salix euxina*), sweet cherry (*Prunus avium*), and Scots pine (*Pinus sylvestris*). Dense grey dogwood dominates the understory, with occasional green ash, white ash, European buckthorn, and hawthorn species (*Crataegus sp*.). Ground cover is relatively sparse and was comprised of Canada goldenrod, white avens (*Geum canadense*), woodland strawberry (*Fragaria vesca*), and red raspberry (*Rubus idaeus ssp. strigosus*). Small clearings with minimal tree cover are also located within the community. These areas contain sparse eastern cottonwood, black walnut, and common pear (*Pyrus communis*), with a denser ground cover containing species such as tufted vetch (*Vicia cracca*), curled dock (*Rumex crispus),* common milkweed, and grass species (*Poa spp.*).

FOD2-A: Dry - Fresh Oak - Maple - Hickory Deciduous Forest

This community comprises large areas within the northern portion of the LSA, in close proximity to the SSA. Dominant canopy species include pin oak, bur oak (*Quercus macrocarpa*), and northern red oak (*Quercus rubra*), with shagbark hickory (*Carya ovata var. ovata*), sugar maple (*Acer saccharum*), and white elm (*Ulmus americana*). The sub-canopy includes eastern hop-hornbeam (*Ostrya virginiana*) and bitternut hickory (*Carya cordiformis*). The understory includes blue-beech (*Carpinus caroliniana ssp. virginiana*), American beech (*Fagus grandifolia*), grey dogwood, and European buckthorn. The sparse ground cover is comprised of eastern poison ivy (*Toxicodendron radicans var. radicans*), jack-in-the-pulpit (*Arisaema triphyllum*), and thicket creeper. Vernal pools with no vegetation are also located throughout this community.

FOD2-B: Dry - Fresh Oak - Maple - Hickory Deciduous Forest

This community comprises a narrow area within the northwestern extent of the LSA. In this area, additional works are proposed to facilitate the installation of a new forcemain along its existing alignment for leachate management. The community contains similar species composition and structure to that of the FOD2-A community and is differentiated for reporting purposes. It was dominated by intermediate and mature pin oak, bur oak, northern red oak, and sugar maple trees. The community contained relatively dense sub-canopy and understory of American beech, grey dogwood, and European buckthorn, with sparse ground cover of poison ivy and thicket creeper.

FOD2-C: Dry - Fresh Oak - Maple - Hickory Deciduous Forest

This community comprises an area within the northeastern extent of the LSA, in close proximity to the LSA. Species composition and stand structure are comparable to the FOD2-A and FOD2-B communities and is differentiated for reporting purposes.

FOD2: Dry - Fresh Oak - Maple - Hickory Deciduous Forest

This community comprises large areas within the southern and southeastern portions of the LSA, in areas distant from the SSA. Species composition and stand structure are comparable to the FOD2-A, FOD2-B, and FOD2-C communities and is differentiated for reporting purposes.

FOD9: Fresh – Moist Oak - Maple - Hickory Deciduous Forest

This community comprises areas within the southern and southeastern portions of the LSA in the vicinity of Shriner's Creek Wetland Complex. Species composition included a mix of wetland and terrestrial plants species which demonstrated the forest-swamp interface. The canopy is dominated northern red oak, shagbark hickory, and pin oak. The understory includes European buckthorn, black cherry (***Prunus serotina*** var. ***serotina***), poison ivy, thicket creeper, and jack-in-the-pulpit.

Hedge: Hedgerow

These narrow and linear hedgerows primarily run along the eastern SSA and LSA boundary, as well as in field margins surrounding agricultural fields within the greater LSA. The canopy is dominated by pin oak, northern red oak, red maple (*Acer rubrum*), silver maple, eastern white pine (*Pinus strobus*), and occasional honey locust (*Gleditsia triacanthos*). The understory includes riverbank grape, red-osier dogwood, grey dogwood, dog rose, and tufted vetch. Common milkweed was noted in this community.

4.2.1.2 Wetland Communities

MAM2: Mineral Meadow Marsh

This community forms a long and narrow area just outside the eastern boundary of the SSA and is found in pockets throughout the greater LSA. The community is dominated by bluejoint reedgrass (*Calamagrostis canadensis var. canadensis*) and reed canary grass and also contains abundant early goldenrod (*Solidago juncea*), sedge species (*Carex sp.*), tufted vetch, and purple-stemmed aster (*Symphyotrichum puniceum*). Dense patches of broad-leaved cattail (*Typha latifolia*), narrow-leaved cattail (*Typha latifolia*), and phragmites were also observed within this community.

MAM2-5: Narrow-leaved Sedge Mineral Meadow Marsh

This community is present in the eastern portion of the LSA and dominated by various narrow-leaved sedge species. A full plant list was not recorded due to its distance from the landfill footprint.

SWD: Deciduous Swamp

This community is located in the southeastern portion of the LSA and is north and south of Ten Mile Creek, west of Garner Road. A full plant list was not collected due to its distance from the landfill footprint.

SWD1-3: Pin Oak Mineral Deciduous Swamp

This community is present in the northern portion of the LSA, along the northern boundary of the SSA. The canopy of the community is dominated by pin oak, bur oak, red maple, and silver maple. A relatively sparse subcanopy contains eastern hop-hornbeam and swamp white oak (*Quercus bicolor*). Ground cover is generally sparse and comprised of eastern poison ivy, jack-in-the-pulpit, sensitive fern (*Onoclea sensibilis*), and bladder sedge (*Carex intumescens*).

SWD3-1: Red Maple Mineral Deciduous Swamp

This community is located in the southeastern portion of the LSA as part of Shriner's Creek Wetland Complex and is dominated by red maple.

SWT2-9: Grey Dogwood Mineral Thicket Swamp

This community is located within the northeastern extent of the LSA. The community is dominated by grey dogwood and contains abundant red-osier dogwood and occasional red maple trees. The groundcover is dense and comprised of wetland species, including sallow sedge (*Carex lurida*), soft rush (*Juncus effusus ssp. effusus*), fox sedge (*Carex vulpinoidea*), as well as tall goldenrod and New England aster.

4.2.1.3 Botanical Inventory

A total of 195 vascular plants were identified to species level during field investigations. An additional seven plants were identified to genus level (wood fern [*Dryopteris sp.*], hawthorn [*Crataegus sp.*], willow [*Salix sp.*], elm [*Ulmus sp.*], sedge [*Carex sp.*], fescue [*Festuca sp.*], and grass [*Poa sp.*]). A full list of species is presented in **Appendix A.**

Of the species identified, 129 (66.2 percent) are native and 65 (33.3 percent) are non-native. Of the native species identified, 124 species are considered 'secure' or 'apparently secure' as defined by their S-Ranks[1] of 'S5', 'S5?', 'S4S5', 'S4', or 'S4?'. Additionally, one species, field thistle (*Cirsium discolor*), has an S-Rank of 'S3' indicating it is vulnerable in the province; one species, bushy aster (*Symphyotrichum dumosum*), has an S-Rank of 'S2' indicating it is 'imperilled' in the province, and one species, honey locust (*Gleditsia triacanthos*), has an S-Rank of 'S2?' indicating it is 'imperilled' in the province though there is some uncertainty with the assigned rank.

Of the native species identified for which information is available, 119 (92.2 percent) have Co-efficient of Conservatism[2] (CC) values of 0 to 6, indicating they are tolerant to moderately tolerant of disturbance. Six species possess rankings of 7-8 indicating they have a moderately low tolerance for disturbance. Four species, including creeping juniper (*Juniperus horizontalis*), field thistle, bushy aster, and pin oak, possess rankings of 9-10 which indicate they have a very low tolerance for disturbance.

Six locally rare (Oldham 2017) species, including bushy aster, common hackberry (*Celtis occidentalis*), honey locust, balsam poplar, Canada rush (*Juncus canadensis*), and yellow Indiangrass (*Sorghastrum nutans*) were observed during botanical inventories (**Figure 5**).

The yellow Indiangrass is likely of anthropogenic origin as it was observed in the meadow established on the constructed screening berm. Balsam poplar and honey locust were observed in planted hedgerow and therefore likely also planted as part of quarry landscaping activities. Canada rush was observed within moist pockets of cultural meadow and MAM2 community types, and may have been part of the seed mix associated with the realignment of Ten Mile Creek. Similarly, the bushy aster was observed in cultural meadow at the south/southeast portion of the SSA. The field thistle was observed at the edge of cultural meadow and meadow marsh near the Ten Mile Creek. Hackberry was observed in cultural thicket habitat at the far south of the SSA.

A butternut hybridity assessment was conducted for potential butternuts observed in the CUT community in the northern portion of the LSA. It was determined that the trees were hybrid butternuts and are therefore not considered SAR plants. No other SAR or SCC plants were identified during the botanical inventories.

4.2.2 Amphibians

In 2023, four amphibian call stations were established within the study areas, which included AC-23-01, AC-23-02, AC-23-03, and AC-23-04 (**Figure 2**). Over the course of the surveys in 2023, amphibians were heard calling from all four stations within the study areas. The results of the 2023 surveys are summarized in **Table 4.1**, which indicates the call levels and abundance of each species present at each station.

In 2025, amphibian call stations were established in the same four locations as those in 2023, along with one additional location. The amphibian call stations surveyed in 2025 include AC-25-01, AC-25-02, AC-25-03 and AC-25-04, and AC-25-05 (**Figure 2**). Over the course of the surveys in 2025, amphibians were heard calling from all five stations within the study areas. The results of the 2025 surveys are summarized in **Table 4.2**, which indicates the call levels and abundance of each species present at each station.

In 2023 and 2025, amphibians were generally heard calling in low numbers (one to three individuals) and consisted of common and secure species in Ontario (i.e., S5 or S4 ranked), apart from higher numbers of western chorus frog (*Pseudacris triseriata*; Carolinian population is listed as not-at-risk [NAR] provincially and federally). Multiple individuals and groups (up to a full chorus) of this species were heard calling at all stations during the first two rounds of amphibian call surveys in 2023 and 2025. No SAR, SCC, or locally rare amphibian species were observed.

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

[2] Rank of 0 to 10 based on plant's degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters (Oldham et al. 1995).

Table 4.1 2023 Amphibian Call Survey Data

Species	AC-23-01			AC-23-02			AC-23-03			AC-23-04		
	Orientation: South			Orientation: Northwest			Orientation: Southeast			Orientation: East		
	2023-04-11	2023-05-08	2023-05-29	2023-04-11	2023-05-08	2023-05-29	2023-04-11	2023-05-08	2023-05-29	2023-04-11	2023-05-08	2023-05-29
American toad (*Anaxyrus Americanus*)	-	-	-	1 (1)	2 (2) [a]	-	-	1 (1)	-	-	-	-
Green frog (*Lithobates clamitans*)	-	-	-	-	-	-	-	-	-	-	1 (1)	1 (1)
Northern leopard frog (*Lithobates pipiens*)	-	-	-	1 (1)	-	-	-	-	-	-	-	-
Spring peeper (*Pseudacris crucifer*)	1 (3)*	2 (2)[a]	-	1 (2)	-	-	1 (1) [a]	-	-	1 (1)	-	-
Western chorus frog (*Pseudacris triseriata;* Carolinian population)	2 (4)*	2 (3)* [a]	-	2 (2) [a]	2 (2) [a]	-	2 (3)* [a]	2 (2) [a]	-	2 (3)* [a]	2 (2) [a]	-
Wood frog (*Lithobates sylvaticus*)	-	-	-	-	1 (1)	-		-	-	-	-	-

Notes

Format of table is “Call Level (Abundance)”

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

Abundance: Numbers in parentheses indicate estimated number of individuals of a species.

* Groups observed on each side of the survey area (i.e., multiple groups of that call level/abundance within survey area).

[a] Multiple calls observed, reporting the maximum call code for the species.

Table 4.2 2025 Amphibian Call Survey Data

Species	AC-25-01			AC-25-02			AC-25-03			AC-25-04			AC-25-05		
	Orientation: Southeast			Orientation: Northwest			Orientation: Southeast			Orientation: East			Orientation: Northeast		
	2025-04-14	2025-05-12	2025-06-05	2025-04-14	2025-05-12	2025-06-05	2025-04-14	2025-05-12	2025-06-05	2025-04-14	2025-05-12	2025-06-05	2025-04-14	2025-05-12	2025-06-05
American toad (*Anaxyrus americanus*)	-	-	-	1 (1)	1 (1)	-	-	1 (1)	-	-	-	-	1 (2)	-	-
Western chorus frog (*Pseudacris triseriata*)	3*	-	-	2 (4)* [a]	-	-	3* [a]	-	-	3* [a]	-	-	3* [a]	1 (1)	-

Notes

Format of table is “Call Level (Abundance)”

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

Abundance: Numbers in parentheses indicate estimated number of individuals of a species.

* Groups observed on each side of the survey area (i.e., multiple groups of that call level/abundance within survey area).

[a] Multiple calls observed, reporting the maximum call code for the species.

4.2.3 Breeding Birds

In 2023, BBS were conducted on May 24 and June 29, 2023, and detected a total of 52 bird species across the eight point-count locations within the study areas (**Figure 2**). Of the total species observed, one species was a confirmed breeder, 15 were probable breeders, and 31 were possible breeders. The remaining five bird species are considered to be non-breeders, flyovers, or migrants.

In 2025, BBS were conducted on June 4 and June 30, 2025, and detected a total of 41 bird species across the nine point-count locations within the study areas (**Figure 2**). Of the total species observed, no species were confirmed breeders, 18 were probable breeders, and 14 were possible breeders. The remaining nine bird species are considered to be non-breeders, flyovers, or migrants.

Across both years of BBS, a total of 61 bird species were detected within the study areas. A list of the species detected with evidence of breeding is provided in **Appendix C**.

Through the BBS, three species listed as SC under the federal SARA (not listed under the provincial SCA) were observed: grasshopper sparrow (*Ammodramus savannarum*), olive-sided flycatcher (*Contopus cooperi*), and eastern wood-pewee (*Contopus virens*). These species were only observed during one BBS and were not identified to be breeding within the study areas. As such, they are not further considered under SWH. Additionally, barn swallow (*Hirundo rustica*) was observed within the study areas and listed as THR under the federal SARA (not listed under the provincial SCA). Suitable breeding habitat is not present within the SSA for barn swallow; only foraging habitat is present. None of the birds recorded during the BBS are identified as THR or END under the SCA, nor as a regionally rare, provincially rare or a species of interest by OBBA or NHIC. However, most of the species detected during the surveys along with their nests, eggs, and young receive protection under the MBCA.

4.2.4 Snakes

GHD ecologists conducted the ACO surveys from May to September in both 2023 and 2025. The locations where the ACOs were placed are included on **Figure 2**. After deployment, ACOs were checked three times throughout the period of monitoring in 2023 and four times throughout the period of monitoring in 2025. No snakes or evidence of snakes were found under the deployed ACOs during the surveys in 2023. Two eastern gartersnakes (*Thamnophis sirtalis sirtalis*; non-SAR) were observed during the surveys in 2025. ACO survey results are summarized in **Table 4.3**.

Table 4.3 Coverboard Survey Results

Survey Number	Survey Date	Weather Conditions	Observations
2023 ACO Monitoring Survey #1	2023-05-29	Temperature (°C): 22 Wind (km/h): 6-11 Cloud (%): 0	No snakes observed.
2023 ACO Monitoring Survey #2	2023-06-29	Temperature (°C): 14 Wind (km/h): 1-5 Cloud (%): 10	No snakes observed.
2023 ACO Monitoring Survey #3	2023-09-26	Temperature (°C): 14 Wind (km/h): 6-11 Cloud (%): 25	No snakes observed.
2025 ACO Monitoring Survey #1	2025-05-12	Temperature (°C): 25 Wind (km/h): 1-5 Cloud (%): 10	Eastern gartersnake (*Thamnophis sirtalis sirtalis*)
2025 ACO Monitoring Survey #2	2025-06-05	Temperature (°C): 20 Wind (km/h): 0 Cloud (%): 100	Eastern gartersnake (*Thamnophis sirtalis sirtalis*)

Survey Number	Survey Date	Weather Conditions	Observations
2025 ACO Monitoring Survey #3	2025-06-30	Temperature (°C): 24 Wind (km/h): 6-11 Cloud (%): 0	No snakes observed.
2025 ACO Monitoring Survey #4	2025-09-19	Temperature (°C): 17 Wind (km/h): 6-11 Cloud (%): 25	No snakes observed.

4.2.5 SAR Bats

4.2.5.1 Bat Habitat Surveys

The location of suitable bat maternity roosting habitat, including snags, was identified following a modified methodology of the *MECP Bats & Treed Habitat – Maternity Roost Surveys* protocol (MECP 2022). In total, 42 trees exhibiting suitable maternity roost habitat characteristics were observed within the LSA where tree removals are possible. Majority of these trees were observed within the north and northeastern portions of the LSA, within the SWD1-3, FOD2-A, and FOD2-C communities near the boundary of the SSA. Tree characteristics that provide suitable maternity roost habitat included peeling/loose bark, cavities, and cracks. In addition, several large oak (*Quercus sp.*) were observed that may provide suitable foliage-roosting habitat. All potentially suitable maternity trees are detailed in **Appendix D** and displayed on **Figure 5.**

In addition to suitable maternity roost trees, eastern red bats may use shrubs and thickets for roosting. Numerous CUT1 communities were observed within and adjacent the SSA; however, were dominated by species that do not form dense shrubby growth, and as such likely do not provide high quality habitat for eastern red bats. Suitable foraging habitat for SAR bats was observed within the SSA and LSA within the swamp communities; however, there is minimal open area over wetlands or standing water. Additionally, the FOD2-B community within the northwestern extent of the LSA is presumed to provide suitable roost habitat for SAR bats based on observations of mature oak and maple trees that may posses suitable roost characteristics, however, targeted surveys were not conducted within this area due to access restrictions. Representative photos of the CUT1, SWD1-3, FOD2-A, and FOD2-C communities that provide roosting and foraging habitat are included in the Photographic Log in **Appendix B**.

4.2.5.2 Bat Acoustic Surveys

Acoustic surveys were completed using SM4BAT+ bat detectors from Wildlife Acoustics that were deployed from June 11 to June 30, 2025. Bat detectors were deployed near identified bat maternity roost trees and foraging habitat, as illustrated on **Figure 2** and **Figure 5**. Data recorded by the bat detectors were analyzed by an individual trained in the specialized software.

The total number of presumptive bat passes recorded during this period is summarized in **Table 4.4**, organized by detector location and by guild of interest based on manual vetting of recorded calls. Complete bat acoustic monitoring results by nightly recording are presented in **Appendix E**. A total of four bat species were recorded, three of which are classified as END under the SCA. Eastern red bat, hoary bat, and silver-haired bat were also recommended by COSEWIC as END in May 2023 but are not yet on Schedule 1 (SARA) as of March 2026. Additionally, one call was identified as *Myotis sp*., which implies possible little brown myotis, northern myotis, or tri-colored bat, but determination cannot be reliably made.

Table 4.4 Presumptive Bat Passes per Bat Detector from June 1 – June 30, 2025

Bat Detector	Total Number of Presumptive Bat Passes	Total Number of SAR Bat Calls*	Total Number of LoF Calls
PTBO_01	529	121	201
PTBO_02	439	140	112

Bat Detector	Total Number of Presumptive Bat Passes	Total Number of SAR Bat Calls*	Total Number of LoF Calls
WATS_01	140	57	15
WATS_03	171	87	53
WATS_05	1748	441	118
Total	**3027**	**846**	**499**
Notes			
*: Calls identified to species level as a SAR, as Myotis sp. (possible little brown myotis, northern myotis or tri-colored bat), or as HiF LoF: Low frequency calls that could not be classified to species level but may be SAR			

The highest average calling activity was at WATS_05, followed by PTBO_01, PTBO_02, WATS_03, and WATS_01 (**Table 4.4**). Stations WATS_05 and WATS_03 were located along the edges of vernal pools within the deciduous swamp (SWD1-3) communities in the northern extent of the SSA. Station PTBO_02 was located along the edge of a vernal pool within a deciduous swamp (SWD3-1) community in the southeastern extent of the LSA. These communities contained numerous suitable bat maternity roost trees and suitable foraging and commuting opportunities. Station PTBO_01 was located within a thicket (CUT1) community while station WATS_01 was located within the oak deciduous forest (FOD2-C), both locations which contain suitable bat maternity roost habitat. All stations are displayed on **Figure 2**.

The pattern of calling activity through the monitoring period was similar across stations WATS_05, PTBO_01, and PTBO_02. Lower activity observed at WATS_03 and WATS_01 may have been due to placement within the forest and swamp patches that may not possess as much suitable open foraging habitat.

High frequency bat calls detected within the SSA include Myotis species and eastern red bat. Myotis species were detected on one file at PTBO_02. Eastern red bat was detected at all stations and was most abundant at station WATS_05 (221 files). There was also a relatively small number of unknown HiF calls (i.e., calls that could not be identified due to poor recording quality and insufficient characteristics for identification) at all stations except for WATS_03. Silver-haired bat was detected in relatively high numbers across all stations, while hoary bat was detected in moderate numbers across all stations, apart from WATS_01 (1 file). These calls represent confirmed SAR bats and comprise approximately 28 percent of the total presumptive bat passes throughout the monitoring period. An additional 499 LoF files, representing approximately 16.5 percent of the total presumptive bat passes, were identified and may include SAR bats; however, could not be classified to species level.

Of the total presumptive bat passes across the monitoring periods, big brown bat, a non-SAR, was the most frequently recorded species and was detected across all stations (48.3 percent of all bat passes). The next most commonly identified species was silver-haired bat (14.8 percent), followed by eastern red bat (7.6 percent), hoary bat (4.1 percent), and Myotis species (0.03 percent).

Based on the results of the acoustics surveys by GHD, four bat SAR were recorded to use habitat within and adjacent to the SSA. This includes Myotis species, silver-haired bat, eastern red bat, and hoary bat. Specifically, SAR bats were detected within the SWD1-3, SWD3-1, CUT1, FOD2-A, and FOD2-C communities within the SSA, which form contiguous habitat with communities in the LSA. Targeted acoustic monitoring surveys were not conducted within the deciduous forest communities (FOD2-B and FOD) within the northwestern extent of the LSA, and as such, SAR bats are not confirmed to be utilizing this habitat.

A time of night analysis was also conducted for all recorded bat calls and is included as **Appendix F**. It was determined that there was an increase in call count during the first hour of sunset recordings (i.e., half an hour before sunset to half an hour after sunset) at stations PTBO_01, PTBO_02, WATS_05, and WATS-03, which is indicative of roosting activity within and adjacent the SSA. Call count was relatively evenly spread across time (hours) at station WATS_01, indicating a higher likelihood of foraging activity throughout the night.

4.2.6 Incidental Wildlife Observations

In addition to the wildlife species detected during formal surveys, additional wildlife species observed incidentally within the study areas are listed in **Table 4.5**.

Table 4.5 Incidental Wildlife Observations

Species		SCA	SARA	S-ranks	Date Observed	Notes
Common Name	**Scientific Name**					
Raccoon	*Procyon lotor*	-	-	S5	2023-04-11 and 2025-02-24	Tracks and scat observed
White-tailed deer	*Odocoileus virginianus*	-	-	S5	2023-04-11 and 2025-02-24	Antler seen on ground
Red-bellied woodpecker	*Melanerpes carolinus*	-	-	S4	2023-04-11	Adult observed eating
Northern flicker	*Colaptes auratus*	-	-	S4B	2023-04-11 and 2023-06-29	Adult male calling – evidence of breeding
Great egret	*Ardea alba*	-	-	S2B	2023-05-24	Adult seen flying overhead
Eastern grey squirrel	*Sciurus carolinensis*	-	-	S5	2025-02-24	Tracks observed in snow
Eastern cottontail	*Sylvilagus floridanus*	-	-	S5	2025-02-24	Tracks observed in snow
Coyote	*Canis latrans*	-	-	S5	2025-02-24	Tracks observed in snow
Green frog	*Lithobates calamitans*	-	-	S5	2025-04-16	Adult observed, not calling
White-footed mouse	*Peromyscus leucopus*	-	-	S5	2025-05-12	Adult with offspring observed under ACO
Spotted salamander	*Ambystoma maculatum*	-	-	S4	2025-06-05	Adult observed under ACO
Meadow vole	*Microtus pennsylvanicus*	-	-	S5	2025-06-05	Adult observed under ACO

4.2.7 Significant Wildlife Habitat

An assessment of candidate and confirmed SWH is provided in **Appendix G**. Prior to field investigations, candidate SWH was identified based on suitable ELC ecosites and criteria provided in the SWH Criteria for Ecoregion 7E (MNRF 2015). Through targeted surveys, majority of these candidate SWH categories were not confirmed within the LSA. One category of SWH was confirmed through field investigations within the SSA and LSA and is illustrated on **Figure 5**:

– Deer Winter Congregation Areas. SWH was confirmed within the LSA due to applicable MNR mapping displaying deer wintering area (stratum 2) in the northern, eastern, and southern portions of the LSA. These mapped wintering areas correspond to woodlots suitable for the species.

Candidate SWH was identified within the LSA where appropriate habitat may be present but targeted surveys were not included in the scope of the project and thus SWH presence or absence could not be confirmed (**Appendix G**). Candidate SWH are illustrated on **Figure 5** and include:

– Candidate Bat Maternity Colonies.

Pileated woodpecker, rough legged hawk were observed but lack sufficient breeding evidence to identify significant habitat, and several rare plants were also recorded but have a high likelihood of anthropogenic origin and/or were observed in low abundance, and therefore their occurrences and associated habitats are not identified as SWH.

4.2.8 Species at Risk

GHD evaluated the potential for SAR to occur within the LSA through a combination of secondary source review, agency consultation, and field investigations (**Appendix H**). A list of 42 SAR/SCC with the potential to occur within the LSA was developed from a review of background sources.

Of the 42 SAR/SCC identified with the potential to occur at the Site, 11 are not listed under the SCA or are only listed under SARA *and* are not aquatic species or birds. Therefore, these species are not afforded formal protection and are discussed in **Section 4.2.9.**

Four SAR were confirmed within the LSA (**Figure 5**), three SAR were identified to have a high potential to occur in the LSA, and eight SAR species were identified to have a moderate potential to occur in the LSA. The remaining SAR were determined to have a low potential to occur within the LSA (**Appendix H**).

4.2.8.1 Confirmed

4.2.8.1.1 Barn Swallow

Barn swallow (*Hirundo rustica*) is listed as THR under the SARA (not listed under the SCA). In Ontario, barn swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared right-of-ways, and wetlands (COSEWIC 2021). Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown 1999). This species was observed during breeding bird surveys in 2023 at various stations within the LSA, however, was not confirmed as a breeder within the study areas. Only suitable foraging habitat is present within the SSA (**Appendix C**).

4.2.8.1.2 Eastern Red Bat

Eastern red bat has an extensive range that covers much of the province of Ontario but is centralized in Southern Ontario. They are a solitary species that roosts in the terminal foliage of mature deciduous and coniferous trees typically at the edge of a clearing, often in dead leaf clusters or pine cone clusters (Dobbyn 1994, Robinson 2020). This species migrates to the south to the US each winter prior to hibernation. Eastern red bat was detected through acoustic monitoring surveys at all stations in 2025.

4.2.8.1.3 Hoary Bat

The hoary bat has an extensive range that covers much of the province of Ontario but is centralized in Southern Ontario. They are a solitary species that roosts in the terminal foliage of mature deciduous and coniferous trees typically at the edge of a clearing (Dobbyn 1994). This species migrates to the south to the US each winter prior to hibernation. Hoary bat was detected through acoustic monitoring surveys at all stations in 2025.

4.2.8.1.4 Silver-haired Bat

The silver-haired bat has an extensive range that covers much of the province of Ontario. They often form small maternity colonies in hollow trees and bark crevices, and do not make use of buildings or caves (Dobbyn 1994). This species migrates to the south to the US each winter prior to hibernation. Silver-haired bat was detected through acoustic monitoring surveys at all stations in 2025.

4.2.8.2 High Potential

4.2.8.2.1 Little Brown Myotis

In Ontario, this species range is extensive and covers much of the province. It will roost in both natural and man-made structures. They require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas (Lacki, Hayes, and Kurta 2017). May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used for hibernaculum, but high humidity and stable above freezing temperatures are required. This species has a high potential to occur within the LSA as *Myotis sp*. was confirmed through acoustic monitoring; however, not identified to species level. Suitable habitat was identified, including maternity roost trees and woodland habitat within the LSA.

4.2.8.2.2 Northern Myotis

In Ontario, this species range is extensive and covers much of the province. It will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Caves or abandoned mines may be used for hibernaculum, but high humidity and stable above freezing temperatures are required (COSSARO 2012). This species has a high potential to occur within the LSA as *Myotis sp*. was confirmed through acoustic monitoring; however, not identified to species level. Suitable habitat was identified, including maternity roost trees and woodland habitat within the LSA.

4.2.8.2.3 Tri-colored Bat

In Ontario, tri-colored bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada (Poissant, Broders, and Quinn 2010). They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year. This species has a high potential to occur within the LSA as *Myotis sp*. was confirmed through acoustic monitoring; however, not identified to species level. Suitable habitat was identified, including maternity roost trees and woodland habitat within the LSA.

4.2.9 Species of Conservation Concern

Four species considered SCC were confirmed within the LSA or SSA and are illustrated on **Figure 5.** These include:

– Eastern wood-pewee is designated as SC under the SARA and COSSARO (not listed under the SCA). This species was observed on one occasion at BBS station BBS-25-07 within the LSA in 2025 (**Figure 2**).
– Grasshopper sparrow is designated as SC under the SARA and COSSARO (not listed under the SCA). This species was observed on one occasion during BBS at station BBS-23-05 within the SSA in 2023 (**Figure 2**).
– Olive-sided flycatcher is designated as SC under the SARA and COSSARO (not listed under the SCA). This species was observed on one occasion during BBS at station BBS-23-05 within the SSA in 2023 (**Figure 2**).
– Monarch is listed as END under the SARA and COSSARO (not listed under the SCA). This species (larva) were confirmed within the LSA, and suitable habitat is found where its larval foodplant, common milkweed, occurs within the CUM1-1 and Hedgerow communities.

The full SAR screening, including species habitat requirements and probability of occurrence within the LSA, is provided as **Appendix H.**

4.3 Wetlands

One provincially significant wetland (PSW) complex is located just northwest of the LSA; the Welland Canal North Turn Basin Wetland Complex (**Figure 3**). This PSW is located northwest of existing Walker operations and will not be influenced by the proposed Phase 2 of the South Landfill. A variety of evaluated non-PSW wetlands were identified

within the LSA as confirmed by background sources and field verification. They are primarily confined to waterways and mapped wetland ecosites within the LSA.

4.4 Aquatic Habitat and Species

4.4.1 Aquatic Habitat Conditions

Ten Mile Creek originates northeast of the LSA and flows southwest through the LSA, adjacent to the eastern side of the SSA. A total of three reaches were assessed within Ten Mile Creek for aquatic habitat on May 30, 2023, and May 28, 2025, by GHD aquatic ecologists (**Figure 2**). The findings of both assessments were relatively consistent. May 2025 saw above average precipitation amounts, as such there was more water found within the system than during May 2023. Surrounding land use of the watercourse was agricultural with potential sources of pollution from agricultural runoff, road use, and industrial processes. The instream vegetation and low water levels in the summer months may act as a seasonal barrier to fish passage within the watercourse.

Reach 3 was approximately 290 m in length and represented the northern-most reach of the watercourse in the eastern portion of the LSA. An existing box culvert constructed of cement and flagstone was observed within the northeastern-most extent of the reach where the watercourse flows underneath of Garner Road. This reach was channelized and constrained and assessed to have an intermittent flow. The reach was mainly dry during the time of GHD's May 2023 survey. This reach had standing water throughout the second assessment, with the most amount of water at the Garner Road crossing and declining as moving southwest.

Reach 2 was approximately 1,250 m in length and represented the middle and largest reach. This section of the watercourse was located within the eastern and central portion of the LSA. The reach was channelized and constrained and assessed to have an intermittent flow. The reach was mostly dry with standing water during GHD's field surveys. An existing double CSP was observed within the middle portion of the reach where the watercourse flowed beneath a gravel access road. The double CSP was observed to contain standing water at the outlet. The reach also flowed through a shallow pond that was filled with cattails and contained standing water.

Reach 1 was approximately 300 m in length and represents the most southern reach of the watercourse within the southern portion of the LSA. This reach was constrained to a defined channel, assessed to have intermittent flow, and was mostly dry with some standing water during the time of both GHD's field surveys. Channel morphology was characterized as generally uniform, containing mostly clay substrate and other fine materials. A pond was observed west of the reach with standing water, surrounded by cattails (*Typha sp.*) and phragmites. The pond appeared to have a connection point to the watercourse. An existing concrete box culvert was located within the southern-most extent of the reach where the watercourse flowed under Beechwood Road. The box culvert was observed to be in good condition and lined with large cobble.

Channel characteristics within the three reaches of Ten Mile Creek are presented in **Table 4.6**.

Table 4.6 Ten Mile Creek Channel Characteristics

Reach	Year	Average Velocity (m/sec)	Substrate Type (%)	Average Channel Dimensions (m)
Reach 3	2023	0	Clay (80) Silt (15) Sand (5)	Wetted Width: 1.26 Wetted Depth: 0.07 Bankfull Width: 2.78 Bankfull Depth: 0.37
	2025	0	Clay (70) Silt (25) Sand (5)	Wetted Width: 2.0 Wetted Depth: 0.14 Bankfull Width: 2.8 Bankfull Depth: 0.39

Reach	Year	Average Velocity (m/sec)	Substrate Type (%)	Average Channel Dimensions (m)
Reach 2	2023	0	Clay (60) Silt (30) Sand (10)	Wetted Width: 0.06 Wetted Depth: 0.01 Bankfull Width: 2.22 Bankfull Depth: 0.31
	2025	0	Clay (50) Silt (45) Sand (5)	Wetted Width: 0.3 Wetted Depth: 0.05 Bankfull Width: 0.8 Bankfull Depth: 0.35
Reach 1	2023	0	Clay (60) Silt (30) Sand (10)	Wetted Width: 0.02 Wetted Depth: 0.05 Bankfull Width: 2.48 Bankfull Depth: 0.71
	2025	0	Clay (50) Silt (45) Sand (5)	Wetted Width: 0.10 Wetted Depth: 0.13 Bankfull Width: 1.44 Bankfull Depth: 0.70

The riparian vegetation communities that surrounded the entire watercourse consisted of cultural thicket (CUT1), cultural meadow (CUM1-1), mineral meadow marsh (MAM2), narrow-leaved sedge mineral meadow marsh (MAM2-5), and deciduous swamp (SWD).

Minor evidence of erosion was observed within Reach 3 along the outer bends of the watercourse. Instream cover consisted mostly of vascular macrophytes, organic debris and instream woody debris. Instream vegetation was comprised almost entirely of emergent phragmites or cattails; however, within Reach 3 submergent water smartweed (*Persicaria amphibia*) was observed.

Reach 2 banks were generally stable and low, acting as a floodplain for the watercourse. Instream cover consisted mostly of vascular macrophytes as well as organic debris. Overhanging vascular macrophytes were also observed within Reach 2. Instream vegetation was comprised almost entirely of emergent phragmites or cattails.

Reach 1 banks were generally stable and low, acting as a floodplain for the watercourse. Instream cover consisted mostly of vascular macrophytes as well as organic debris. Instream vegetation was comprised almost entirely of emergent phragmites or cattails.

The watercourse substrate was uniform throughout all reaches, largely comprised of clay with smaller proportions of silt and sand. Overall, Ten Mile Creek provides direct and indirect fish habitat. Creek characteristics that provide habitat for fish are outlined in **Table 4.7**.

Table 4.7 Ten Mile Creek Habitat Characteristics

Reach	Year	Sediment Deposition	Canopy Cover (%)	Aerial Cover Composition (%)	Instream Cover Composition (%)	Instream Vegetation Type (%)	Bank Characteristics	
							Left Upstream Bank	Right Upstream Bank
Reach 3	2023	Minimal <5mm	75-100	Shrubs (60) Trees (30) Bridge/Crossing (10)	Instream vascular macrophytes (65) Instream woody debris (20) Organic debris (10) Overhanging vascular macrophytes (5)	Emergent – Cattails and Phragmites (65) Submergent – Water weed (35)	Slightly stable Height = 0.37 m Some bank erosion on outer bends	Moderately stable Height = 0.37 Some bank erosion on outer bends
	2025	Minimal <5mm	75-100	Shrubs (40) Trees (30) Cattails (20) Bridge/Crossing (10)	Instream vascular macrophytes (65) Instream woody debris (20) Organic debris (10) Overhanging vascular macrophytes (5)	Emergent – Cattails and Phragmites (65) Submergent – Water weed (35)	Slightly stable Height = 0.39 m Some bank erosion on outer bends	Moderately stable Height = 0.39 Some bank erosion on outer bends
Reach 2	2023	Minimal <5mm	50-74	Cattails (45) Grass (40) Shrubs (10) Trees (5)	Instream vascular macrophytes (75) Organic debris (15) Overhanging vascular macrophytes (10)	Emergent – Cattails (100)	Stable Height = 0.25 m	Stable Height = 0.28 m
	2025	Minimal <5mm	50-74	Cattails (45) Grass (40) Shrubs (10) Trees (5)	Instream vascular macrophytes (80) Organic debris (10) Overhanging vascular macrophytes (10)	Emergent – Cattails (100)	Stable Height = 0.31 m	Stable Height = 0.30 m

Reach	Year	Sediment Deposition	Canopy Cover (%)	Aerial Cover Composition (%)	Instream Cover Composition (%)	Instream Vegetation Type (%)	Bank Characteristics	
							Left Upstream Bank	Right Upstream Bank
Reach 1	2023	Minimal <5mm	75-100	Phragmites (90) Shrubs (5) Trees (5)	Instream vascular macrophytes (80) Organic debris (20)	Emergent – Phragmites (100)	Stable Height = 0.71 m	Stable Height = 0.71 m
	2025	Minimal <5mm	75-100	Phragmites (85) Shrubs (10) Trees (5)	Instream vascular macrophytes (85) Organic debris (15)	Emergent – Phragmites (100)	Stable Height = 0.7 m	Stable Height = 0.7 m

4.4.2 Surface Water Quality

Surface water quality within the LSA varied, with some parameters falling within acceptable ranges for aquatic life and others not meeting guideline criteria. In the assessed reaches variations from the acceptable ranges are likely due to the limited flow within the system. The baseline surface water quality data may be used to support construction-phase and/or post-construction effectiveness monitoring, if required.

During the first site visit, none of the reaches met the acceptable range for dissolved oxygen (DO). Under shallow, slow moving conditions, water warms more rapidly, and warmer water physically holds less dissolved oxygen.pH levels were within acceptable limits across all reaches, while turbidity appeared elevated in Reach 2 and 3. Elevated turbidity could be attributed to fine sediment suspension, potentially from wildlife disturbance, and lack of dilution under low flow conditions, which allows suspended sediments to persist for longer periods.

During the second site visit, insufficient water levels were present in Reach 2 to allow for the collection of water quality measurements. In Reach 1, DO was slightly below the acceptable range, whereas Reach 3 met the applicable DO criteria. pH was below the acceptable range in Reach 1 but remained within acceptable limits in Reach 3. The pH below the acceptable range could be associated with low flow and reduced water levels. Full measurements are presented in **Table 4.8**.

Table 4.8 Surface Water quality Measurements – Ten Mile Creek

Water Quality Parameters	2023			2025			Parameter Range
Reach	3	2	1	3	2	1	N/A
Date	2023-05-30	2023-05-30	2023-05-30	2025-05-28	2025-05-28	2025-05-28	N/A
Water Temperature (°C)	19.23	22.93	22.77	14.07	-	14.48	N/A
Dissolved Oxygen (mg/L)	3.94	0.52	9.93	8.07	-	4.54	5.5-9.5 mg/L
Total Dissolved Solids (mg/L)	0.847	0.753	0.599	-	-	-	N/A
Conductivity (SPC us/cm)	1.32	1.18	0.936	1.33	-	1.681	N/A
ORP (mV)	125	68	99	116	-	194	N/A

Water Quality Parameters	2023			2025			Parameter Range
pH	7.9	6.42	7.68	7.54	-	5.98	6.5-8.5
Turbidity (NTU)	40.8	278	6.3	24.6	-	20	N/A. Required background NTU for comparison
Dissolved oxygen (mg/L): Lowest acceptable dissolved oxygen concentrations. Warm water early life stages = 6mg/L. Warm water other life stages = 5.5 mg/L. Cold water early life stage 9.5mg/L. Cold water other life stage 6.5mg/L. Total Suspended Solids (TSS): CCME Guidelines. Clear Flow: Maximum increase of 25mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase if 5mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30d. High flow: Maximum increase of 25mg/L from background levels at any time when background are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250mg/L. pH: Acceptable pH range for aquatic life is 6.5-8.5 as outlined in the Provincial Water Quality Guidelines (PWQO). Turbidity: CCME Guidelines. Clear flow: Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer-term exposure (e.g., 30-d period). High flow or turbid waters: Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is >80 NTUs.							

4.4.3 Headwater Drainage Feature Assessment

Some features were observed coming from the adjacent agricultural property throughout the assessed area. Further assessments would be required to determine the appropriate classification for mitigations if these features fall within an area of alteration.

4.4.4 Fish Community

Fish sampling surveys were not conducted by GHD. Secondary source data was used to determine fish community. Fish sampling surveys were conducted in Ten Mile Creek by the NPCA, which identified a total of five species of fish including central mudminnow (*Umbra limi*), common carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), Iowa darter (*Etheostoma exile*) and spottail shiner (*Notropis hudsonius* (NPCA 2011; Gartner Lee 2001). Through correspondence with NPCA, fisheries data from MNRF was also provided, which identified bluegill (*Lepomis macrochirus*), fathead minnow, and pumpkinseed (*Lepomis gibbosus*) within Ten Mile Creek. Based on correspondence and fisheries data, Ten Mile Creek is representative of a tolerant warm water watercourse that includes different species of fish with varying tolerances to environmental change and contains Type II Fish Habitat (NPCA 2011; NPCA 2024). The NPCA defines Type II Fish Habitat as Important Fish Habitat, which includes spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes (NPCA 2022). NPCA also identified in-water restricted timing windows for the Welland Canal Tributaries, which includes Ten Mile Creek, of March 1 to July 1 (i.e., no in-water work is to occur between these dates).

Review of secondary sources found no provincially and/or nationally rare species documented within the study areas. As well, no critical habitat for aquatic SAR was identified within the SSA or LSA (DFO 2025).

5. Conclusions

The LSA contains a variety of designated ecological features such as wetlands, woodlands, and NPCA regulated areas. Although the SSA is heavily impacted by active aggregate extraction, the LSA provides a mosaic of different natural features which provide habitat for a wide variety of plant and animal species, including SAR. Four SAR (barn

swallow, eastern red bat, hoary bat, silver-haired bat) and four SCC (eastern wood-pewee, grasshopper sparrow, olive-sided flycatcher, and monarch) were confirmed through field investigations within the SSA/LSA. One category of SWH was also confirmed within the study areas: deer wintering areas. Ten Mile Creek, immediately adjacent to the SSA, was found to be a warm water watercourse that provides direct and indirect fish habitat; however, no critical habitat was identified within the assessed reaches.

6. References

Bird Studies Canada. 2009. Marsh Monitoring Program - Participants Handbook for Surveying Amphibians. Bird Studies Canada in Cooperation with Environment Canada and U.S. Environmental Protection Agency. URL: https://www.birdscanada.org/volunteer/glmmp/index.jsp?targetpg=glmmpfrog

Brown, C. R., and M. B. Brown. 1999. Barn Swallow (*Hirundo rustica*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. URL: http://bna.birds.cornell.edu/bna/species/452

Cadman, M. D., D. A. Sutherland, G. G. Beck, D. Lepage, and A. R. Couterier. 2021. Atlas-3 of Breeding Birds of Ontario, 2021-2025. Toronto: Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. URL: https://www.birdsontario.org/atlas/index.jsp?lang=en

Canadian Council of Ministers of the Environment. 2024. The Canadian Water Quality Guidelines for the Protection of Aquatic Life. URL: https://ccme.ca/en/current-activities/canadian-environmental-quality-guidelines

City of Niagara Falls. 1993. Official Plan – City of Niagara Falls: 2024 Office Consolidation. URL: https://niagarafalls.ca/pdf/planning/official-plan/official-plan-2024-january-9-consolidation-accessible.pdf

COSEWIC. 2010. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada.

COSEWIC. 2013. COSEWIC assessment and status report on the Grasshopper Sparrow *pratensis* subspecies *Ammodramus savannarum pratensis* in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada.

COSEWIC. 2021. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada.

COSEWIC. 2023. Hoary Bat (*Lasiurus cinereus*) Eastern Red Bat (*Lasiurus borealis*) Silver-haired Bat (*Lasionycteris noctivagans*): COSEWIC assessment and status report 2023. Environment and Climate Change Canada.

COSSARO. 2012. COSSARO Candidate Species at Risk Evaluation for Northern Myotis (*Myotis septentrionalis*) [formerly Northern Long-eared Bat]. Committee on the Status of Species at Risk in Ontario. Toronto. 18 pp.

COSSARO. 2026. Committee on the Status of Species at Risk in Ontario. URL: https://cossaroagency.ca/species/

Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists. D.W. Friesen, Altona, Manitoba.

Environment, C. C. 2024. Canadian Water Quality Guidelines for the Protection of Aquatic Life. URL: https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/canadian-council-ministers-environment.html

Farrar, J. L. 1995. Trees in Canada. Fitzhenry & Whiteside Limited, Markham, Ontario and Canadian Forest Service, Natural Resources Canada, Ottawa, Ontario. 502 pp. ISBN: 1-55041-199-3.

Fisheries and Oceans Canada (DFO). 2025. Aquatic Species at Risk Map. URL: https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Government of Canada. 1994. *Migratory Birds Convention Act* (S.C. 1994, c. 22). URL: https://laws-lois.justice.gc.ca/eng/acts/m-7.01/

Government of Canada. 2002. *Species at Risk Act* (S.C. 2002, c. 29). URL: https://laws-lois.justice.gc.ca/eng/acts/s-15.3/

Government of Canada. 2017. Beaufort wind scale table. URL: Government of Canda: https://www.canada.ca/en/environment-climate-change/services/general-marine-weather-information/understanding-forecasts/beaufort-wind-scale-table.html

Government of Canada. 2024. The Atlas of Canada. URL: https://atlas.gc.ca/toporama/en/index.html

Government of Ontario. 2017. Niagara Escarpment Plan: Office Consolidation 2024. URL: https://escarpment.org/wp-content/uploads/2024/11/niagara-escarpment-plan-oct-2024-consolidation.pdf

Government of Ontario. 2021. Survey Protocol for Ontario's Species at Risk Snakes. URL: https://www.ontario.ca/page/survey-protocol-ontarios-species-risk-snakes

Government of Ontario. 2024. Geospatial Ontario. URL: https://www.ontario.ca/page/geospatial-ontario#section-5

Government of Ontario. 2024. Natural Heritage Information Centre. URL: https://www.ontario.ca/page/natural-heritage-information-centre#section-1

Government of Ontario. 2025. *Species Conservation Act* (S.O. 2025, c. 4, Sched. 10). URL: https://www.ontario.ca/laws/statute/25s04b

Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. Vii + 76 pp.

Humphrey, C., and H. Fotherby. 2019. Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Tri-colored Bat (*Perimyotis subflavus*) in Ontario. Ontario Recovery Strategy Series. Ministry of the Environment, Conservation, and Parks.

Lacki, M. J., J. P. Hayes, and A. Kurta. 2017. Bats in Forests: Conservation and Management. Johns Hopkins University Press. 329 pp.

Lee, G. 2001. Ten Mile Creek Background Summary of Fisheries/Habitat Assessments. Prepared for Walker Brothers Quarries Ltd.

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

Niagara Escarpment Commission. 2026. Niagara Escarpment Plan Maps. URL: https://escarpment.org/planning/niagara-escarpment-plan-maps/

Niagara Peninsula Conservation Authority (NPCA). 2011. Beaverdams and Shriners Creek Watershed Plan: Phase One. URL: https://npca.ca/images/uploads/common/NPCA-Watershed-Plan-Beaverdams-and-Shriners-Creek_1.pdf

Niagara Peninsula Conservation Authority (NPCA). 2020. ELC 2020 NPCA - (Ecological Land Classification). URL: https://open.niagararegion.ca/

Niagara Peninsula Conservation Authority (NPCA). 2022. Policies for Planning and Development in the Watersheds of the Niagara Peninsula Conservation Authority. URL: https://npca.ca/images/uploads/common/NPCA_Policy_Document_-_Nov_18_2022_Office_Consolidation.pdf

Niagara Peninsula Conservation Authority (NPCA). 2024. NPCA Approximate Regulation Lands. URL: https://gis-npca-camaps.opendata.arcgis.com/datasets/camaps::npca-approximate-regulation-lands-1/explore?location=43.061092%2C-79.469230%2C9.35

Niagara Peninsula Conservation Authority (NPCA). 2025. GIS Open Data. URL: https://gis-npca-camaps.opendata.arcgis.com/

Niagara Region. 2022. Niagara Official Plan: 2024 Consolidation. URL: https://www.niagararegion.ca/official-plan/pdf/2022-niagara-official-plan.pdf

Oldham, M. J. 1993. Distribution and status of the vascular plants in southwestern Ontario. Alymer: Ontario Ministry of Natural Resources.

Oldham, M. J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Peterborough: Carolinian Canada and Ontario Ministry of Natural Resources and Forestry.

Oldham, M. J., W. D. Bakowsky, and D. A. Sutherland. 1995. Floristic quality assessment for southern Ontario. Peterborough: Ontario Ministry of Natural Resources, Natural Heritage Information Centre.

Ontario Breeding Bird Atlas. 2024. Ontario Breeding Bird Atlas. URL: https://www.birdsontario.org/#

Ontario Ministry of Environment, Conservation, and Parks (MECP). 2022. Bats & Treed Habitats – Maternity Roost Surveys. URL: 2022-06_Bats & Treed Habitats_MaternityRoostSurveys_MECP.pdf.

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2024. Provincial Planning Statement, 2024. Government of Ontario. 56 pp. ISBN 978-1-4868-8226-7. URL: https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf.

Ontario Ministry of Natural Resources (MNR). 2025. Species at Risk in Ontario List. URL: https://www.ontario.ca/page/species-risk-ontario

Ontario Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E. URL: https://dr6j45jk9xcmk.cloudfront.net/documents/4776/schedule-7e-jan-2015-access-vers-final-s.pdf

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. URL: https://docs.ontario.ca/documents/3620/significant-wildlife-habitat-technical-guide.pdf

Ontario Ministry of Natural Resources. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. URL: https://docs.ontario.ca/documents/3270/natural-heritage-reference-manual-for-natural.pdf

Ontario Nature. (2024). Ontario Reptile and Amphibian Atlas. Retrieved from https://www.ontarioinsects.org/herp/index.html?Sort=0&area2=squaresCounties&records=all&myZoom=5&Lat=47.5&Long=-83.5

Ontario. 2014. Ontario Wetland Evaluation System. Southern Manual. 3rd Edition, Version 3.3.

Poissant, J. A., H. G. Broders, and G. M. Quinn. 2010. Use of lichen as a roosting substrate by *Perimyotis subflavus*, the tricolored bat, in Nova Scotia. Ecoscience. 17(4): 372-378.

Robinson, C. 2020. Species Spotlight: Eastern Red Bat. Batacea. URL: https://www.batacea.com/post/species-spotlight-eastern-red-bat

Six Nations of the Grand River. 2024. Plant List of Potential Importance to the Six Nations of the Grand River.

Stanfield, L. 2017. Ontario Stream Assessment Protocol. Version 10.0. Ontario Ministry of Natural Resources.

Toronto Entomologists' Association. 2024. Ontario Butterfly Atlas. URL: https://www.ontarioinsects.org/atlas/

Voss, E. G., and A. A. Reznicek. 2012. Field Manual of Michigan Flora. The University of Michigan Press, Ann Arbor, Michigan. 990 pp.

Figures

LEGEND

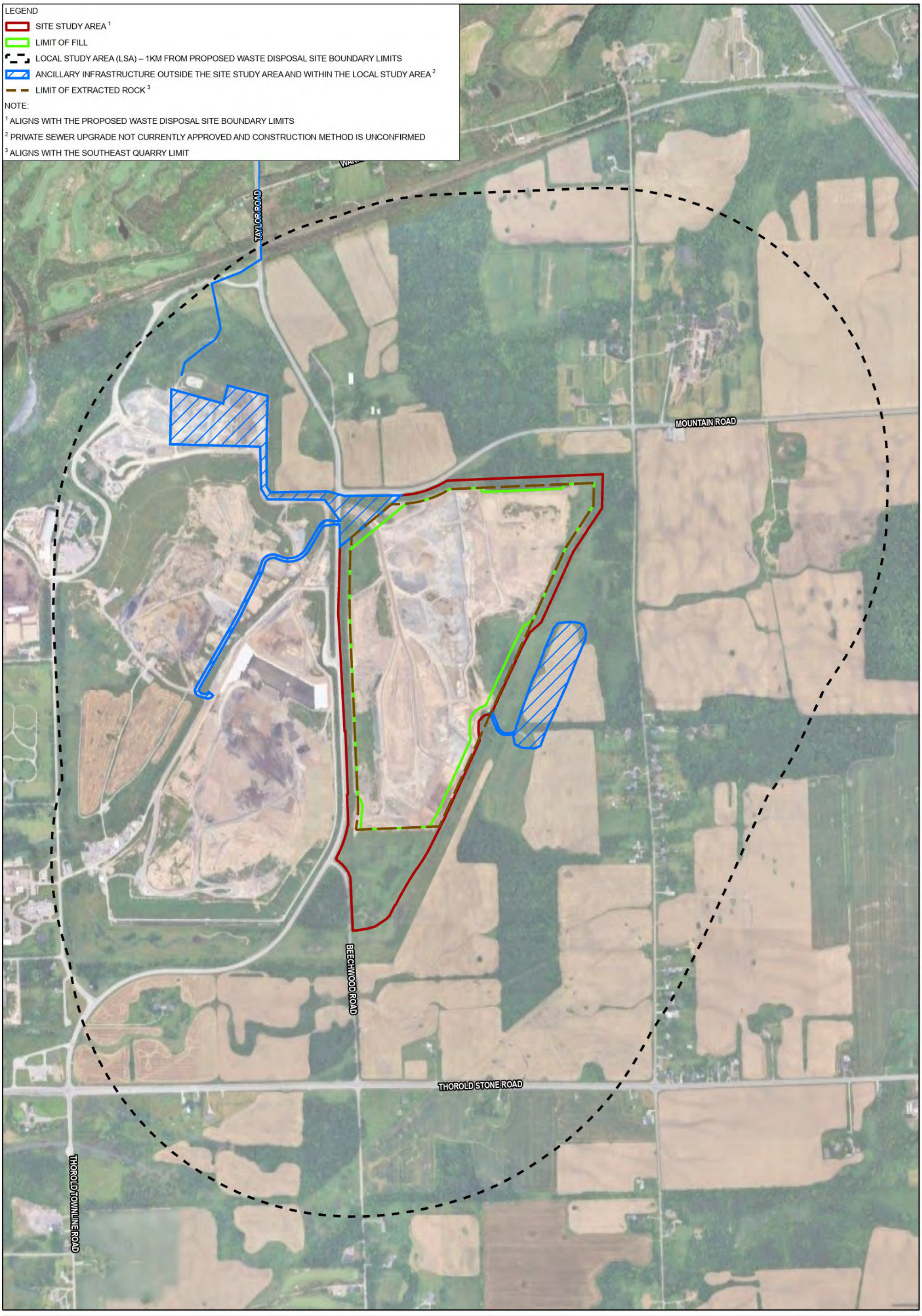
- SITE STUDY AREA [1]
- LIMIT OF FILL
- LOCAL STUDY AREA (LSA) – 1KM FROM PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS
- ANCILLARY INFRASTRUCTURE OUTSIDE THE SITE STUDY AREA AND WITHIN THE LOCAL STUDY AREA [2]
- LIMIT OF EXTRACTED ROCK [3]

NOTE:

[1] ALIGNS WITH THE PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS

[2] PRIVATE SEWER UPGRADE NOT CURRENTLY APPROVED AND CONSTRUCTION METHOD IS UNCONFIRMED

[3] ALIGNS WITH THE SOUTHEAST QUARRY LIMIT



Paper Size ANSI B

0 125 250 375 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

WALKER INDUSTRIES
TERRESTRIAL AND AQUATIC ENVIRONMENT
EXISTING CONDITION REPORT

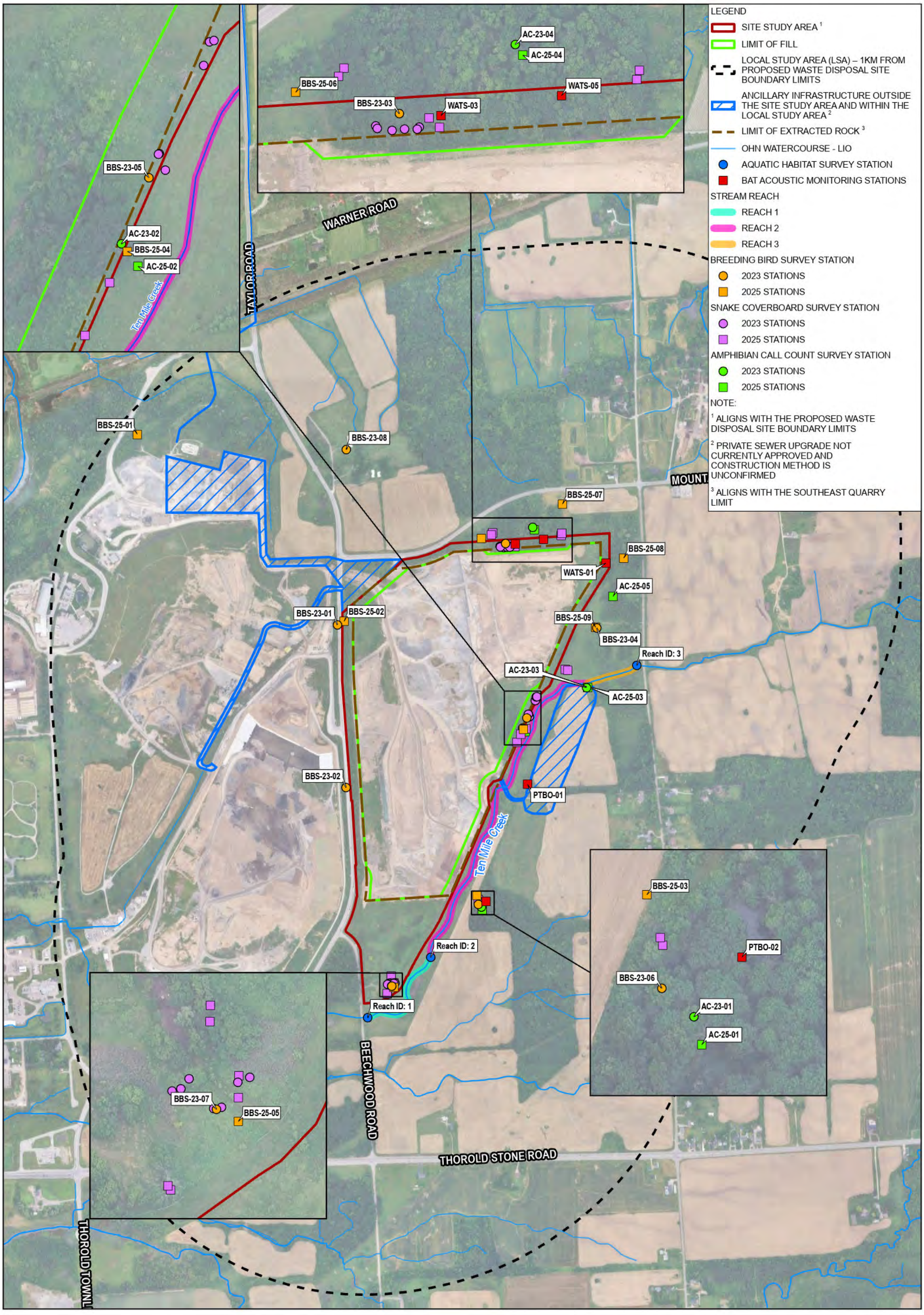
TERRESTRIAL AND AQUATIC STUDY AREAS

Project No. **12567140**
Revision No. **-**
Date **Mar 27, 2026**

FIGURE 1

Q:\GIS\PROJECTS\12567000s\12567140\GIS\Maps\Deliverables\202411_LandfillEA\12567140_202411_LandfillEA\12567140_202411_LandfillEA.aprx
Print date: 27 Mar 2026 - 11:18

Data source: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: yxiong2



Paper Size ANSI B

0 125 250 375 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

WALKER INDUSTRIES
TERRESTRIAL AND AQUATIC ENVIRONMENT
EXISTING CONDITION REPORT

SURVEY STATIONS

Project No. **12567140**
Revision No. **-**
Date **Mar 27, 2026**

FIGURE 2

Q:\GIS\PROJECTS\12567000s\12567140\GIS\Maps\Deliverables\202411_LandfillEA\12567140_202411_LandfillEA.aprx
Print date: 27 Mar 2026 - 11:48

Data source: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: yxiong2

LEGEND

- SITE STUDY AREA [1]
- LIMIT OF FILL
- LOCAL STUDY AREA (LSA) – 1KM FROM PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS
- ANCILLARY INFRASTRUCTURE OUTSIDE THE SITE STUDY AREA AND WITHIN THE LOCAL STUDY AREA [2]
- LIMIT OF EXTRACTED ROCK [3]
- OHN WATERCOURSE - LIO
- NPCA APPROXIMATE REGULATION LANDS

WILDLIFE VALUES AREA

- WHITE-TAILED DEER WINTERING AREA (STRATUM 2)
- PROVINCIALLY SIGNIFICANT WETLAND - LIO
- WETLANDS OTHER / NOT PROVINCIALLY SIGNIFICANT - LIO
- WATERBODIES
- SIGNIFICANT WOODLANDS - NIAGARA REGION

NOTE:

[1] ALIGNS WITH THE PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS

[2] PRIVATE SEWER UPGRADE NOT CURRENTLY APPROVED AND CONSTRUCTION METHOD IS UNCONFIRMED

[3] ALIGNS WITH THE SOUTHEAST QUARRY LIMIT

WARNER ROAD
TAYLOR ROAD
Eight Mile Creek
Six Mile Creek
MOUNTAIN ROAD
Ten Mile Creek Wetland Complex
Shriner's Creek Wetland Complex
Ten Mile Creek
Shriner's Creek Wetland Complex
BEECHWOOD ROAD
Shriner's Creek Wetland Complex
THOROLD STONE ROAD
THOROLD TOWNLINE ROAD

Paper Size ANSI B

0 100 200 300 400 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD UTM Zone 17N

N

GHD

WALKER INDUSTRIES
TERRESTRIAL AND AQUATIC ENVIRONMENT
EXISTING CONDITION REPORT

Project No. **12567140**
Revision No. **-**
Date **Mar 27, 2026**

DESIGNATED FEATURES

FIGURE 3

Q:\GIS\PROJECTS\12567000s\12567140\GIS\Maps\Deliverables\202411_LandfillEA\12567140_202411_LandfillEA\12567140_202411_LandfillEA.aprx
Print date: 27 Mar 2026 - 11:51

Data source: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: yxlong2

ELC Types - 1st Approximation

Ecological Land Classification for Southern Ontario: First Approximation and Its Application. 1998.

ELC Code	Ecosite Vegetation Type Description
AG	Agricultural
CUM1-1	Dry - Moist Old Field Meadow
FOD	Deciduous Forest
FOD2	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
FOD2-A	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
FOD2-B	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
FOD2-C	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
FOD9	Fresh – Moist Oak - Maple - Hickory Deciduous Forest
MAM2	Mineral Meadow Marsh
MAM2-5	Narrow-leaved Sedge Mineral Meadow Marsh
CUT1	Mineral Cultural Thicket
RES	Residential
SWD	Deciduous Swamp
SWD1-3	Pin Oak Mineral Deciduous Swamp
SWT2-9	Grey Dogwood Mineral Thicket Swamp
SWD3-1	Red Maple Mineral Deciduous Swamp
CUP	Mixed Plantation
CUP2-1	Black Walnut – White Pine Mixed Plantation Type
CUP3-8	White Spruce - European Larch Coniferous Plantation
Hedgerow	Hedgerow

LEGEND

- SITE STUDY AREA [1]
- LIMIT OF FILL
- LOCAL STUDY AREA (LSA) – 1KM FROM PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS
- ANCILLARY INFRASTRUCTURE OUTSIDE THE SITE STUDY AREA AND WITHIN THE LOCAL STUDY AREA [2]
- LIMIT OF EXTRACTED ROCK [3]
- ECOLOGICAL LAND CLASSIFICATION
- OHN WATERCOURSE

NOTE:

[1] ALIGNS WITH THE PROPOSED WASTE DISPOSAL SITE BOUNDARY LIMITS

[2] PRIVATE SEWER UPGRADE NOT CURRENTLY APPROVED AND CONSTRUCTION METHOD IS UNCONFIRMED

[3] ALIGNS WITH THE SOUTHEAST QUARRY LIMIT

Eight Mile Creek
Ten Mile Creek
Ten Mile Creek Wetland Complex
Shriner's Creek Wetland Complex
Shriner's Creek Wetland Complex
Shriner's Creek Wetland Complex
MOUNTAIN ROAD
BEECHWOOD ROAD
THOROLD STONE ROAD

Paper Size ANSI B

0 100 200 300 400 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

WALKER INDUSTRIES
TERRESTRIAL AND AQUATIC ENVIRONMENT
EXISTING CONDITION REPORT

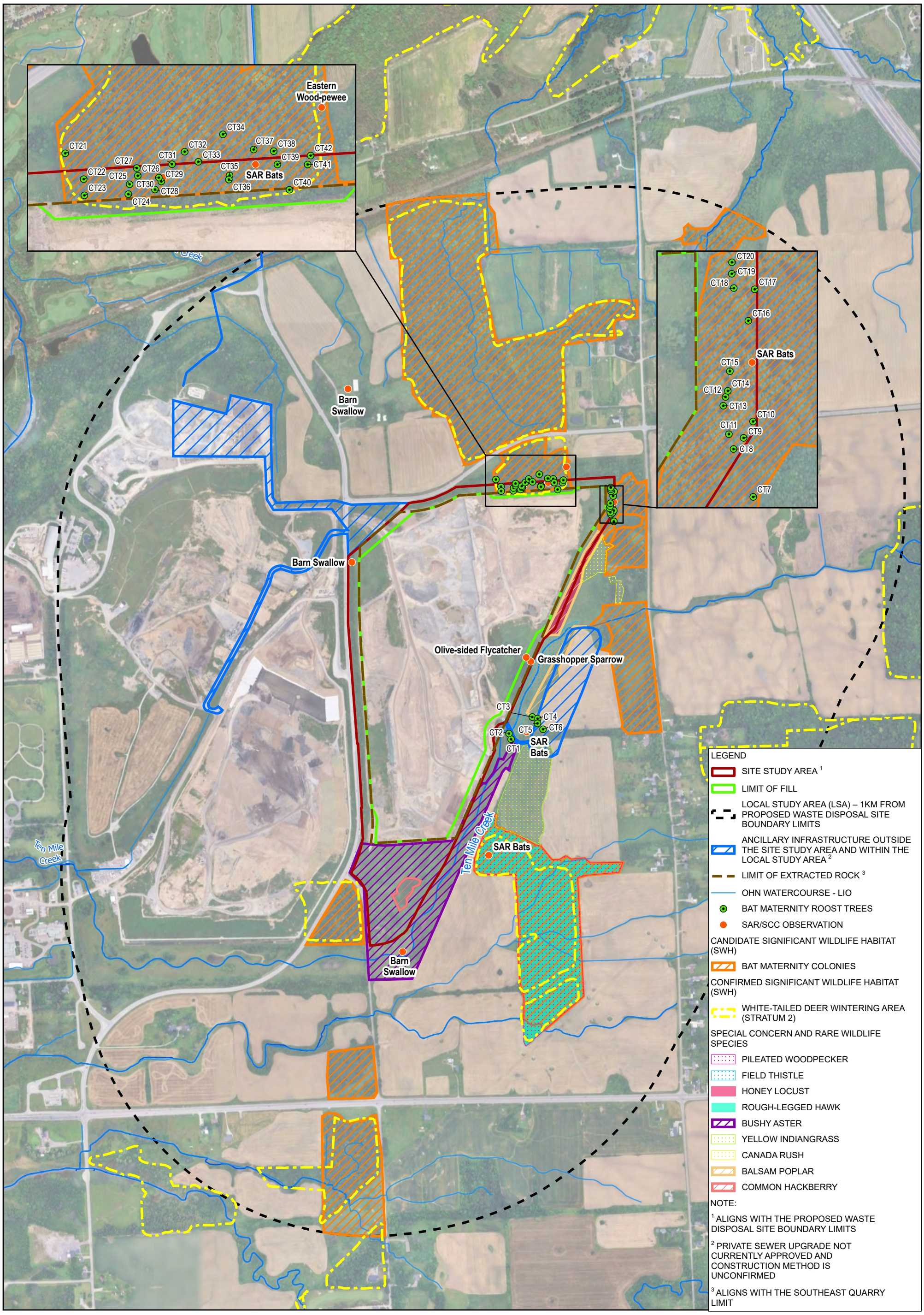
ECOLOGICAL LAND CLASSIFICATION

Project No. 12567140
Revision No. -
Date Jun 2, 2026

FIGURE 4

Q:\GIS\PROJECTS\12567000s\12567140\GIS\Maps\Deliverables\202411_LandfillEA\12567140_202411_LandfillEA\12567140_202411_LandfillEA.aprx
Print date: 02 Jun 2026 - 14:31

Data source: Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: yxiong2



Paper Size ANSI B

0 125 250 375 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

WALKER INDUSTRIES
TERRESTRIAL AND AQUATIC ENVIRONMENT
EXISTING CONDITION REPORT

NATURAL HERITAGE FINDINGS

Project No. **12567140**
Revision No. **-**
Date **Jun 4, 2026**

FIGURE 5

Q:\GIS\PROJECTS\12567000s\12567140\GIS\Maps\Deliverables\202411_LandfillEA\12567140_202411_LandfillEA\12567140_202411_LandfillEA.aprx
Print date: 04 Jun 2026 - 10:30

Data source: NES Perm Int Watercourses;
Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: yxiong2

Appendices

Appendix A

Vascular Plant List

Appendix A

Vascular Plant List
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2 - 12567140

Scientific Name	Common Name	Coefficient of Conservatism (CC)	Wetness Index	Weediness Index	Provincial Status (S-Rank)	SCA Status	SARA Status	Local Status Niagara Oldham 2017	Ecological Land Classification															
									CUM1-1	CUT1	CUP	Hedgerow	CUP2-1	CUP3-8	FOD	FOD2 FOD2-A FOD2-B FOD2-C	FOD9	SWD1-3	SWD3-1	SWT2-9	MAM2	SWD*	MAM2-5*
Dryopteridaceae	**Wood Fern Family**																							
Dryopteris sp.	Wood fern sp.															x		x						
Dryopteris carthusiana	Spinulose Wood Fern	5	-2		S5			C								x	x	x						
Onocleaceae	**Sensitive Fern Family**																							
Onoclea sensibilis	Sensitive Fern	4	-3		S5			C								x		x	x					
Thelypteridaceae	**Marsh Fern Family**																							
Thelypteris palustris var. pubescens	Eastern Marsh Fern	5	-4		S5			X										x	x					
Cupressaceae	**Cypress Family**																							
Juniperus horizontalis	Creeping Juniper	10	1		S5			X							x									
Juniperus virginiana var. virginiana	Eastern Red Cedar	4	3		S5			C		x														
Thuja occidentalis	Eastern White Cedar	4	-3		S5			U		x														
Pinaceae	**Pine Family**																							
Picea abies	Norway Spruce		5	-1	SNA			IC			x		x	x										
Picea glauca	White Spruce	6	3		S5			IU		x				x							x			
Picea mariana	Black Spruce	8	-3		S5			H	x				x					x	x					
Pinus resinosa	Red Pine	8	3		S5			IR				x												
Pinus strobus	Eastern White Pine	4	3		S5			C		x		x	x											
Pinus sylvestris	Scots Pine		3	-3	SNA			IC							x									
Adoxaceae	**Moschatel Family**																							
Sambucus canadensis	Common Elderberry	5	-2		S5			C	x	x														
Sambucus racemosa ssp. pubens	Red Elderberry	5	2		S5			C		x														
Viburnum acerifolium	Maple-Leaved Viburnum	6	5		S5			C								x								
Viburnum lentago	Nannyberry	4	-1		S5			C		x														
Viburnum opulus ssp. opulus	Cranberry Viburnum		-3		SNA			IC		x			x											
Anacardiaceae	**Cashew Family**																							
Rhus typhina	Staghorn Sumac	1	5		S5			C		x		x		x	x									
Toxicodendron radicans var. radicans	Eastern Poison Ivy	5	-1		S5			C	x	x		x	x	x		x	x	x						
Apiaceae	**Carrot Family**																							
Daucus carota	Wild Carrot		5	-2	SNA			IC	x	x				x								x		
Sium suave	Common Water-Parsnip	4	-5		S5			C										x	x					
Apocynaceae	**Milkweed Family**																							
Apocynum cannabinum var. cannabinum	Hemp Dogbane	3	0		S5			C		x											x	x		
Asclepias incarnata ssp. incarnata	Swamp Milkweed	6	-5		S5			C	x												x	x		
Asclepias syriaca	Common Milkweed	0	5		S5			C	x	x		x			x						x			
Asteraceae	**Aster Family**																							
Achillea millefolium	Common Yarrow		3	-1	SNA			IX		x														
Ambrosia artemisiifolia	Common Ragweed	0	3		S5			C	x															
Arctium lappa	Great Burdock		3		SNA			IU				x												
Bidens cernua	Nodding Beggarticks	2	-5		S5			C								x	x		x					
Bidens frondosa	Devil's Beggarticks	3	-3		S5			C										x			x			
Centaurea nigra	Black Knapweed		5		SNA			IU	x	x														
Cichorium intybus	Wild Chicory		5	-1	SNA			IC	x															
Cirsium arvense	Canada Thistle		3	-1	SNA			IC	x	x				x				x						
Cirsium discolor	Field Thistle	9	5		S3			H													x			
Doellingeria umbellata var. umbellata	Flat-Top White Aster	6	-3		S5			X	x															
Erechtites hieraciifolius	Eastern Burnweed	2	3		S5			C				x												
Erigeron annuus	Annual Fleabane	0	1		S5			C	x															
Erigeron philadelphicus var. philadelphicus	Philadelphia Fleabane	1	-3		S5			C	x															
Eupatorium perfoliatum	Common Boneset	2	-4		S5			C													x			
Eurybia macrophylla	Large-Leaved Aster	5	5		S5			C										x						
Euthamia graminifolia	Grass-Leaved Goldenrod	2	-2		S5			C	x	x				x							x	x		
Lactuca serriola	Prickly Lettuce		3	-1	SNA			IC	x	x														
Leucanthemum vulgare	Oxeye Daisy		5	-1	SNA			IC	x			x												
Rudbeckia hirta var. pulcherrima	Black-Eyed Susan	0	3		S5			C		x														
Solidago altissima var. altissima	Tall Goldenrod	1	3		S5			C		x		x		x							x			
Solidago canadensis	Canada Goldenrod	1	3		S5			C	x	x			x		x	x					x	x		
Solidago juncea	Early Goldenrod	3	5		S5			C		x												x		
Sonchus arvensis ssp. arvensis	Field Sow-Thistle		3		SNA			IC	x	x														
Symphyotrichum dumosum	Bushy Aster	10	-1		S2			R	x															
Symphyotrichum ericoides var. ericoides	White Heath Aster	4	4		S5			C		x														
Symphyotrichum lanceolatum var. lanceolatum	White Panicled Aster	3	-3		S5			C	x	x						x					x			
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	-2		S5			C		x				x							x			

Appendix A

Vascular Plant List
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2 - 12567140

Scientific Name	Common Name	Coefficient of Conservatism (CC)	Wetness Index	Weediness Index	Provincial Status (S-Rank)	SCA Status	SARA Status	Local Status Niagara Oldham 2017	Ecological Land Classification															
									CUM1-1	CUT1	CUP	Hedgerow	CUP2-1	CUP3-8	FOD	FOD2 FOD2-A FOD2-B FOD2-C	FOD9	SWD1-3	SWD3-1	SWT2-9	MAM2	SWD*	MAM2-5*
Symphyotrichum novae-angliae	New England Aster	2	-3		S5			C	x	x		x		x		x				x	x		
Symphyotrichum pilosum var. pilosum	Old Field Aster	4	2		S5			C	x	x											x		
Symphyotrichum puniceum	Purple-Stemmed Aster	6	-5		S5			C													x		
Taraxacum officinale	Common Dandelion		3	-2	SNA			IC	x	x					x						x		
Tussilago farfara	Coltsfoot		3	-2	SNA			IC		x													
Xanthium strumarium	Rough Cockleburr	2	0		S5			C													x		
Balsaminaceae	**Touch-Me-Not Family**																						
Impatiens capensis	Spotted Jewelweed	4	-3		S5			C								x	x	x	x	x			
Berberidaceae	**Barberry Family**																						
Berberis thunbergii	Japanese Barberry		3	-3	SNA			IC								x							
Podophyllum peltatum	May-Apple	5	3		S5			C										x					
Betulaceae	**Birch Family**																						
Betula papyrifera	Paper Birch	2	2		S5			C		x		x											
Carpinus caroliniana ssp. virginiana	Blue-Beech	6	0		S5			C								x	x						
Ostrya virginiana	Eastern Hop-Hornbeam	4	4		S5			C								x		x					
Boraginaceae	**Borage Family**																						
Hackelia virginiana	Virginia Stickseed	5	1		S5			U							x								
Brassicaceae	**Mustard Family**																						
Alliaria petiolata	Garlic Mustard		0	-3	SNA			IC	x							x	x						
Barbarea vulgaris	Bitter Wintercress		0	-1	SNA			IC		x			x			x							
Brassica rapa	Field Mustard		5	-1	SNA			IR												x			
Thlaspi arvense	Field Pennycress		5	-1	SNA			IC	x														
Cannabaceae	**Hemp Family**																						
Celtis occidentalis	Common Hackberry	8	1		S4			R		x													
Caprifoliaceae	**Honeysuckle Family**																						
Dipsacus fullonum	Common Teasel		3	-1	SNA			IC	x	x		x									x		
Dianthus armeria ssp. armeria	Deptford Pink		5	-1	SNA			IC	x	x													
Convolvulaceae	**Bindweed Family**																						
Ipomoea purpurea	Common Morning Glory		3	-1	SNA			IH													x		
Cornaceae	**Dogwood Family**																						
Cornus alternifolia	Alternate-Leaved Dogwood	6	5		S5			C	x			x											
Cornus obliqua	Pale Dogwood	5	-4		S5			C												x			
Cornus racemosa	Grey Dogwood	2	-2		S5			C		x		x	x		x	x	x		x	x	x		
Cornus stolonifera	Red-Osier Dogwood	2	-3		S5			U	x	x		x				x							
Elaeagnaceae	**Oleaster Family**																						
Elaeagnus angustifolia	Russian Olive		3	-1	SNA			IR		x		x				x							
Elaeagnus umbellata	Autumn Olive		3	-3	SNA			IU						x									
Fabaceae	**Legume Family**																						
Galega officinalis	Common Goat's-Rue		0		SNA			IR													x		
Gleditsia triacanthos	Honey Locust	3	0		S2?			R				x											
Lotus corniculatus	Garden Bird's-Foot Trefoil		3	-2	SNA			IC		x													
Melilotus albus	White Sweet-Clover		3	-3	SNA			IC	x	x													
Melilotus officinalis	Yellow Sweet-Clover		3	-1	SNA			IC	x														
Securigera varia	Purple Crown-Vetch		5	-2	SNA			IU	x	x													
Trifolium pratense	Red Clover		3	-2	SNA			IX	x												x		
Trifolium repens	White Clover		3	-1	SNA			IX	x												x		
Vicia cracca	Tufted Vetch		5	-1	SNA			IC	x			x			x						x		
Fagaceae	**Beech Family**																						
Fagus grandifolia	American Beech	6	3		S4			C								x							
Quercus alba	White Oak	6	3		S5			C		x		x				x							
Quercus bicolor	Swamp White Oak	8	-4		S4			C		x		x				x		x	x		x		
Quercus macrocarpa	Burr Oak	5	1		S5			U		x		x				x		x					
Quercus palustris	Pin Oak	9	-3		S4			C	x	x		x	x	x		x	x	x	x				
Quercus rubra	Northern Red Oak	6	3		S5			C		x		x				x	x	x	x	x			
Geraniaceae	**Geranium Family**																						
Geranium robertianum	Herb-Robert	2	3	-2	S5			C										x					
Grossulariaceae	**Currant Family**																						
Ribes cynosbati	Eastern Prickly Gooseberry	4	5		S5			C								x	x						
Hamamelidaceae	**Witch-Hazel Family**																						
Hamamelis virginiana	American Witch-Hazel	6	3		S4S5			C								x							
Hypericaceae	**St. John's-Wort Family**																						
Hypericum perforatum ssp. perforatum	Common St. John's-Wort		5	-3	SNA			IC	x	x										x			
Juglandaceae	**Walnut Family**																						

Appendix A

Vascular Plant List
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2 - 12567140

Scientific Name	Common Name	Coefficient of Conservatism (CC)	Wetness Index	Weediness Index	Provincial Status (S-Rank)	SCA Status	SARA Status	Local Status Niagara Oldham 2017	Ecological Land Classification															
									CUM1-1	CUT1	CUP	Hedgerow	CUP2-1	CUP3-8	FOD	FOD2 FOD2-A FOD2-B FOD2-C	FOD9	SWD1-3	SWD3-1	SWT2-9	MAM2	SWD*	MAM2-5*
Carya cordiformis	Bitternut Hickory	6	0		S5			C								x							
Carya ovata var. ovata	Shagbark Hickory	6	3		S5			C								x	x	x					
Juglans cinerea	Butternut	6	2		S2?	END	END	U		x													
Juglans nigra	Black Walnut	5	3		S4?			C	x	x		x	x	x	x	x							
Lamiaceae	**Mint Family**																						
Glechoma hederacea	Ground-Ivy		3	-2	SNA			IC	x														
Lycopus europaeus	European Water-Horehound		-5	-2	SNA			IU	x														
Lythraceae	**Loosestrife Family**																						
Lythrum salicaria	Purple Loosestrife		-5	-3	SNA			IC	x														
Malvaceae	**Mallow Family**																						
Tilia americana	Basswood	4	3		S5			C								x							
Oleaceae	**Olive Family**																						
Fraxinus americana	White Ash	4	3		S4			C	x	x		x	x		x						x		
Fraxinus excelsior	European Ash		3		SNA			IR		x													
Fraxinus pennsylvanica	Green Ash	3	-3		S4			C	x	x		x	x	x	x	x	x		x	x	x		
Ligustrum vulgare	European Privet		3	-2	SNA			IC		x			x			x							
Onagraceae	**Evening-Primrose Family**																						
Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade	3	3		S5			C	x			x	x					x					
Epilobium coloratum	Purple-Veined Willowherb	3	-5		S5			C												x			
Penthoraceae	**Ditch-Stonecrop Family**																						
Penthorum sedoides	Ditch-Stonecrop	4	-5		S5			C										x					
Plantaginaceae	**Plantain Family**																						
Plantago lanceolata	English Plantain		3	-1	SNA			IC	x														
Plantago major	Common Plantain		3	-1	SNA			IC	x														
Polygonaceae	**Buckwheat Family**																						
Fallopia dumetorum	Hedge Bindweed				SNA			IH	x	x													
Persicaria amphibia	Water Smartweed	5	-5		S5?			U					x										
Persicaria virginiana	Virginia Smartweed	6	0		S4			C								x							
Rumex crispus	Curled Dock		0	-2	SNA			IC	x						x					x	x		
Rhamnaceae	**Buckthorn Family**																						
Rhamnus cathartica	European Buckthorn		0	-3	SNA			IC	x	x		x	x	x	x	x	x				x		
Rosaceae	**Rose Family**																						
Crataegus sp.	Hawthorn sp.								x	x		x	x		x	x							
Agrimonia eupatoria	European Agrimony				SNA			I								x							
Amelanchier arborea	Downy Serviceberry	5	3		S5			C		x													
Crataegus crus-galli var. crus-galli	Cockspur Hawthorn	4	0		S4			X								x	x						
Crataegus macracantha	Large-Thorned Hawthorn	4	5		S5			U								x							
Fragaria vesca	Woodland Strawberry	4	4		S5			C				x	x		x			x					
Fragaria virginiana	Wild Strawberry	2	1		S5			C		x				x									
Geum aleppicum	Yellow Avens	2	-1		S5			C	x	x													
Geum canadense	White Avens	3	0		S5			C				x	x		x			x					
Geum laciniatum	Rough Avens	4	-3		S4			C		x										x			
Prunus avium	Sweet Cherry		5	-2	SNA			IC				x			x								
Prunus serotina var. serotina	Black Cherry	3	3		S5			C		x		x	x			x	x						
Prunus virginiana var. virginiana	Chokecherry	2	1		S5			C					x										
Pyrus communis	Common Pear		5	-1	SNA			IC		x		x	x		x						x		
Rosa canina	Dog Rose		5	-1	SNA			IR		x		x								x			
Rosa multiflora	Multiflora Rose		3	-3	SNA			IC	x	x		x	x		x			x					
Rubus idaeus ssp. strigosus	North American Red Raspberry	0	-2		S5			C		x			x	x	x	x	x		x				
Rubus occidentalis	Black Raspberry	2	5		S5			C	x	x		x		x				x					
Rubiaceae	**Bedstraw Family**																						
Galium aparine	Common Bedstraw	4	3		S5			C					x										
Salicaceae	**Willow Family**																						
Populus balsamifera	Balsam Poplar	4	-3		S5			R				x											
Populus deltoides ssp. deltoides	Eastern Cottonwood	4	-1		S5			C	x	x		x			x								
Populus tremuloides	Trembling Aspen	2	0		S5			C		x	x	x	x			x							
Salix alba	White Willow		-3	-2	SNA			IU		x													
Salix bebbiana	Bebb's Willow	4	-4		S5			C		x													
Salix discolor	Pussy Willow	3	-3		S5			C		x													
Salix euxina	Crack Willow		0	-3	SNA			IX							x								
Salix interior	Sandbar Willow	3	-5		S5			C		x													
Salix sp.	Willow sp.									x													

Appendix A

Vascular Plant List
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2 - 12567140

Scientific Name	Common Name	Coefficient of Conservatism (CC)	Wetness Index	Weediness Index	Provincial Status (S-Rank)	SCA Status	SARA Status	Local Status Niagara Oldham 2017	Ecological Land Classification														
									CUM1-1	CUT1	CUP	Hedgerow	CUP2-1	CUP3-8	FOD	FOD2 FOD2-A FOD2-B FOD2-C	FOD9	SWD1-3	SWD3-1	SWT2-9	MAM2	SWD*	MAM2-5*
Sapindaceae	**Maple Family**																						
Acer negundo	Manitoba Maple	0	-2		S5			X					x		x								
Acer rubrum	Red Maple	4	0		S5			X				x				x		x	x	x			
Acer saccharinum	Silver Maple	5	-3		S5			X		x		x				x		x	x				
Acer saccharum	Sugar Maple	4	3		S5			X				x				x		x					
Acer x freemanii	Freeman's Maple	6	-5		HYB			hyb								x				x			
Ulmaceae	**Elm Family**																						
Ulmus americana	White Elm	3	-2		S5			C								x	x						
Ulmus sp.	Elm sp.															x							
Urticaceae	**Nettle Family**																						
Boehmeria cylindrica	Small-Spike False Nettle	4	-5		S5			C										x	x				
Urtica dioica ssp. dioica	European Stinging Nettle		0	-1	SNA			IR								x							
Verbenaceae	**Vervain Family**																						
Verbena hastata	Blue Vervain	4	-4		S5			C	x											x	x		
Vitaceae	**Grape Family**																						
Parthenocissus vitacea	Thicket Creeper	4	3		S5			C				x	x		x	x	x	x		x			
Parthenocissus quinquefolia	Virginia Creeper	6	1		S4?			U		x					x	x							
Vitis riparia	Riverbank Grape	0	-2		S5			C	x	x		x	x	x	x	x	x			x	x		
Alismataceae	**Water-Plantain Family**																						
Alisma subcordatum	Southern Water-Plantain	1	-5		S4?			X										x	x				
Araceae	**Arum Family**																						
Arisaema triphyllum	Jack-In-The-Pulpit	5	-2		S5			C								x	x	x	x				
Asparagaceae	**Asparagus Family**																						
Asparagus officinalis	Garden Asparagus		3	-1	SNA			IC						x									
Cyperaceae	**Sedge Family**																						
Carex sp.	Sedge sp.																						
Carex crinita var. crinita	Fringed Sedge	6	-4		S5			C										x	x				
Carex cristatella	Crested Sedge	3	-4		S5			U	x									x	x	x			
Carex intumescens	Bladder Sedge	6	-4		S5			C										x	x				
Carex lupulina	Hop Sedge	6	-5		S5			C										x	x				
Carex lurida	Sallow Sedge	6	-5		S4S5			U												x			
Carex molesta	Troublesome Sedge	5	2		S4S5			U													x		
Carex pensylvanica	Pennsylvania Sedge	5	5		S5			C								x	x						
Carex scoparia	Pointed Broom Sedge	5	-3		S5			U												x			
Carex spicata	Spiked Sedge		3	-1	SNA			IC					x										
Carex tribuloides var. tribuloides	Blunt Broom Sedge	5	-4		S4			U	x									x	x				
Carex vulpinoidea	Fox Sedge	3	-5		S5			C	x											x	x		
Juncaceae	**Rush Family**																						
Juncus canadensis	Canada Rush	6	-5		S5			R	x												x		
Juncus effusus ssp. effusus	Soft Rush		-5		SNA			C												x			
Juncus tenuis	Path Rush	0	0		S5			C	x	x													
Liliaceae	**Lily Family**																						
Erythronium americanum ssp. americanum	Yellow Trout Lily	5	5		S5			X								x	x						
Poaceae	**Grass Family**																						
Poa sp.	Grass sp.								**x**	**x**					**x**						**x**		
Alopecurus pratensis	Meadow Foxtail		-3	-1	SNA			IR	x	x													
Andropogon gerardi	Big Bluestem	7	1		S4			U	x														
Calamagrostis canadensis var. canadensis	Bluejoint Reedgrass	4	-5		S5			C	x												x		
Cinna arundinacea	Stout Woodreed	7	-3		S4			C								x							
Dactylis glomerata	Orchard Grass		3	-1	SNA			IC	x														
Festuca sp.	Fescue sp.								x														
Echinochloa frumentacea	Barnyard Grass				SNA			I													x		
Festuca rubra ssp. rubra	Red Fescue				SNA			IC	x	x											x		
Glyceria striata	Fowl Mannagrass	3	-5		S5			C								x		x	x				
Hordeum jubatum ssp. jubatum	Foxtail Barley	0	0		S5?			IX	x														
Leersia oryzoides	Rice Cutgrass	3	-5		S5			C								x					x		
Lolium arundinaceum	Tall Fescue		3	-1	SNA			IC	x														
Panicum virgatum	Old Switch Panicgrass	6	-1		S4			U	x														
Phalaris arundinacea var. arundinacea	Reed Canary Grass	0	-3		S5			C	x	x		x	x								x		
Phleum pratense ssp. pratense	Common Timothy		3	-1	SNA			IC	x	x				x									
Phragmites australis ssp. australis	European Reed/Phragmites		-3		SNA			IC	x	x			x								x		
Poa palustris	Fowl Bluegrass	5	-4		S5			C	x														

Appendix A

Vascular Plant List
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2 - 12567140

Scientific Name	Common Name	Coefficient of Conservatism (CC)	Wetness Index	Weediness Index	Provincial Status (S-Rank)	SCA Status	SARA Status	Local Status Niagara Oldham 2017	Ecological Land Classification														
									CUM1-1	CUT1	CUP	Hedgerow	CUP2-1	CUP3-8	FOD	FOD2 FOD2-A FOD2-B FOD2-C	FOD9	SWD1-3	SWD3-1	SWT2-9	MAM2	SWD*	MAM2-5*
Poa pratensis ssp. pratensis	Kentucky Bluegrass		3		SNA			IC	x					x							x		
Sorghastrum nutans	Yellow Indiangrass	8	2		S4			R	x														
Typhaceae	**Cattail Family**																						
Typha angustifolia	Narrow-Leaved Cattail	3	-5		SNA			IC	x												x		
Typha latifolia	Broad-Leaved Cattail	3	-5		S5			C													x		
Total									78	83	2	46	32	22	28	57	22	38	23	33	41		

Notes

* = A full plant list was not recorded due to its distance from the landfill footprint.

Co-efficient of Conservatism, Wetness & Weediness

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.

Co-efficient of Conservatism: This value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific habitat integrity.

Weediness Index: This value, ranging from -1 (low) to -3 (high) quantifies the potential invasiveness of non-native plants. In combination with the percentage of non-native plants, it can be used as an indicator of disturbance.

Wetness Index: This value, ranging from -5 (obligate wetland) to 5 (upland) provides the probability of a species occurring in wetland or upland habitats.

FACW (Facultative Wetland): usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability)

FAC (Facultative) equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)

FACU (Facultative Upland): occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)

UPL (Upland): occurs almost never in wetlands under natural conditions (estimated <1% probability)

Further refinement of the Facultative categories are denoted by a "+" or "-" to express exaggerated tendencies for those species. The "+" denotes a greater estimated probability occurring in wetlands than species in the general indicator category, but a lesser probability than species occurring in the next higher category. The "-" denotes a lesser estimated probability of occurring in wetlands than species in the general indicator category, but a greater probability than species occurring in the next lower general category.

Each wetland category has been assigned a numerical value to facilitate the quantification of the wetness index. The wetland categories and their corresponding values are as follows:

OBL : -5
FACW+: -4
FACW: -3
FACW-: -2
FAC+: -1
FAC: 0
FAC-: 1
FACU+: 2
FACU: 3
FACU-: 4
UPL: 5

Provincial Status S Rank

Natural Heritage Information Centre (NHIC). (2020) Provincial status of plants, wildlife and vegetation communities database. http://www.mnr.gov.on.ca/MNR/nhic/nhic.html. OMNR, Peterborough.

Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These rankings are based on the total number of extant Ontario populations and the degree to which they are potentially or actively threatened with destruction. These ranks are not legal designations. S4 and S5 species are generally uncommon to common in the province. Species ranked S1-S3 are considered to be rare in Ontario.

S2: Imperiled - *Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.*
S3: Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: Apparently Secure **-** Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5: Secure - Common, widespread, and abundant in the nation or state/province.

SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SNA: Unranked — Status not assigned.
"?" following a rank indicates uncertainty about the assigned rank.
Q: Questionable taxonomy —Taxonomic distinctiveness of this entity is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation status.

Status in Carolinian Zone (CZ) Oldham, 2017

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

I - Introduced; thought to have been present in the Carolinian Zone or individual CZ area prior to European settlement; believed to be deliberately or inadverently introduced to the CZ by humans (followed by a status, below)
C - Common
U - uncommon
R - rare
H - Historic records only (generally >30 years)
X - present; status unkown or not specified in source lists
? - unconfirmed report
hyb - hybrid

SCA Status

Species Conservation Act (SCA), 2025. Protected Species in Ontario List, 2026 (O. Reg. 60/26); Table 1 (Extirpated - EXP; Endangered - END; Threatened - THR)

SARA Status

Species at Risk Act (SARA), 2002. Extirpated - EXP, Endangered - END, Threatened - THR, Special Concern - SC

Appendix B

Photo Log

Photo 1 April 11, 2023. View of access road just west of BBS-23-07. Photo facing north.

Photo 2 April 11, 2023. Representative view of cultural meadow (ELC Code: CUM1-1) with Dry – Fresh Oak – Maple – Hickory Deciduous Forest (ELC Code: FOD2) community present southeast of the active quarry. Forest community contains AC-23-01 and AC-25-01. Photo facing northeast.

Photo 3 July 16, 2025. Representative view of CUM1-1 community within eastern extent of LSA.

Photo 4 May 8, 2023. Vernal pool present within Pin Oak Mineral Deciduous Swamp (ELC Code: SWD1-3) community just north of the active quarry. Community contains AC-23-04, AC-25-04, and BBS-23-03, and is adjacent BBS-25-06. Photo facing southeast.

Photo 5 April 14, 2025. View of AC-25-04 station within SWD1-3 community in the northern portion of the LSA.

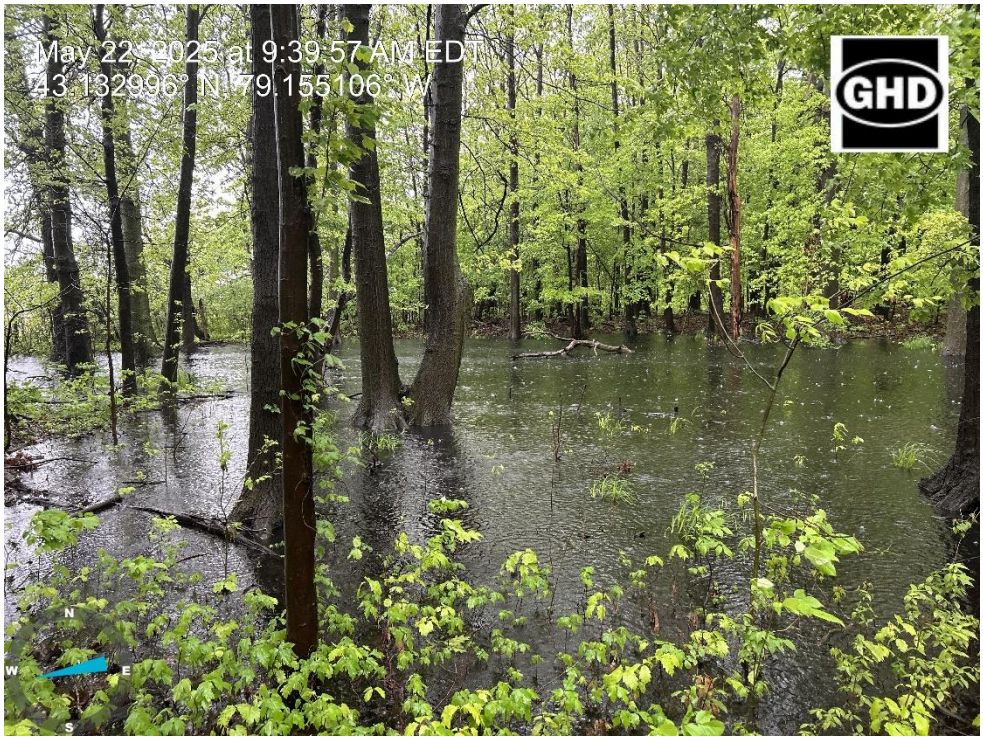


Photo 6 May 22, 2025. Representative view of vernal pool within FOD2 community in the northern portion of the LSA, under flooded conditions.

Photo 7 July 16, 2025. Representative view of SWD1-3 community in the northern portion of the LSA.

Photo 8 May 8, 2023. Representative view of Mineral Meadow Marsh (ELC Code: MAM2) community present on the east side of the Study Area. This community contains AC-23-03 and AC-25-03. Photo facing east.

Photo 9 May 22, 2025. Representative view of MAM2 community present within eastern extent of LSA, under flooded conditions.

Photo 10 July 16, 2025. Representative view of Grey Dogwood Mineral Thicket Swamp (ELC Code: SWT2-9) community present within the northeastern portion of LSA.

Photo 11 September 19, 2025. Representative view of White Spruce – European Larch Coniferous Plantation (ELC Code: CUP3-8) community present within the eastern portion of LSA.

Photo 12 July 16, 2025. Representative view of Black Walnut – White Pine Mixed Plantation (ELC Code: CUP2-1) community present within the eastern portion of LSA.

Photo 13 May 22, 2025. Representative view of agricultural community within eastern extent of LSA.

Photo 14 September 19, 2025. Representative view of Mineral Cultural Thicket (ELC Code: CUT1) community within the northern portion of the LSA.

Photo 15 September 19, 2025. Representative view of CUM1-1 and CUT1 communities within the southern portion of the LSA. Area contains BBS-25-05.

Photo 16 September 19, 2025. Representative view of Deciduous Forest (ELC Code: FOD) community observed in the northern extent of the LSA where an additional landfill site is proposed.

Photo 17 May 24, 2023. View of rock piles and rock face within the active quarry. Photo facing east.

Photo 18 May 24, 2023. View of field staff deploying snake coverboards on the east side of the Study Area. Photo facing south.

Photo 19 May 29, 2023. Representative view of Hedgerow community on the east side of the Study Area. Photo facing southeast.

Photo 20 May 29, 2023. View of FOD2 community just east of the active quarry. This forest contains AC-23-02, AC-25-02, BBS-23-05, and BBS-25-04. Photo facing southeast.

Photo 21 June 11, 2025. View of bat acoustic monitoring station WATS-05 within FOD2 community in northeast portion of LSA. Representative view of setup for bat acoustic detectors.

Photo 22 April 16, 2025. Representative view of bat maternity roost tree (CT25) with suitable characteristics including peeling park and cavities.

Photo 23 May 30, 2023. Reach 1. View of culvert under Beechwood Road. Photo facing west.

Photo 24 May 30, 2023. Reach 1. Representative view of the riparian vegetation.

Photo 25 May 30, 2023. Reach 1. Representative view of pond within reach. Photo facing south.

Photo 26 May 30, 2023. Reach 2. Representative view of riparian vegetation. View facing north.

Photo 27 May 30, 2023. Reach 2. View of road crossing facing west.

Photo 28 May 29, 2023. Reach 2. Most northeastern extent of reach.

Photo 29 May 30, 2023. Reach 3. Representative view of reach. View facing west.

Photo 30 May 30, 2023. Reach 3. View of pool at Garner Road crossing culvert.

Photo 31 May 30, 2023. Reach 3. View of culvert at Garner Road, facing east.

Photo 32 May 28, 2025. Reach 1. View of culvert under Beechwood Road. Photo facing east.

Photo 33 May 28, 2025. Representative view of the riparian vegetation, facing east.

Photo 34 May 28, 2025. Reach 1. Close up view of water within the reach.

Photo 35 May 28, 2025. Representative view of riparian vegetation, facing east.

Photo 36 May 28, 2025. Reach 2. View of culverts under access road, facing west.

Photo 37 May 28, 2025. Reach 2. View east of the access road, representative of the reach.

Photo 38 May 28, 2025. Representative view of reach. View facing west.

Photo 39 May 28, 2025. Reach 3. View of pool at Garner Road crossing culvert.

Appendix C

Breeding Bird Survey Results

Appendix C.1

2023 Breeding Bird Survey Results
Natural Environment Existing Conditions Report
Walker South Landfill Phase 2

Common Name	Scientific Name	Ontario Status	ESA	SARA	BBS-23-01		BBS-23-02		BBS-23-03		BBS-23-04		BBS-23-05		BBS-23-06		BBS-23-07		BBS-23-08		Highest Breeding Evidence
					24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	24-May-23	29-Jun-23	
American Crow	*Corvus brachyrhynchos*	S5B									O:X	P:S		O:X							P
American Goldfinch	*Carduelis tristis*	S5B				O:X		P:S	PR:P	P:S	P:S	PR:P	PR:P	P:S			P:H	PR:P	P:S	P:H	PR
American Redstart	*Setophaga ruticilla*	S5B										P:S									P
American Robin	*Turdus migratorius*	S5B				P:H	P:S			PR:P		P:H	P:S	P:S						PR:P	PR
Baltimore Oriole	*Icterus galbula*	S4B									P:S								P:S		P
Barn Swallow	*Hirundo rustica*	S4B	SC	THR		O:X											O:X		P:H		P
Black-capped Chickadee	*Poecile atricapillus*	S5							P:S												P
Blue Jay	*Cyanocitta cristata*	S5			P:H				P:H	P:S				P:S		P:S		P:S		P:S	PR
Brown-headed Cowbird	*Molothrus ater*	S4B			O:X			PR:P	P:H			PR:P		O:X				PR:M	O:X		PR
Canada Goose	*Branta canadensis*	S5							PR:P												PR
Chipping Sparrow	*Spizella passerina*	S5B									P:S										P
Common Grackle	*Quiscalus quiscula*	S5B			P:S												PR:M	P:H			PR
Common Yellowthroat	*Geothlypis trichas*	S5B							P:S		P:S	P:S	P:S	P:S		P:S	P:S	PR:P		P:S	PR
Dark-eyed Junco	*Junco hyemalis*	S5B										P:S									P
Eastern Kingbird	*Tyrannus tyrannus*	S4B											P:S								P
Eastern Phoebe	*Sayornis phoebe*	S5B											P:S								P
Eastern Towhee	*Pipilo erythrophthalmus*	S4B												P:S							P
European Starling	*Sturnus vulgaris*	SNA				P:H		PR:P		P:S			PR:P					P:S			PR
Field Sparrow	*Spizella pusilla*	S4B										P:S	P:S			P:S	P:S				P
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	SC										P:S							P
Gray Catbird	*Dumetella carolinensis*	S4B				P:S				P:S			P:S	PR:P				P:S			PR
Horned Lark	*Eremophila alpestris*	S5B												P:S							P
House Finch	*Carpodacus mexicanus*	SNA							P:S			P:S		P:S						P:S	P
House Sparrow	*Passer domesticus*	SNA					P:H													P:S	P
House Wren	*Troglodytes aedon*	S5B			P:H																P
Indigo Bunting	*Passerina cyanea*	S4B										P:S			P:S			P:H			P
Killdeer	*Charadrius vociferus*	S5B,S5N							P:S												P
Least Flycatcher	*Empidonax minimus*	S4B																P:S			P
Mallard	*Anas platyrhynchos*	S5											O:X								O
Marsh Wren	*Cistothorus palustris*	S4B				P:S															P
Mourning Dove	*Zenaida macroura*	S5				O:X															O
Northern Cardinal	*Cardinalis cardinalis*	S5							P:S		P:S	P:S	P:S	P:S				P:S			PR
Northern Mockingbird	*Mimus polyglottos*	S4										P:H							O:X		P
Northern Rough-winged Swallow	*Stelgidopteryx serripenni*	S4B														O:X					O
Olive-sided Flycatcher	*Contopus cooperi*	S4B	SC	SC										P:S							P
Orchard Oriole	*Icterus spurius*	S4B																	O:X		O
Pileated Woodpecker	*Dryocopus pileatus*	S3B														P:S					P
Purple Finch	*Carpodacus purpureus*	S4B											P:S								P
Red-breasted Nuthatch	*Sitta canadensis*	S5							P:H												P
Red-eyed Vireo	*Vireo olivaceus*	S5B							P:S	P:S											PR
Red-tailed Hawk	*Buteo jamaicensis*	S5											O:X		C:NB						C
Red-winged Blackbird	*Agelaius phoeniceus*	S4			P:S	PR:M	P:H	P:H	P:S	PR:P	O:X	PR:P	P:S	P:H	P:S	P:S	P:S	PR:M	P:S	P:S	PR
Ring-billed Gull	*Larus delawarensis*	S5B,S4N				O:X		O:X			O:X		O:X		O:X	O:X	O:X				P
Rough-legged Hawk	*Buteo lagopus*	S1B,S4N														P:H					P
Song Sparrow	*Melospiza melodia*	S5B			P:S		P:S		P:H	P:S	P:S	P:S	PR:P	P:S		P:S	P:S	P:H	P:S	PR:P	PR
Tree Swallow	*Tachycineta bicolor*	S4B							P:S												P
Turkey Vulture	*Cathartes aura*	S5B															O:X				O
Warbling Vireo	*Vireo gilvus*	S5B															P:S	P:S			PR
Willow Flycatcher	*Empidonax traillii*	S5B											P:S				P:S			P:S	P
Wood Duck	*Aix sponsa*	S5							P:S												P
Yellow Warbler	*Dendroica petechia*	S5B									P:S	P:S		P:S							PR
Yellow-bellied Sapsucker	*Sphyrapicus varius*	S5B															P:S				P

Notes

S-Ranks-

S1: Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2: Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or

S3: Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4: Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure - Common, widespread, and abundant in the nation or state/province.

SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SR: Reported in Ontario, but without persuasive documentation.

SX: Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it

SE: Exotic; not believed to be a native component of Ontario's flora. Numerical rankings after SE follow designations described above for native species.

SNA: Unranked — Status not assigned.

SU: Unranked — Nation or state/province conservation status not yet assessed.

ESA Status

Endangered Species Act (ESA), 2007. Extirpated - EXP, Endangered - END, Threatened - THR, Special Concern - SC

SARA Status

Species at Risk Act (SARA), 2002. Extirpated - EXP, Endangered - END, Threatened - THR, Special Concern - SC

All species listed were identified by song/vocalizations unless otherwise noted

O: Species observed ('X': observed during breeding season but no evidence of breeding)

P: Possible breeding ('S': singing male present; 'H': species observed in breeding season in suitable nesting habitat)

PR: Probable breeding ('P': Pair observed; 'T': Permanent territory presumed through territorial behaviour on both visits; 'D': Courtship or display; 'V': visiting probable nest site; 'A': Agitated behaviour or anxiety calls of an adult; 'B': Brood Patch; 'N': Nest-building)

C: Confirmed breeding ('DD': Distraction display; 'NU': Used nest or eggshells found; 'FY': Recently fledged young; 'AE': Adult leaving or entering nest site; 'FS': Adult carrying fecal sac; 'CF': adult carrying food for young; 'NE': Nest with eggs; 'NY': Nest with young)

Appendix C.2

2025 Breeding Bird Survey Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Common Name	Scientific Name	Ontario Status	ESA	SARA	BBS-25-01		BBS-25-02		BBS-25-03		BBS-25-04		BBS-25-05		BBS-25-06		BBS-25-07		BBS-25-08		BBS-25-09		Highest Breeding Evidence
					4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	4-Jun-25	30-Jun-25	
American Crow	*Corvus brachyrhynchos*	S5B											O:X			P:S	O:X					O:X	P
American Goldfinch	*Carduelis tristis*	S5B			P:S				PR:P	P:S	P:H		P:H	P:H	P:H	P:H	P:H	P:H	P:S	P:H	P:S	P:H	PR
American Redstart	*Setophaga ruticilla*	S5B								P:S													P
American Robin	*Turdus migratorius*	S5B			P:S	P:S	P:S	P:S	P:S	P:H	P:S	P:S		O:X				O:X				O:X	PR
American Tree Sparrow	*Spizella arborea*	S4B												O:X									O
Baltimore Oriole	*Icterus galbula*	S4B							P:S					P:S									P
Black-capped Chickadee	*Poecile atricapillus*	S5																			P:S		P
Blue Jay	*Cyanocitta cristata*	S5				P:H	O:X			P:H	O:X		O:X	O:X			O:X	O:X	PR:P	P:H			PR
Brown-headed Cowbird	*Molothrus ater*	S4B											O:X	O:X						P:H	P:S		P
Canada Goose	*Branta canadensis*	S5					O:X														O:X		O
Cedar Waxwing	*Bombycilla cedrorum*	S5B				P:H							O:X	O:X		P:H							P
Common Grackle	*Quiscalus quiscula*	S5B							PR:P				P:H	O:X			O:X	O:X			P:H	O:X	PR
Common Yellowthroat	*Geothlypis trichas*	S5B					P:S		P:S	P:S		P:S		P:S		P:S		P:S			P:S	P:S	PR
Eastern Kingbird	*Tyrannus tyrannus*	S4B							O:X					O:X									O
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC														P:S					P
European Starling	*Sturnus vulgaris*	SNA					O:X						P:H	P:H									PR
Field Sparrow	*Spizella pusilla*	S4B							P:S		P:S	P:S		P:S							P:S	P:S	PR
Gray Catbird	*Dumetella carolinensis*	S4B								P:S		P:S	P:S				P:H	P:S		P:S	P:H		PR
Great Crested Flycatcher	*Myiarchus crinitus*	S4B								P:H							P:S		P:S				P
Great Egret	*Ardea alba*	S2B								O:X													O
House Finch	*Carpodacus mexicanus*	SNA											P:S	P:S									PR
Indigo Bunting	*Passerina cyanea*	S4B				P:S		P:S		P:S	P:S		P:S							P:S	P:S	P:S	PR
Killdeer	*Charadrius vociferus*	S5B,S5N										P:S					P:H					P:H	P
Mallard	*Anas platyrhynchos*	S5					O:X										O:X						O
Mourning Dove	*Zenaida macroura*	S5															P:S						P
Northern Cardinal	*Cardinalis cardinalis*	S5			P:S	P:H		P:S			P:S			P:S					P:S		P:S	PR:P	PR
Northern Flicker	*Colaptes auratus*	S4B												P:S				O:X					P
Northern Rough-winged Swallow	*Stelgidopteryx serripenni*	S4B							O:X														O
Orchard Oriole	*Icterus spurius*	S4B							P:S				P:S										P
Red-bellied Woodpecker	*Melanerpes carolinus*	S4							O:X				O:X										O
Red-tailed Hawk	*Buteo jamaicensis*	S5													P:H						O:X		P
Red-winged Blackbird	*Agelaius phoeniceus*	S4					P:S	P:H	PR:P	P:S	PR:P		P:H	P:S	O:X		P:H	P:H	P:S				PR
Ring-billed Gull	*Larus delawarensis*	S5B,S4N					O:X	O:X	O:X		O:X		O:X	P:S	O:X	O:X	O:X	O:X	O:X		P:S	O:X	PR
Song Sparrow	*Melospiza melodia*	S5B			P:S	P:S	P:S	P:S	P:S	P:S	P:S	P:S	P:S	P:S	P:S	P:S		P:S		P:S	P:S	P:S	PR
Spotted Sandpiper	*Actitis macularia*	S5														O:X							O
Swamp Sparrow	*Melospiza georgiana*	S5B								P:S	P:S	P:S											PR
Tree Swallow	*Tachycineta bicolor*	S4B											P:H		O:X								P
Turkey Vulture	*Cathartes aura*	S5B											O:X		O:X						O:X	O:X	O
Warbling Vireo	*Vireo gilvus*	S5B											P:S	P:S									PR
Willow Flycatcher	*Empidonax traillii*	S5B							P:S	P:S			P:H	P:S		P:S							PR
Yellow Warbler	*Dendroica petechia*	S5B							P:S	P:S	P:S		P:S	P:S			P:S				P:S		PR

Notes

S-Ranks-

S1: Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2: Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or

S3: Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4: Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure - Common, widespread, and abundant in the nation or state/province.

SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SR: Reported in Ontario, but without persuasive documentation.

SX: Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it

SE: Exotic; not believed to be a native component of Ontario's flora. Numerical rankings after SE follow designations described above for native species.

SNA: Unranked — Status not assigned.

SU: Unranked — Nation or state/province conservation status not yet assessed.

ESA Status

Endangered Species Act (ESA), 2007. Extirpated - EXP, Endangered - END, Threatened - THR, Special Concern - SC

SARA Status

Species at Risk Act (SARA), 2002. Extirpated - EXP, Endangered - END, Threatened - THR, Special Concern - SC

All species listed were identified by song/vocalizations unless otherwise noted

O: Species observed ('X': observed during breeding season but no evidence of breeding)

P: Possible breeding ('S': singing male present; 'H': species observed in breeding season in suitable nesting habitat)

PR: Probable breeding ('P': Pair observed; 'T': Permanent territory presumed through territorial behaviour on both visits; 'D': Courtship or display; 'V': visiting probable nest site; 'A': Agitated behaviour or anxiety calls of an adult; 'B': Brood Patch; 'N': Nest-building)

C: Confirmed breeding ('DD': Distraction display; 'NU': Used nest or eggshells found; 'FY': Recently fledged young; 'AE': Adult leaving or entering nest site; 'FS': Adult carrying fecal sac; 'CF': adult carrying food for young; 'NE': Nest with eggs; 'NY': Nest with young)

Appendix D

Bat Maternity Roost Habitat Asessment

Appendix D

Bat Maternity Roost Habitat Assessment Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Tree ID	Tree Species	Size (DBH)	Tree Status	Decay Class	Height Class	Characteristics	SAR Bat Habitat Suitability
CT1	Unknown	35	Dead	4	Co-dominant	Crack, Knot Hole	Suitable for bats.
CT2	Oak species (*Quercus sp.*)	70	Live	1	Dominant	Cavity	Large DBH oak tree with cavity (10m above ground, 10cmx10cm). Suitable for bats.
CT3	White Ash (*Fraxinus americana*)	55	Dead	4	Co-dominant	Loose Bark, Crack	Evidence of emerald ash borer. Suitable for bats.
CT4	White Ash (*Fraxinus americana*)	50	Dead	4	Suppressed	Loose Bark, Crack	Suitable for bats.
CT5	White Ash (*Fraxinus americana*)	61	Dead	4	Co-dominant	Loose Bark, Crack	Suitable for bats.
CT6	Trembling Aspen (*Populus tremuloides*)	55	Live	1	Co-dominant	Cavity	Aspen tree with cavity (8m above ground, 10cmx10cm). Suitable for bats.
CT7	Oak species (*Quercus sp.*)	120	Live	2	Dominant	Crack	Multi stem tree, one stem broke off leaving exposed crack and cavity into main trunk. Hole extends into main trunk. Likely suitable for bats.
CT8	Shagbark Hickory (*Carya ovata*)	22	Live	1	Co-dominant	Loose Bark	Peeling bark may be suitable for bats.
CT9	Shagbark Hickory (*Carya ovata*)	38	Live	1	Co-dominant	Loose Bark	Peeling bark may be suitable for bats.
CT10	Oak species (*Quercus sp.*)	75	Live	1	Dominant	Foliage	Large DBH oak tree, possiby suitable for foliage-roosting species
CT11	Oak species (*Quercus sp.*)	70	Live	1	Dominant	Cavity	Large DBH oak tree with cavity (10m above ground, 20cmx10cm). Suitable for bats.
CT12	Shagbark Hickory (*Carya ovata*)	30	Live	1	Co-dominant	Loose Bark	Peeling bark may be suitable for bats.
CT13	Unknown	37	Dead	4	Intermediate	Other snag within 10m	Snag suitable for bats.
CT14	Shagbark Hickory (*Carya ovata*)	32	Live	1	Co-dominant	Loose Bark	Peeling bark may be suitable for bats.

Appendix D

Bat Maternity Roost Habitat Assessment Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Tree ID	Tree Species	Size (DBH)	Tree Status	Decay Class	Height Class	Characteristics	SAR Bat Habitat Suitability
CT15	Oak species (*Quercus sp.*)	60	Live	1	Co-dominant	Foliage	Large DBH oak tree, possiby suitable for foliage-roosting species
CT16	Shagbark Hickory (*Carya ovata*)	28	Live	1	Intermediate	Loose Bark	Peeling bark may be suitable for bats.
CT17	Oak species (*Quercus sp.*)	70	Live	2	Co-dominant	Cavity	Large DBH oak tree with cavity (8m above ground, 8cmx8cm). Suitable for bats.
CT18	Shagbark Hickory (*Carya ovata*)	45	Live	1	Co-dominant	Loose Bark	Peeling bark may be suitable for bats.
CT19	Oak species (*Quercus sp.*)	55	Live	1	Co-dominant	Foliage	Large DBH oak tree, possiby suitable for foliage-roosting species
CT20	Oak species (*Quercus sp.*)	50	Live	1	Co-dominant	Foliage	Large DBH oak tree, possiby suitable for foliage-roosting species
CT21	Unknown	30	Dead	5	Suppressed	Cavity	Snag with cavity (5m above ground, 100cmx20cm). Possibly suitable for bats.
CT22	Unknown	28	Live	1	Intermediate	Cavity	Tree with cavity (6m above ground, 40cmx20cm). Possibly suitable for bats.
CT23	Shagbark Hickory (*Carya ovata*)	26	Live	1	Intermediate	Loose Bark	Suitable for bats.
CT24	Oak species (*Quercus sp.*)	34	Live	4	Intermediate	Cavity	Large DBH oak tree with cavity (6m above ground, 50cmx20cm). Suitable for bats.
CT25	American Beech (*Fagus grandifolia*)	24	Dead	6	Suppressed	Crack, Knot Hole	Snag suitable for bats.
CT26	Unknown	40	Dead	2	Intermediate	Loose Bark, Crack	Snag suitable for bats.
CT27	Unknown	20	Dead	5	Suppressed	Loose Bark, Crack	Snag suitable for bats.

Appendix D

Bat Maternity Roost Habitat Assessment Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Tree ID	Tree Species	Size (DBH)	Tree Status	Decay Class	Height Class	Characteristics	SAR Bat Habitat Suitability
CT28	Oak species (*Quercus sp.*)	80	Live	2	Co-dominant	Cavity, Loose Bark, Crack	Large DBH oak tree with cavity (7m above ground, 15cmx15cm). Suitable for bats.
CT29	Unknown	20	Dead	4	Intermediate	Loose Bark	Snag suitable for bats.
CT30	Shagbark Hickory (*Carya ovata*)	30	Live	1	Intermediate	Loose Bark	Suitable for bats.
CT31	Unknown	25	Dead	5	Suppressed	Loose Bark, Knot Hole	Snag suitable for bats.
CT32	Unknown	24	Dead	4	Intermediate	Cavity, Crack	Snag with cavity (8m above ground, 15cmx15cm). Suitable for bats.
CT33	Poplar species (*Populus sp.*)	30	Live	2	Intermediate	Loose Bark	Suitable for bats.
CT34	Maple species (*Acer sp*.)	45	Live	2	Co-dominant	Crack	Suitable for bats.
CT35	Black cherry (*Prunus serotina*)	35	Dead	4	Intermediate	Loose Bark	Snag suitable for bats.
CT36	Unknown	25	Dead	5	Intermediate	Crack, Loose Bark	Snag suitable for bats.
CT37	Unknown	30	Dead	5	Co-dominant	Loose Bark	Snag suitable for bats.
CT38	Red Maple (*Acer rubrum*)	22	Live	5	Intermediate	Loose Bark	Multi stem tree, suitable for bats.
CT39	Unknown	23	Dead	5	Suppressed	Loose Bark	Snag suitable for bats.
CT40	Unknown	32	Dead	6	Intermediate	Loose Bark, Knot Hole	Snag suitable for bats.
CT41	Unknown	23	Dead	5	Suppressed	Loose Bark	Snag suitable for bats.
CT42	Unknown	24	Dead	5	Suppressed	Loose Bark, Knot Hole	Snag suitable for bats.

Notes

Decay Class
1: Healthy, live tree
2: Declining live tree, part of canopy lost
3: Very recently dead, no canopy, bark intact, branches intact
4: Recently dead, bark peeling, only large brances intact
5: Older dead trees, 90% bark lost, few branch stubs, broken top
6: Very old dead tree, advanced decay, parts of stem have rotted away

Height Class
Dominant: above canopy
Co-dominant: canopy height
Intermediate just below canopy
Suppressed: well below canopy

Appendix E

Bat Acoustic Monitoring Results

Appendix E.1

PTBO_01 Bat Acoustic Monitoring Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species/Guild	ESA	SARA	Total Number of Vetted Calls	Percent of Total Vetted Calls
*Myotis sp**	END	END	0	0.00
Eastern red bat (*Lasiurus borealis*)	END	END*	1	0.19
Big brown bat (*Eptesicus fuscus*)	Not Listed	Not Listed	114	21.55
Silver-haired bat (*Lasionycteris noctivagans*)	END	END*	83	15.69
Hoary Bat (*Lasiurus cinereus*)	END	END*	36	6.81
High Frequency (HiF)	N/A	N/A	1	0.19
Low Frequency (LoF)	N/A	N/A	201	38.00
Noise	N/A	N/A	93	17.58
Total			529	100.00

Notes

SARA: Species at Risk Act (END: Endangered)
ESA: Endangered Species Act (END: Endangered)
*: Recommended by COSEWIC in May 2023, but not on list as of February 2026.
Myotis sp.*: Identified as a Myotis sp. (possible little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis)* or tri-colored bat(*Perimyotis subflavus*)), but cannot make determination. These species are listed as END under the SARA and ESA.

Appendix E.2

PTBO_02 Bat Acoustic Monitoring Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species/Guild	ESA	SARA	Total Number of Vetted Calls	Percent of Total Vetted Calls
*Myotis sp**	END	END	1	0.23
Eastern red bat (*Lasiurus borealis*)	END	END*	2	0.46
Big brown bat (*Eptesicus fuscus*)	Not Listed	Not Listed	175	39.86
Silver-haired bat (*Lasionycteris noctivagans*)	END	END*	73	16.63
Hoary Bat (*Lasiurus cinereus*)	END	END*	59	13.44
High Frequency (HiF)	N/A	N/A	5	1.14
Low Frequency (LoF)	N/A	N/A	112	25.51
Noise	N/A	N/A	12	2.73
Total			439	100.00

Notes

SARA: Species at Risk Act (END: Endangered)
ESA: Endangered Species Act (END: Endangered)
*: Recommended by COSEWIC in May 2023, but not on list as of February 2026.
Myotis sp.*: Identified as a Myotis sp. (possible little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis)* or tri-colored bat(*Perimyotis subflavus*)), but cannot make determination. These species are listed as END under the SARA and ESA.

Appendix E.3

WATS_01 Bat Acoustic Monitoring Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species/Guild	ESA	SARA	Total Number of Vetted Calls	Percent of Total Vetted Calls
*Myotis sp**	END	END	0	0.00
Eastern red bat (*Lasiurus borealis*)	END	END*	2	1.43
Big brown bat (*Eptesicus fuscus*)	Not Listed	Not Listed	30	21.43
Silver-haired bat (*Lasionycteris noctivagans*)	END	END*	41	29.29
Hoary Bat (*Lasiurus cinereus*)	END	END*	1	0.71
High Frequency (HiF)	N/A	N/A	13	9.29
Low Frequency (LoF)	N/A	N/A	15	10.71
Noise	N/A	N/A	38	27.14
Total			140	100.00

Notes

SARA: Species at Risk Act (END: Endangered)
ESA: Endangered Species Act (END: Endangered)
*: Recommended by COSEWIC in May 2023, but not on list as of February 2026.
Myotis sp.*: Identified as a Myotis sp. (possible little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis)* or tri-colored bat(*Perimyotis subflavus*)), but cannot make determination. These species are listed as END under the SARA and ESA.

Appendix E.4

WATS_03 Bat Acoustic Monitoring Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species/Guild	ESA	SARA	Total Number of Vetted Calls	Percent of Total Vetted Calls
*Myotis sp**	END	END	0	0.00
Eastern red bat (*Lasiurus borealis*)	END	END*	5	2.92
Big brown bat (*Eptesicus fuscus*)	Not Listed	Not Listed	23	13.45
Silver-haired bat (*Lasionycteris noctivagans*)	END	END*	69	40.35
Hoary Bat (*Lasiurus cinereus*)	END	END*	13	7.60
High Frequency (HiF)	N/A	N/A	0	0.00
Low Frequency (LoF)	N/A	N/A	53	30.99
Noise	N/A	N/A	8	4.68
Total			171	100.00

Notes

SARA: Species at Risk Act (END: Endangered)
ESA: Endangered Species Act (END: Endangered)
*: Recommended by COSEWIC in May 2023, but not on list as of February 2026.
*Myotis sp.**: Identified as a *Myotis sp.* (possible little brown myotis [*Myotis lucifugus*], northern myotis [*Myotis septentrionalis*] or tri-colored bat [*Perimyotis subflavus*]), but cannot make determination. These species are listed as END under the SARA and ESA.

Appendix E.5

WATS_05 Bat Acoustic Monitoring Results
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

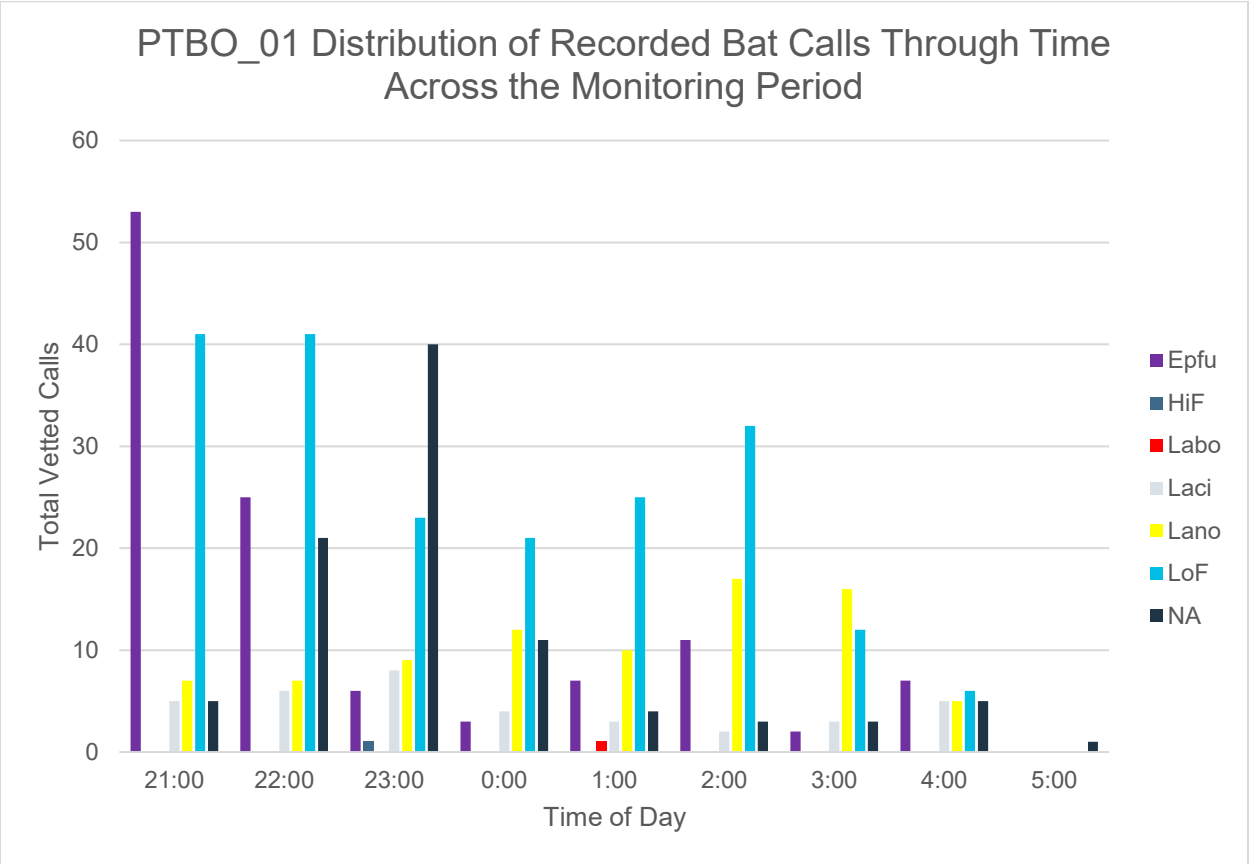
Species/Guild	ESA	SARA	Total Number of Vetted Calls	Percent of Total Vetted Calls
*Myotis sp**	END	END	0	0.00
Eastern red bat (*Lasiurus borealis*)	END	END*	221	12.64
Big brown bat (*Eptesicus fuscus*)	Not Listed	Not Listed	1121	64.13
Silver-haired bat (*Lasionycteris noctivagans*)	END	END*	181	10.35
Hoary Bat (*Lasiurus cinereus*)	END	END*	15	0.86
High Frequency (HiF)	N/A	N/A	24	1.37
Low Frequency (LoF)	N/A	N/A	118	6.75
Noise	N/A	N/A	68	3.89
Total			1748	100.00

Notes

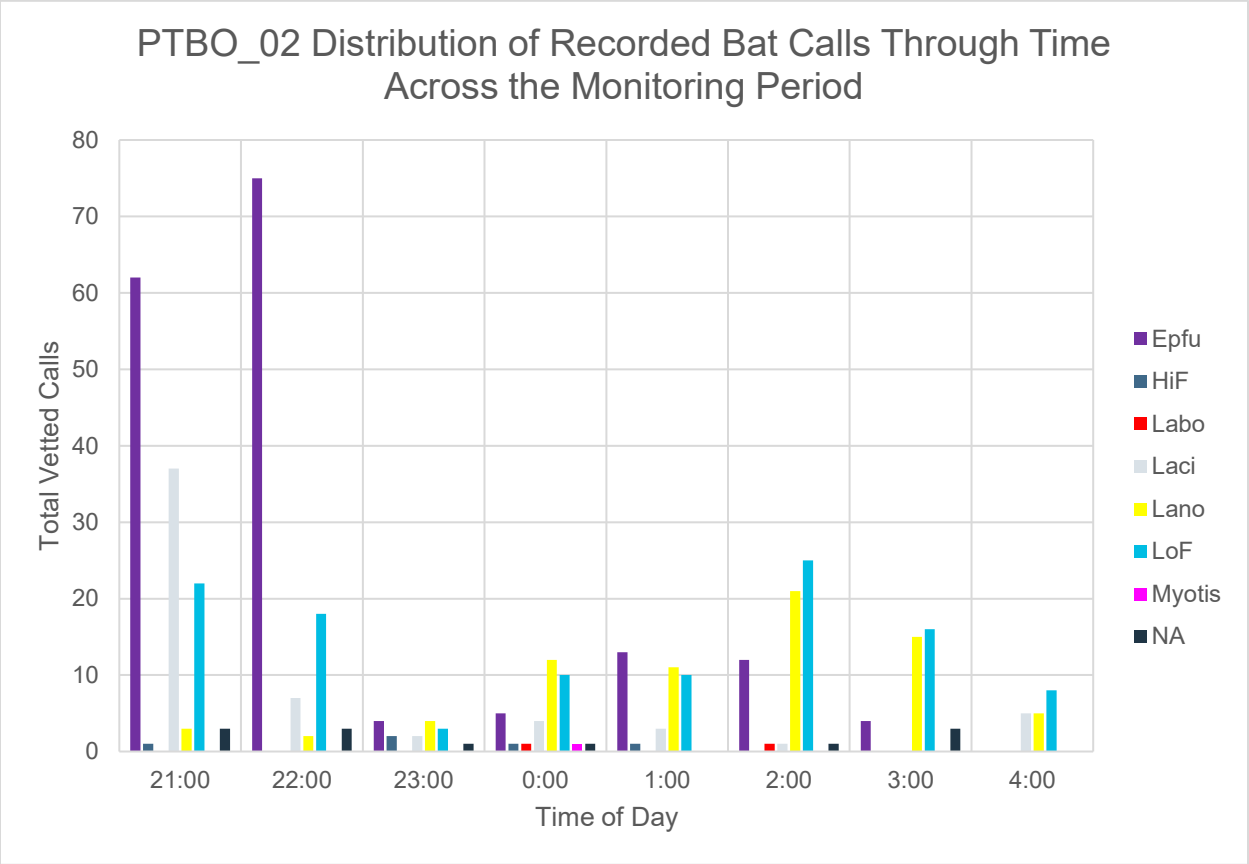
SARA: Species at Risk Act (END: Endangered)
ESA: Endangered Species Act (END: Endangered)
*: Recommended by COSEWIC in May 2023, but not on list as of February 2026.
Myotis sp.*: Identified as a Myotis sp. (possible little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis)* or tri-colored bat(*Perimyotis subflavus*)), but cannot make determination. These species are listed as END under the SARA and ESA.

Appendix F

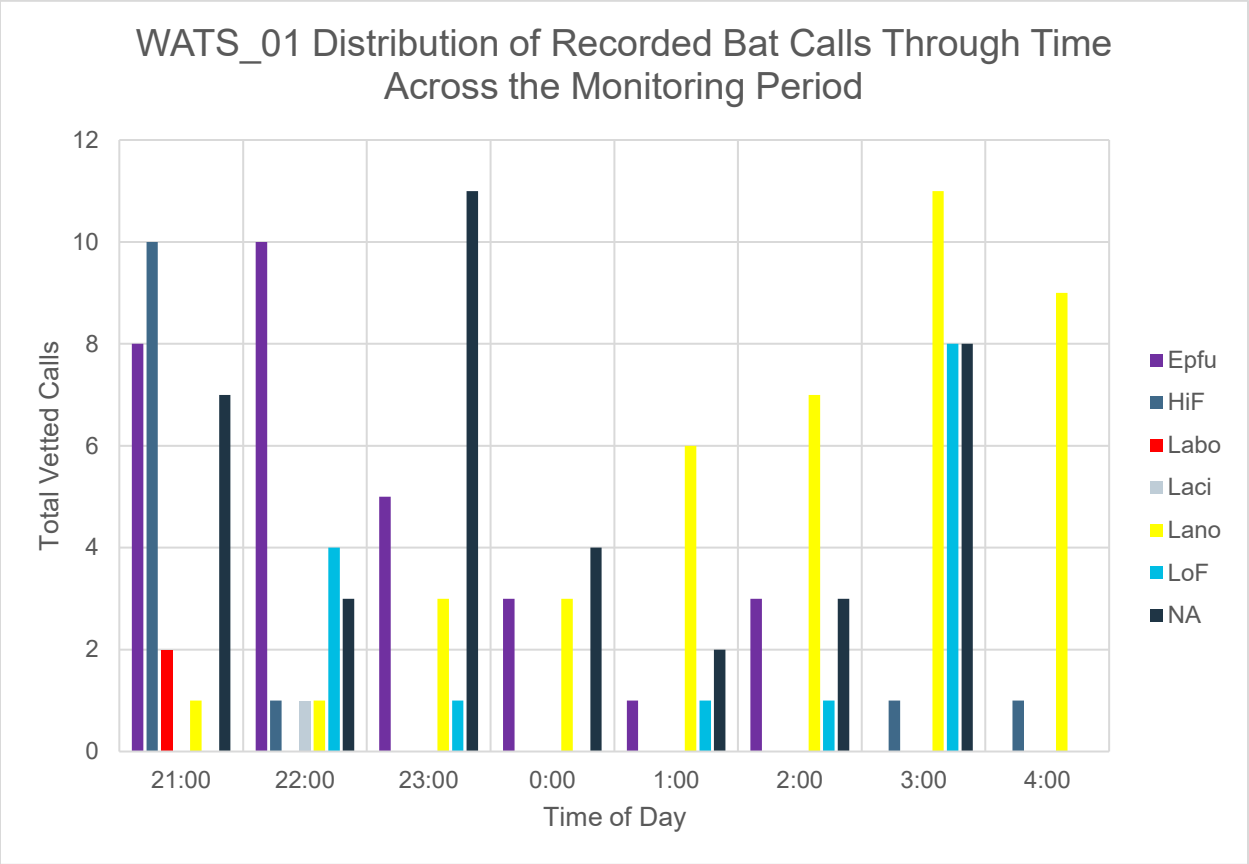
Bat Acoustic Monitoring Time Graphs



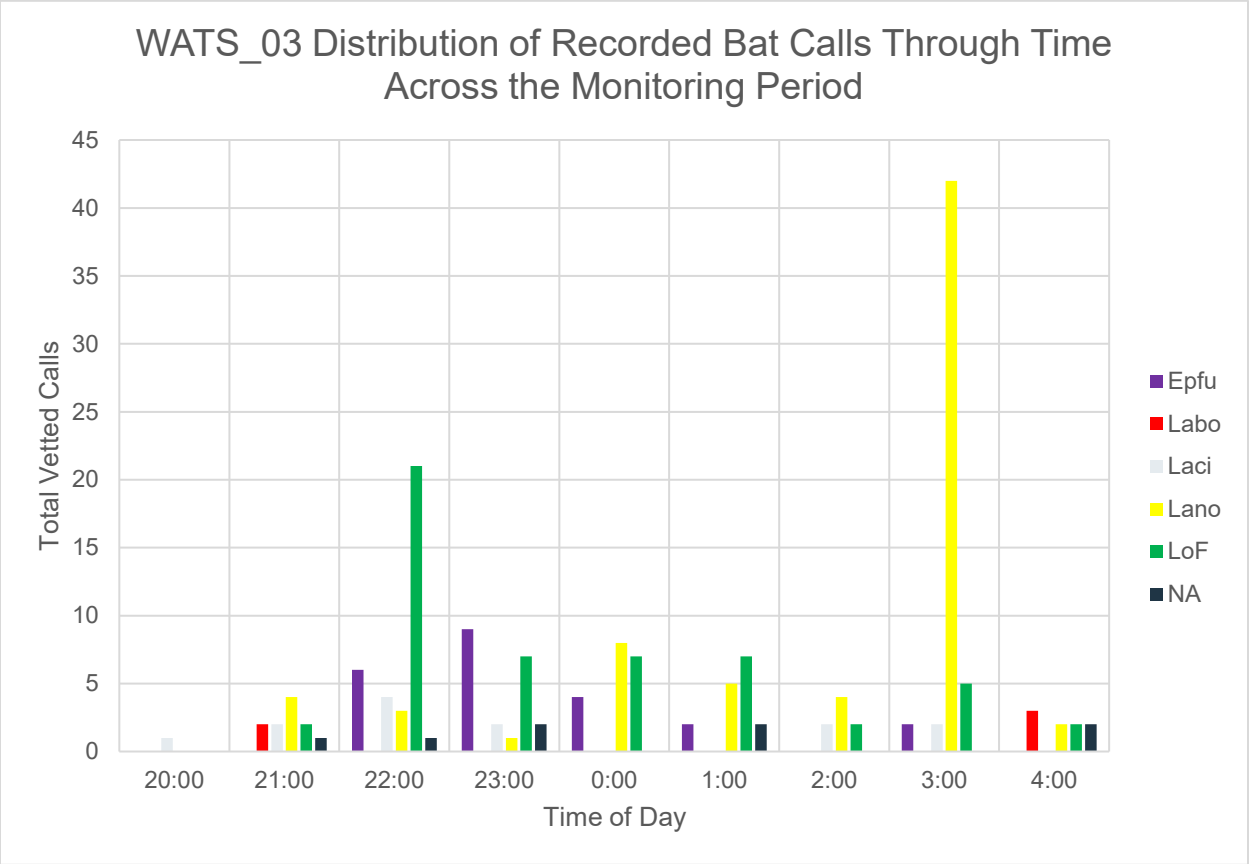
Epfu – Big brown bat (*Eptesicus fuscus*)
HiF – High Frequency
Labo – Eastern red bat (*Lasiurus borealis*)
Laci – Hoary bat (*Lasiurus cinereus*)
Lano – Silver-haired bat (*Lasionycteris noctivagans*)
LoF – Low Frequency
NA – Not Applicable. Recordings can result from background noise such as vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone.



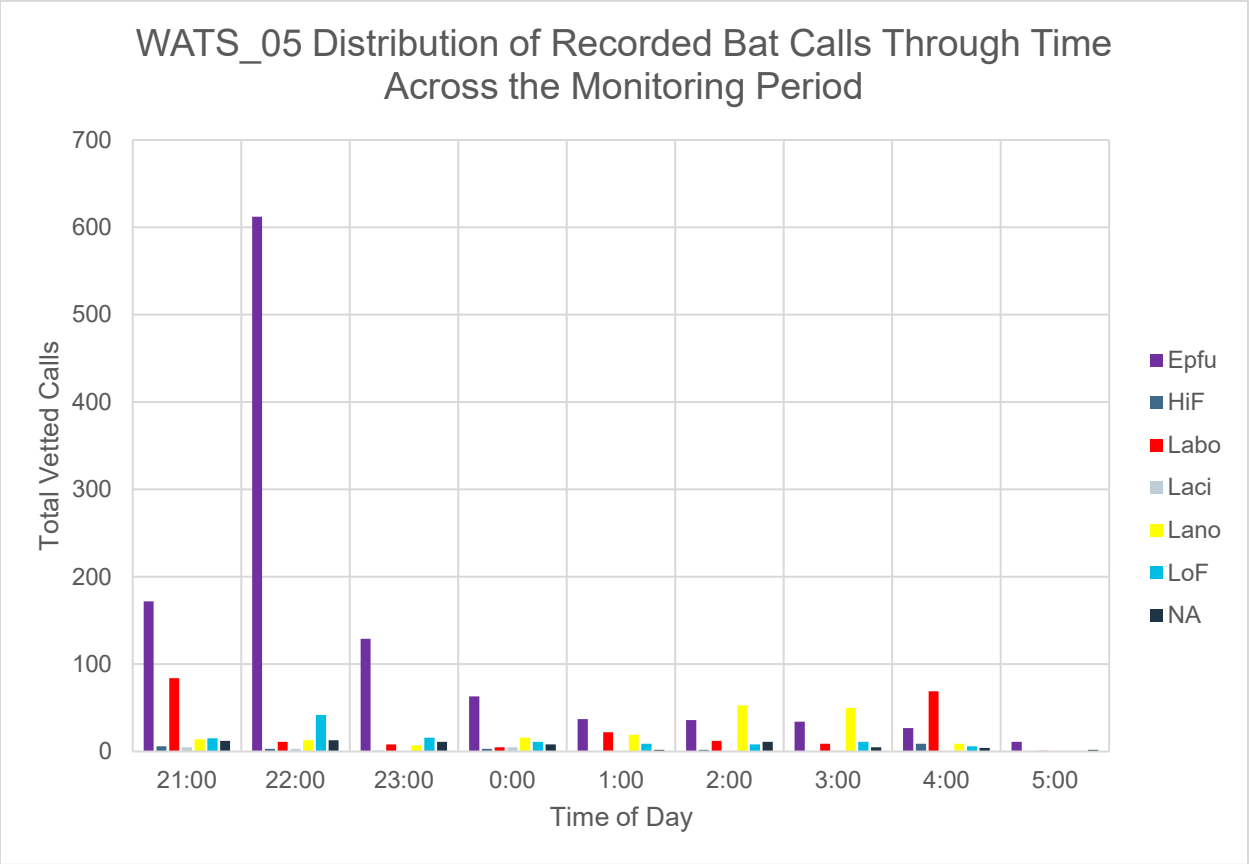
Epfu – Big brown bat (*Eptesicus fuscus*)
HiF – High Frequency
Labo – Eastern red bat (*Lasiurus borealis*)
Laci – Hoary bat (*Lasiurus cinereus*)
Lano – Silver-haired bat (*Lasionycteris noctivagans*)
LoF – Low Frequency
Myotis sp. - possible little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*) or tri-colored bat (*Perimyotis subflavus*)) but cannot make determination.
NA – Not Applicable. Recordings can result from background noise such as vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone.



Epfu – Big brown bat (*Eptesicus fuscus*)
HiF – High Frequency
Labo – Eastern red bat (*Lasiurus borealis*)
Laci – Hoary bat (*Lasiurus cinereus*)
Lano – Silver-haired bat (*Lasionycteris noctivagans*)
LoF – Low Frequency
NA – Not Applicable. Recordings can result from background noise such as vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone.



Epfu – Big brown bat (*Eptesicus fuscus*)
HiF – High Frequency
Labo – Eastern red bat (*Lasiurus borealis*)
Laci – Hoary bat (*Lasiurus cinereus*)
Lano – Silver-haired bat (*Lasionycteris noctivagans*)
LoF – Low Frequency
NA – Not Applicable. Recordings can result from background noise such as vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone.



Epfu – Big brown bat (*Eptesicus fuscus*)
HiF – High Frequency
Labo – Eastern red bat (*Lasiurus borealis*)
Laci – Hoary bat (*Lasiurus cinereus*)
Lano – Silver-haired bat (*Lasionycteris noctivagans*)
LoF – Low Frequency
NA – Not Applicable. Recordings can result from background noise such as vehicles, rustling plants, other wildlife, incomplete recordings, or calls which are outside of the range of the microphone.

Appendix G

Significant Wildlife Habitat Screening

Significant Wildlife Habitat Criteria Schedule, Ecoregion 7E

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the 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 • Northern Pintail • Gadwall • Blue-winged Teal • Green-winged Teal • American Wigeon • Northern Shoveler • Tundra Swan	CUM1 CUT1 • Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. • Fields with seasonal flooding and waste grains in the Long Point, Rondeau, Lk. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	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]. Information Sources • 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 waterfowl planning processes (e.g. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • Any mixed species aggregations of 100[E] or more individuals required. • The flooded field ecosite habitat plus a 100–300m radius, dependent on local site conditions and adjacent land use is the significant wildlife habitat [cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWH MIST[cxlix] Index #7 provides development effects and mitigation measures.	No. CUM1 present, but substantial flooding to support waterfowl breeding does not occur in the spring.	No.
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	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) Information Sources • 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	Studies carried out and verified presence of: • Aggregations of 100[E] or more of listed species for 7 days[E], results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH [cxlix] • The combined area of the ELC ecosites and a 100 m radius area is the SWH [cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG [cxlviii] Appendix K [cxlix] are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” [ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWH MIST [cxlix] Index #7 provides development effects and mitigation measures.	No. SWD ecosite present, however, do not contain abundant food supply in shallow water.	No. Candidate SWH is not present and criteria species were not observed during targeted surveys (BBS).

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
	• Ruddy Duck • Red-breasted Merganser • Brant • Canvasback		• NHIC Waterfowl Concentration Area			
Shorebird Migratory Stopover Area **<u>Rationale:</u>** 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. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • 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 100 m radius area [cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" [ccxi] • SWH MIST [cxlix] Index #8 provides development effects and mitigation measures.	No. ELC Ecosites not present.	No.

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Raptor Wintering Area **Rationale:** Sites used by multiple species, a high number of individuals and used annually are most significant	• Rough-legged Hawk • Red-tailed Hawk • Northern Harrier • American Kestrel • Snowy Owl **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 (hawk/owl) sites need to be >20 ha[cxlviii, cxlix] with a combination of forest and upland.[xvi, xvii, xviii, xix, xx, xxi.] • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15 ha) 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 and large trees and snags available for roosting[cxlix] Information Sources: • OMNRF Ecologist or Biologist • Naturalist clubs • 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 of more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species[E] • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[E]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area[E] • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWH MIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	No. FOD, FOD2, CUM1, CUT1, and SWD1-3 ecosites present however do not meet size criteria, field areas are not wind swept, and no open water is present.	No. Candidate habitat was not identified.
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. Information Sources • OMNRF for possible locations and contact for local experts • NHIC Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (e.g. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH[E]. • The area includes 200 m radius around the entrance of the hibernaculum[cxlviii, ccvii, E] for most development types and 1000 m for wind farms[ccv]. • Studies are to be conducted during the peak swarming period (Aug.–Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”[ccv]. • SWH MIST[cxlix] Index #1 provides development effects and mitigation measures.	No. ELC ecosites not present.	No. Candidate habitat was not identified.
Bat Maternity Colonies **Rationale:** Known locations of forested bat maternity colonies	• Big Brown Bat • Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD	• Maternity colonies can be found in tree cavities, vegetation and often in buildings[xxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii].	• Maternity Colonies with confirmed use by: • >10 Big Brown Bats[E] • >5 Adult Female Silver-haired Bats[E] • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or	Yes. FOD, FOD2, and SWD1-3 ecosites present, and suitable maternity trees	No. The number of bats confirmed to be using the habitat has not been determined.

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
are extremely rare in all Ontario landscapes.		FOM SWD SWM	• Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx, ccv] with >10/ha large diameter (>25 cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1–3[ccxiv] or class 1 or 2.[ccxii] • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx, lxiv] <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	an Ecoelement containing the maternity colonies[E]. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”[ccv]. • SWH MIST[cxlix] Index #12 provides development effects and mitigation measures.	observed in the Study Area.	
Turtle Wintering Areas **<u>Rationale:</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	• Midland Painted Turtle **<u>Special Concern:</u>** • Northern Map Turtle • Snapping Turtle	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water 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[cix, cx, cxi, cxii] • 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. • Field Naturalists Clubs • OMNRF Ecologist or Biologist • NHIC	• Presence of 5 over-wintering Midland Painted Turtles is significant[E]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[E]. • 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)[cvii]. • Congregation of turtles is more common where wintering areas are limited and therefore significant.[cix, cxcxi, cxii] • SWH MIST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	No. SWD1-3 and MAM2 communities and watercourse present; however, insufficient to provide overwintering habitat (i.e., only very shallow surface water observed within these communities). No potential basking areas were observed during Site investigations.	No. Candidate habitat was not identified.
Reptile Hibernaculum **<u>Rationale:</u>** 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	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	• 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	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. <u>or</u>; 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)[E]	No. CUM1, CUP2-1, CUP3-8, CUT1, FOD, FOD2, SWD1-3, Hedge communities present, however, no recorded observations of congregations of	No. Candidate SWH not present. Targeted surveys (Artificial Cover Object) did not detect a high number of snakes and field investigations did not

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
	Special Concern: • Milksnake • Eastern Ribbonsnake	the spring or fall is a good indicator.	access to subterranean sites below the frost line.[xliv, l, li, liii, cxii] • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs • University herpetologists • NHIC	• 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© • SWH MIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	snakes, and no hibernacula features below frost lines occur.	identify the presence of any hibernacula.
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. Information Sources • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests[ccvii] • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWH MIST[cxlix] Index #4 provides development effects and mitigation measures	No. CUM1 community present, but no exposed eroding banks on steep slopes, sand piles, hills, etc., within the Study Area.	No. Candidate habitat is not 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. Information Sources • Ontario Breeding Bird Atlas,[ccv] colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF).	Studies confirming: • Presence of 2© or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300 m radius or extent of the Forest Ecosite containing the colony or any island <15.0 ha with a colony is the SWH.[cc, ccvii] • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August)	No. SWD1-3 ecosite present; however, bird nests not observed.	No. Candidate habitat is not present. BBS confirmed species were not present.

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from Conservation Authorities. • MNRF District Offices. • Field Naturalist Clubs.	or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWH MIST[cxlix] Index #5 provides development effects and mitigation measures.		
Colonially-Nesting Bird Breeding Habitat (Ground) **<u>Rationale:</u>** 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 or 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 Conservation Authorities. • 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 150 m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha with a colony is the SWH[cc, ccvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #6 provides development effects and mitigation measures.	No. No rocky island or peninsulas within lakes or large rivers present. MAM, CUM, and CUT communities present.	No. Candidate Habitat is not present. Species were not present during BBS.
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	• Painted Lady • Red Admiral <u>Special Concern</u> • Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: <u>Field</u>: CUM 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 Erie or Lake Ontario[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south.[xxxii, xxxiii, xxxiv, xxxv, xxxvi] • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. [cxlviii, cxlix] • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes.[xxxvii, xxxviii, xxxix, xl, xli] <u>Information Sources</u>	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100–500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur.[xl, xlii] • 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 Admirals is to be considered significant.[Ⓔ] • SWH MIST[cxlix] Index #16 provides development effects and mitigation measures.	No. CUM, CUT, and FOD present but lack sufficient size and not within 5 km of Lake Erie or Lake Ontario.	No. Candidate Habitat is not present.

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• MNRF District Offices • NHIC • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities			
Landbird Migratory Stopover Areas **<u>Rationale</u>:** 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 >5 ha[E] in size and within 5 km[iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Erie and Lake Ontario. If woodlands are rare in an area of shoreline, woodland fragments 2–5 ha can be considered for this habitat[E] • If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Erie and Lake Ontario are more significant[cxlix] • Sites have a variety of habitats; forest, grassland and wetland complexes[cxlix] • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds,[ccxviii] these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.[cxlviii] <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and field naturalist clubs • 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[E]. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #9 provides development effects and mitigation measures.	No. FOD and SWD present but lack sufficient size and are not within 5 km of Lake Erie or Lake Ontario.	No. Candidate Habitat is not present.

Table 1.1 Seasonal Concentration Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate SWH Present Within the Study Area	Confirmed SWH Present Within the 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 Ecoregion 7E 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 >100 ha in size or if large woodlots are rare in a planning area woodlots >50 ha[Ⓔ] • Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth; however, deer will annually congregate in large numbers in suitable woodlands.[cxlviii] • Large woodlots > 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1–1.5 deer/ha.[ccxxiv] • Woodlots with high densities of deer due to artificial feeding are not significant[Ⓔ]. 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.[cxlviii] • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF.[Ⓔ] • Studies should be completed during winter (Jan/Feb) when >20 cm of snow is on the ground using aerial survey techniques,[ccxxiv] ground or road surveys, or a pellet count deer density survey.[ccxxv] • SWH MIST[cxlix] Index #2 provides development effects and mitigation measures.	Yes. MNR mapping confirms white-tailed deer wintering area (stratum 2) in the northern, eastern, and southern portions of the LSA.	Yes. MNR mapping confirms white-tailed deer wintering area (stratum 2) in the northern, eastern, and southern portions of the LSA.

Table 1.2.1 Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
	ELC Ecosite Codes	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 CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3 m 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. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • NHIC has location information available on their website • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWH MIST[cxlix] Index #21 provides development effects and mitigation measures.	No. ELC ecosites not present.	No. Candidate habitat was not identified.
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 >0.5 ha in size[Ⓔ]. Information Sources • OMNRF Districts • NHIC has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)[Ⓔ]. • SWH MIST[cxlix] Index #20 provides development effects and mitigation measures.	No. ELC ecosites not present.	No. Candidate habitat was not identified.

Table 1.2.1 Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria		
Alvar **Rationale:** Alvars are extremely rare habitats in Ecoregion 7E.	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 7E[E][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 animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.[lxxviii]	An Alvar site > 0.5 ha in size.[lxxv] Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie.[cxcix] Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi] • Ontario Nature – Conserving Great Lakes Alvars[ccviii] • NHIC has location information available on their website. • OMNRF Staff • Field Naturalist Clubs • Conservation Authorities	• Field studies that identify four of the five[E] **Alvar Indicator Species**[lxxv, cxlix] at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv] • SWH MIST[cxlix] Index #17 provides development effects and mitigation measures.	No. ELC ecosites not present.	No. Candidate habitat was not identified.
Old Growth Forest **Rationale**: Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	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 area is >0.5 ha.[E] 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 forest are >140 years old, then the area containing these trees is Significant Wildlife Habitat[cxlviii] • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities[cxlviii] (cut stumps will not be present) • The area of forest ecosites combined or an ecoelement within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics[lxxviii] • SWH MIST[cxlix] Index #23 provides development effects and mitigation measures.	No. FOD, FOD2, and SWD1-1 ecosites present and meet sufficient size criteria, however, do not have heavy mortality or mosaic of gaps.	No. Candidate SWH is not present and targeted surveys confirmed that trees are not >140 years old.
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%[lxxix, lxxx, lxxxi, lxxxii, lxxxiii] In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie	No minimum size to site.[E] Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • NHIC has location data available on their website. • OMNRF Districts	Field studies confirm one or more of the Savannah indicator species listed in [cxlix] Appendix N should be present[E]. Note: Savannah plant spp. list from Ecoregion 7E should be used.[cxlviii] • Area of the ELC Ecosite is the SWH.	No. ELC ecosites not present.	No. Candidate habitat was not identified.

Table 1.2.1 Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
	ELC Ecosite Codes	Habitat Description	Detailed Information and Sources	Defining Criteria		
		shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	• Field Naturalists Clubs • Conservation Authorities	• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWH MIST[cxlix] Index #18 provides development effects and mitigation measures.		
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[lxxix, lxxx, lxxxi, lxxxii, lxxxiii] In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario).	No minimum size to site.[E] Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts • NHIC has location information available on their website. • Field Naturalists Clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in [cxlix] Appendix N should be present.[E] Note: Prairie plant spp. list from Ecoregion 7E should be used[cxlviii] • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWH MIST[cxlix] Index #19 provides development effects and mitigation measures.	No. ELC ecosites not present.	No. Candidate habitat was not identified.
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.[cxlviii] Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M.[cxlviii] The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • NHIC has location information available on their website. • OMNRF Districts • Field Naturalists Clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG.[cxlviii] • Area of the ELC Vegetation Type polygon is the SWH. • SWH MIST[cxlix] Index #37 provides development effects and mitigation measures.	No. Rare ELC communities not present.	No. Candidate Habitat is not present.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Waterfowl Nesting Area **Rationale:** Important to local waterfowl populations, sites with greatest number of	• American Black Duck • Northern Pintail • Northern Shoveler • Gadwall • Blue-winged Teal • Green-winged Teal • Wood Duck	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1	A waterfowl nesting area extends 120 m[cxlix] from a wetland (> 0.5 ha) or a wetland (>0.5 ha) and any small wetlands (0.5 ha) within 120 m 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.[cxlix]	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[E], or; • Presence of 10 or more nesting pairs for listed species including Mallards.[E] • Any active nesting site of an American Black Duck is considered significant.	No. Upland habitat adjacent MAM and SWD communities present and meet size criteria, however, waterfowl	No. Candidate SWH is not present and the criteria species were not observed during

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
species and highest number of individuals are significant.	• Hooded Merganser • Mallard	SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	• Upland areas should be at least 120 m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm 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.	• Nesting studies should be completed during the spring breeding season (April–June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWH MIST[cxlix] Index #25 provides development effects and mitigation measures.	nesting is not known to occur.	targeted surveys (BBS).
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **<u>Rationale:</u>** Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these 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> • 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 District • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Reports and other information available from Conservation Authorities.	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area.[cxlviii] • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH[ccvii], maintaining undisturbed shorelines with large trees within this area is important.[cxlviii] • For a Bald Eagle the active nest and a 400–800 m radius around the nest is the SWH.[cvi, ccvii] Area of the habitat from 400–800 m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat.[cvi] • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥ 3 years or suspected of not being used for >5 years before being considered not significant.[ccvii] • Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid-August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi]	No. FOD and FOD2 communities are present; however, lack adjacency to suitable riparian areas.	No. Candidate Habitat is not present.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• Field Naturalists clubs	• SWH MIST[cxlix] Index #26 provides development effects and mitigation measures.		
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats 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 >30 ha with >4 ha of interior habitat.[lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii] Interior habitat determined with a 200 m buffer.[cxlviii] • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as 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. <u>Information Sources</u> • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant.[cxlviii] • Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH[ccvii] (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl—A 200 m radius around the nest is the SWH.[ccvii] • Broad-winged Hawk and Coopers Hawk—A 100 m radius around the nest is the SWH.[ccvii] • Sharp-Shinned Hawk—A 50 m radius around the nest is the SWH.[ccvii] • Conduct field investigations from early 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. • SWH MIST[cxlix] Index #27 provides development effects and mitigation measures.	No. FOD, FOD2, and SWD1-3 are present; however, do not meet the minimum size criteria.	No. Candidate Habitat is not present.
Turtle Nesting Areas **<u>Rationale:</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	• Midland Painted Turtle <u>Special Concern</u> • Northern Map Turtle • Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100 m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u>	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 30–100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH.[cxlviii] • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30–100 m area of habitat.[cxlix] • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method.	No. ELC ecosites not present.	No. Candidate habitat was not identified.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• 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. • NHIC • Field Naturalist Clubs	• SWH MIST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.		
Seeps and Springs **<u>Rationale:</u>** 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 groundwater comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	• Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.[cxvii, cxlix] • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.[cxix, cxx, cxxi, cxxii, cxiii, cxiv] <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by 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 two or more© seeps/springs should be considered SWH. • The area of an ELC forest ecosite or an ecoelement 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.[cxlviii] • SWH MIST[cxlix] Index #30 provides development effects and mitigation measures	No. No seeps or springs were observed.	No. Candidate Habitat is not present.
Amphibian Breeding Habitat (Woodland) **<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	• Eastern Newt • Blue-spotted Salamander • Spotted Salamander • Gray Treefrog • Spring Peeper • Western Chorus Frog • Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500 m^2 (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size).[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.[cxlviii] <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records	Studies confirm; • Presence of breeding population of one or more of the listed newt/salamander species or two or more of the listed frog species with at least 20 individuals (adults or eggs masses) or two or more of the listed frog species with Call Level Codes of 3.© • A combination of observational study and call count surveys[cviii] will be required during the spring (March–June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230 m radius of woodland area.[lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi] If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.	No. FOD and SWD present, however, vernal pools do not meet sufficient size criteria.	No. Candidate SWH is not present. Spotted salamander incidentally observed. Targeted surveys completed and observed Western chorus frog with Call Level Code 3, however, no other criteria species observed with Call Level Code 3 and

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	• SWH MIST[cxlix] Index #14 provides development effects and mitigation measures.		breeding populations not confirmed.
Amphibian Breeding Habitat (Wetland) **<u>Rationale:</u>** 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 (>120 m) from woodland ecosites; however, larger wetlands containing predominantly aquatic species (e.g. Bullfrog) may be adjacent to woodlands	• Wetlands >500 m^2 (about 25 m diameter),[ccvii] supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats.[clxxxii] • 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 one or more of the listed newt/salamander species or two or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or two or more of the listed frog/toad species with Call Level Codes of 3.Ⓔ **or;** Wetland with confirmed breeding Bullfrogs are significant.Ⓔ • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys[cviii] will be required during 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. • SWH MIST[cxlix] Index #15 provides development effects and mitigation measures.	No. MAM and SWD present, however, communities are no isolated from woodland ecosites.	No. Candidate SWH is not present. Spotted salamander incidentally observed. Targeted surveys completed and observed Western chorus frog with Call Level Code 3, however, no other criteria species observed with Call Level Code 3 and breeding populations not confirmed.
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale:</u>** Large, natural blocks of mature woodland habitat within the settled areas of	• Yellow-bellied Sapsucker • Red-breasted Nuthatch • Veery • Blue-headed Vireo • Northern Parula • Black-throated Green Warbler • Blackburnian Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha.[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix] • Interior forest habitat is at least 200 m from forest edge habitat.	Studies confirm: • Presence of nesting or breeding pairs of three 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.	No. FOD and SWD ecosites present within Study Area; however, lack sufficient size requirements (i.e., < 30 ha, interior forest	No. Candidate habitat is not present.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH

Specialized Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Southern Ontario are important habitats for area sensitive interior forest song birds.	• Black-throated Blue Warbler • Ovenbird • Scarlet Tanager • Winter Wren • Pileated Woodpecker **Special Concern:** • Cerulean Warbler • Canada Warbler		<u>Information Sources</u> • Local birder 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.	• Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #34 provides development effects and mitigation measures.	habitat > 200m from forest edge).	

Table 1.3 Habitats of Species of Conservation Concern considered SWH

Wildlife Habitat	Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Marsh Breeding Bird Habitat **<u>Rationale:</u>** 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 • 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.[cxxiv] • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> • OMNRF District and wetland evaluations. • Field Naturalist clubs • NHIC Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of five or more nesting pairs of Sedge Wren or Marsh Wren **or** breeding by any combination of four or more of the listed species.Ⓔ • Note: any wetland with breeding of one 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"[ccxi] • SWH MIST[cxlix] Index #35 provides development effects and mitigation measures.	No. MAM, CUM, and SWD communities, however, do not contain standing water with emergent vegetation throughout the year.	No. Candidate SWH is not present and criteria species not observed during targeted surveys (BBS).
Open Country Bird Breeding Habitat **<u>Rationale:</u>** This wildlife habitat is declining throughout Ontario and North	• Upland Sandpiper • Grasshopper Sparrow • Vesper Sparrow • Northern Harrier • Savannah Sparrow **Special Concern** • Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha.[clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix] • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years).Ⓔ	Field Studies confirm: • Presence of nesting or breeding of two or more of the listed species.Ⓔ • A field with one or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas.	No. CUM1-1 present but does not meet the size criteria.	No. Candidate Habitat is not present.

Table 1.3 Habitats of Species of Conservation Concern considered SWH

Wildlife Habitat	Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.			• 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 • EIS Reports and other information available from Conservation Authorities.	• Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MIST[cxlix] Index #32 provides development effects and mitigation measures		
Shrub/Early Successional Bird Breeding Habitat **<u>Rationale</u>**: 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.	<u>Indicator Spp:</u> • Brown Thrasher • Clay-coloured Sparrow <u>Common Spp.</u> • 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 >10 ha[clxiv] in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years).Ⓔ • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species.[clxxiii] • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of one of the indicator species and at least two 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"[ccxi] • SWH MIST[cxlix] Index #33 provides development effects and mitigation measures.	No. CUT1 ecosite community present but do not meet sufficient size criteria.	No. Candidate habitat is not present.
Terrestrial Crayfish **<u>Rationale:</u>** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.[ccii]	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	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.	Studies Confirm: • Presence of one or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites.[cci] • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August 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.[cci]	No. MAM, SWD, and adjacent CUM1 communities present, however, terrestrial crayfish burrows not observed during targeted investigations.	No. Candidate SWH is not present. No crayfish burrows were observed within the Study Area.

Table 1.3 Habitats of Species of Conservation Concern considered SWH

Wildlife Habitat	Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
		ecosites can be used by terrestrial crayfish.	Premek Hamr for the WWF and CNF March 1998	• SWH MIST[cxlix] Index #36 provides development effects and mitigation measures.		
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 NHIC.	All plant and animal element occurrences (EO) within a 1- or 10-km grid. Older element occurrences were recorded prior to GPS being available; therefore, location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites.[lxxviii] Information Sources • 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. • SWH MIST[cxlix] Index #37 provides development effects and mitigation measures.	Yes. Site has potential to support numerous provincially rare species based on records review.	No. Special concern and rare wildlife species were observed within the SSA and LSA (pileated woodpecker, rough-legged hawk, field thistle, bushy aster, barn swallow, eastern wood-pewee, olive sided fly-catcher, and grasshopper sparrow), however, there is insufficient evidence to suggest that the study areas support confirmed SWH.

Table 1.4 Animal Movement Corridors

Habitat	Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		ELC Ecosites	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.[clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi] • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 **(Amphibian Breeding Habitat –Wetland)** of this Schedule.[E] Information Sources • MNRF District Office • 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[cxlix] • Corridors should have at least 15 m of vegetation on both sides of waterway[cxlix] or be up to 200 m wide[cxlix] of woodland habitat and with gaps <20 m.[cxlix] • Shorter corridors are more significant than longer corridors; however, amphibians must be able to get to and from their summer and breeding habitat.[cxlix] • SWH MIST[cxlix] Index #40 provides development effects and mitigation measures	No. No confirmed SWH for breeding wetland or woodland amphibians on-Site.	No. Targeted Surveys for breeding habitat concluded that the Site does not meet criteria for SWH.

Table 1.5.1 Significant Wildlife Habitat Exceptions for Ecodistricts within Ecoregion 7E

Ecodistrict	Wildlife Habitat and Species	Candidate SWH		Confirmed SWH	Candidate Habitat Present Within the Site	Confirmed Habitat Found Within the Site
		Ecosites and Habitat Description	Habitat Criteria and Information	Defining Criteria		
7E-2	**Bat Migratory Stopover Area** Rationale: Stopover areas for long distance migrant bats are important during fall migration. • Hoary Bat • Eastern Red Bat • Silver-haired Bat	No specific ELC types or habitat descriptions	• Long-distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University of Waterloo, Biology Department	• Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration.[ccxv] • The confirmation criteria and habitat areas for this SWH are still being determined. • SWH MIST[cxlix] Index #38 provides development effects and mitigation measures	Study Area is not within Ecodistrict 7E-2.	Study Area is not within Ecodistrict 7E-2

Appendix H

Species at Risk Screening

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Amphibians							
Allegheny Mountain dusky salamander (Carolinian population)	*Desmognathus ochrophaeus*	END	END	END	S1	In Ontario, Allegheny mountain dusky salamander has only been found in the Niagara River gorge, so it is at the edge of its range in Ontario. This salamander species is generally found near forested brooks, gorge cascades, springs, or seeps. It uses this habitat to forage, as well as for overwintering and brooding. In winter they seek out flowing water where they remain active as long as the substrate is unfrozen (Markle et. al. 2013).	Low - Very rare species only found in the Niagara River gorge.
Northern dusky salamander (Carolinian population)	*Desmognathus fuscus*	END	END	END	S1	In Ontario, northern dusky salamander is restricted to two sites a few kilometres apart in streams in the Niagara Gorge, downstream of Niagara Falls. Adults are terrestrial and inhabit wooded or partly wooded terrain, but are always found in very close proximity to streams or seepage areas. They inhabit damp areas under leaves, rocks, and logs near streams. They can remain active all winter where moving water prevents freezing of the substrate (Markle et. al. 2013).	Low - Found at only two sites a few kilometres apart in streams in the Niagara Gorge, downstream of Niagara Falls.
Unisexual ambystoma (Jefferson salamander dependent population)	*Ambystoma laterale - (2) jeffersonianum*	END	END	END	S2	This population of unisexual Ambystoma salamanders co-occurs with Jefferson salamanders. In Ontario, Jefferson salamander is found only in southern Ontario, along southern portions of the Niagara Escarpment and western portions of the Oak Ridges Moraine. Jefferson salamander prefers moist, well-drained deciduous and mixed forests with a closed canopy. It overwinters underground in mammal burrows and rock fissures, and moves to vernal pools and ephemeral wetlands in the early spring to breed. Breeding ponds are typically located in or near to forested habitats, and contain submerged debris (i.e. sticks, vegetation) for egg attachment sites. Ephemeral breeding pools need to have water until at least mid-summer (mid to late July) (Jefferson Salamander Recovery Team 2010).	Low - Population dependant jefferson salamanders not present therefore this species is also not present.
Arthropods							
American burying beetle	*Nicrophorus americanus*	EXP	EXP	EXP	SH	In Ontario, most occurrences of the American burying beetle are reported in the Mixedwood Plains Ecozone (southern Ontario). This terrestrial species is associated with mature, moderately moist forest habitats with an open understory. Well-drained soils that are not easily crumbled nor composed primarily of sand are preferred (COSEWIC 2011).	Low - Species not observed during field investigations and has been extirpated from native range.
Monarch	*Danaus plexippus*	END	—	SC	S4B,S2N	In Ontario, monarch is found throughout the northern and southern regions of the province. This butterfly is found wherever there are milkweed (Asclepias spp.) plants for its caterpillars and wildflowers that supply a nectar source for adults. It is often found on abandoned farmland, meadows, open wetlands, prairies and roadsides, but also in city gardens and parks. Important staging areas during migration occur along the north shores of the Great Lakes (COSEWIC 2010).	Confirmed - Larva were confirmed within the LSA and larval foodplant (common milkweed) was observed within CUM1-1 and Hedgerow communities on the east side of the LSA.
Birds							
Acadian flycatcher	*Empidonax virescens*	END	—	END	S1B	In Ontario, the Acadian flycatcher breeds in the understory of large, mature, closed-canopy forests, swamps and forested ravines. This bird prefers forests greater than 40 ha in size, and exhibits edge sensitivity preferring the deep interior of the forest. Its nest is loosely woven and placed near the tip of branch in a small tree or shrub often, but not always, near water (Whitehead and Taylor 2002).	Low - No suitable habitat found within the Study Area. Species not observed during breeding bird surveys.

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Bank swallow	*Riparia riparia*	THR	—	THR	S4B	In Ontario, the bank swallow breeds in a variety of natural and anthropogenic habitats, including lake bluffs, stream and river banks, sand and gravel pits, and roadcuts. Nests are built in a vertical or near-vertical bank. Breeding sites are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods. Forested areas are generally avoided (Garrison and Turner 2020).	Low - Vertical bank provided by quarry face within the SSA creates potential suitable habitat for the species, though it is limited due to human disturbance. This species was not recorded breeding bird surveys.
Barn swallow	*Hirundo rustica*	THR	—	SC	S4B	In Ontario, barn swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared right-of-ways, and wetlands (COSEWIC 2011). Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown 2020).	Confirmed - Species was observed during breeding bird surveys. Both nesting and foraging habitat present within the LSA, specifially human made structures such as barns as well as grassy fields. Only foraging habitat is present within the SSA.
Bobolink	*Dolichonyx oryzivorus*	THR	—	THR	S4B	In Ontario, bobolink breeds in grasslands or graminoid dominated hayfields with tall vegetation (Gabhauer 2007). Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They have low tolerance for presence of woody vegetation and are sensitive to frequent mowing within the breeding season. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows and newly planted hayfields. Their nest is woven from grasses and forbs. It is built on the ground, in dense vegetation, usually under the cover of one or more forbs (Renfrew et al. 2020).	Moderate - Potential habitat in the multiple cultural meadow and agricultural communities within the LSA. Species was not observed during breeding bird surveys.
Chimney swift	*Chaetura pelagica*	THR	—	THR	S3B	In Ontario, chimney swift breeding habitat is varied and includes urban, suburban, rural and wooded sites. They are most commonly associated with towns and cities with large concentrations of chimneys. Preferred nesting sites are dark, sheltered spots with a vertical surface to which the bird can grip. Unused chimneys are the primary nesting and roosting structure, but other anthropogenic structures and large diameter cavity trees are also used (COSEWIC 2018).	Moderate - Potential suitable habitat within the LSA in the form of chimneys. Species was not observed during field investigations.
Common nighthawk	*Chordeiles minor*	THR	—	SC	S4B	These aerial foragers require areas with large open habitat. This includes farmland, open woodlands, clearcuts, burns, rock outcrops, alvars, bog ferns, prairies, gravel pits and gravel rooftops in cities (Sandilands 2007).	Moderate - Expansive farmland within the LSA provides potential suitable habitat for this species. Species was not observed during field investigations.
Eastern meadowlark	*Sturnella magna*	THR	—	THR	S4B,S3N	In Ontario, the eastern meadowlark breeds in pastures, hayfields, meadows and old fields. Eastern meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component (Hull 2003). They prefer well drained sites or slopes, and sites with different cover layers (Roseberry and Klimstra 1970).	Moderate - Potential habitat in the multiple cultural meadow and agricultural communities within the LSA. Species was not observed during breeding bird surveys.
Eastern whip-poor-will	*Antrostomus vociferus*	THR	—	SC	S4B	In Ontario, the whip-poor-will breeds in semi-open forests with little ground cover. Breeding habitat is dependent on forest structure rather than species composition, and is found on rock and sand barrens, open conifer plantations and post-disturbance regenerating forest. Territory size ranges from 3 to 11 ha (COSEWIC 2009). No nest is constructed and eggs are laid directly on the leaf litter (Mills 2007).	Moderate - Potential suitable habitat in forested communities within the LSA. Species was not observed during breeding bird surveys.

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Eastern wood-pewee	*Contopus virens*	SC	—	SC	S4B	The eastern wood-pewee inhabits a wide variety of wooded upland and lowland habitats but is most commonly associated with the mid-canopy of forest clearings, and edge habitat in deciduous and mixed forests. It also occurs in anthropogenic habitats that provide an open forested aspect such as parks and suburban neighborhoods. It prefers intermediate-age mature forest stands with little understory vegetation (COSEWIC 2012).	Confirmed - Species was observed during one breeding bird survey. The multiple woodland communities in the LSA that border the active quarry may provide suitable woodland edge habitat for this species.
Grasshopper sparrow (pratensis subspecies)	*Ammodramus savannarum pratensis*	SC	—	SC	S4B	In Ontario, grasshopper sparrow is found in medium to large grasslands with low herbaceous cover and few shrubs. It also uses a wide variety of agricultural fields, including cereal crops and pastures. Close-grazed pastures and limestone plains (e.g., Carden and Napanee Plains) support highest density of this bird in the province (COSEWIC 2013).	Confirmed - Species was observed during one breeeding bird survey. Suitable habitat may be present in the cultural meadows and active agricultural communities within the LSA.
Least bittern	*Ixobrychus exilis*	THR	—	SC	S4B	In Ontario, the least bittern breeds in marshes, usually greater than 5 ha, with emergent vegetation, relatively stable water levels and areas of open water. Preferred habitat has water less than 1 m deep (usually 10 – 50 cm). Nests are built in tall stands of dense emergent or woody vegetation (Woodliffe 2007). Clarity of water is important as siltation, turbidity, or excessive eutrophication hinders foraging efficiency (COSEWIC 2009).	Low - No suitable habitat found within the LSA. Species was not observed during breeding bird surveys.
Northern bobwhite	*Colinus virginianus*	END	END	END	S1	In Ontario, the northern bobwhite breeds in early successional habitats. This species requires a combination of three habitat types: woody cover, cropland and grassland. Croplands provide foraging habitat, grassland and fields are used for nesting, and dense brush provides both winter forage and year round cover. These birds nest on the ground in a shallow depression lined with grasses and other dead vegetation (Brennan et al. 2020). The distribution of native populations are restricted to southwestern Ontario (ECCC 2018).	Moderate - Potential suitable habitat present due to the combination of woodland, cropland, and cultural meadow communities present within the LSA. Species was not observed during breeding bird surveys.
Olive-sided flycatcher	*Contopus cooperi*	SC	—	SC	S4B	In Ontario, olive-sided flycatcher breeding habitat consists of natural openings in coniferous or mixed forests, including bogs, burns, riparian zones, and cutover areas. They are also found in semi-open forest stands and early successional forest when tall snags and residual live trees are present. In the boreal forest it is often associated with muskeg, bogs, fens and swamps dominated by spruce and tamarack. Open areas with tall trees or snags for perching are used for foraging (COSEWIC 2018). Nests are usually built on horizontal branches of conifers (Peck and James 1987).	Confirmed - Species observed during one breeding bird survey within the LSA.
Peregrine falcon (anatum/tundrius subspecies)	*Falco peregrinus anatum/tundrius*	SC	—	SC	S3B	In Ontario, peregrine falcon breeds in areas containing suitable nesting locations and sufficient prey resources. Such habitat includes both natural locations containing cliff faces (heights of 50 - 200 m preferred) and also anthropogenic landscapes including urban centres containing tall buildings, open pit mines and quarries, and road cuts. Peregrine falcons nest on cliff ledges and crevices and building ledges. Nests consist of a simple scrape in the substrate (COSEWIC 2017).	Moderate - The combination of natural features and anthropogenic landscapes (quarry) within the SSA and LSA provides potential suitable habitat for this species. Species was not observed during breeding bird surveys.

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Red-headed woodpecker	*Melanerpes erythrocephalus*	END	—	END	S3	In Ontario, the red-headed woodpecker breeds in open, deciduous woodlands or woodland edges and are often found in parks, cemeteries, golf courses, orchards and savannahs (Woodliffe 2007). They may also breed in forest clearings or open agricultural areas provided that large trees are available for nesting. They prefer forests with little or no understory vegetation. They are often associated with beech or oak forests, beaver ponds and swamp forests where snags are numerous. Nests are excavated in the trunks of large dead trees (Smith et. al. 2000).	Moderate - Various woodland communities with ample edge habitat within the LSA provide suitable habitat for this species. Species was not observed during breeding bird surveys.
Wood thrush	*Hylocichla mustelina*	THR	—	SC	S4B	In Ontario, wood thrush breeds in moist, deciduous hardwood or mixed stands that are often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches. This species selects nesting sites with the following characteristics: lower elevations with trees less than 16 m in height, a closed canopy cover (>70 %), a high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter (COSEWIC 2012).	Moderate - Various woodland communities within the LSA provide potential suitable habitat, though suitability is limited due to lack of dense deciduous undergrowth in these areas. Species was not observed during breeding bird surveys.
Fish							
American eel	*Anguilla rostrata*	—	END	END	S1S2	In Ontario, the American Eel is native to the Lake Ontario, St. Lawrence River and Ottawa River watersheds. Their current distribution includes lakes Huron, Erie, and Superior and their tributaries. The Ottawa River population is considered extirpated. The preferred habitat of the American eel is cool water of lakes and streams with muddy or silty substrates in water temperatures between 16 and 19°C. The American eel is a catadromous fish that lives in fresh water until sexual maturity then migrates to the Sargasso Sea to spawn (Eakins 2012; Burridge et. al. 2010).	Low - Current LSA structure presents no suitable habitat for this species.
Mammals							
Eastern red bat	*Lasiurus borealis*	* recommended by COSEWIC as END in May 2023, but not yet on Sch 1 (April 2026)	END	END	S3	The eastern red bat has an extensive range that covers much of the province of Ontario but is centralized in Southern Ontario. They are a solitary species that roosts in the terminal foliage of mature deciduous and coniferous trees typically at the edge of a clearing, often in dead leaf clusters or pine cone clusters (Dobbyn 1994; Robinson 2020). This species migrates to the south to the US each winter prior to hibernation.	Confirmed - species was confirmed through acoustic monitoring. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Eastern small-footed myotis	*Myotis leibii*	—	END	END	S2	This species is not known to roost within trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes, or rock piles, and occasionally inhabits buildings. Areas near the entrances of caves or abandoned mines may be used for hibernaculum, where the conditions are drafty with low humidity, and may be subfreezing (Humphrey 2017).	Low - Potential suitable habitat present within the SSA and LSA, though human disturbance likely limits potential hibernaculum in these areas.

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Hoary bat	*Lasiurus cinereus*	* recommended by COSEWIC as END in May 2023, but not yet on Sch 1 (April 2026)	END	END	S3	The hoary bat has an extensive range that covers much of the province of Ontario but is centralized in Southern Ontario. They are a solitary species that roosts in the terminal foliage of mature deciduous and coniferous trees typically at the edge of a clearing (Dobbyn 1994). This species migrates to the south to the US each winter prior to hibernation.	Confirmed - species was confirmed through acoustic monitoring. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Little brown myotis	*Myotis lucifugus*	END	END	END	S3	In Ontario, this species range is extensive and covers much of the province. It will roost in both natural and man-made structures. They require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas (Lacki 2007). May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used for hibernaculum, but high humidity and stable above freezing temperatures are required.	High - Myotis sp. confirmed through acoustic monitoring, however, not identified to species level. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Northern myotis	*Myotis septentrionalis*	END	END	END	S3	In Ontario, this species range is extensive and covers much of the province. It will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Caves or abandoned mines may be used for hibernaculum, but high humidity and stable above freezing temperatures are required (COSSARO 2012).	High - Myotis sp. confirmed through acoustic monitoring, however, not identified to species level. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Silver-haired bat	*Lasionycteris noctivagans*	* recommended by COSEWIC as END in May 2023, but not yet on Sch 1 (April 2026)	END	END	S3	The silver-haired bat has an extensive range that covers much of the province of Ontario. They often form small maternity colonies in hollow trees and bark crevices, and do not make use of buildings or caves (Dobbyn 1994). This species migrates to the south to the US each winter prior to hibernation.	Confirmed - species was confirmed through acoustic monitoring. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Tri-colored bat	*Perimyotis subflavus*	END	END	END	S3	In Ontario, tri-colored bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada (Poissant et. al. 2010). They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year.	High - Myotis sp. confirmed through acoustic monitoring, however, not identified to species level. Suitable habitat present in maternity roost trees and woodland habitat within the LSA.
Reptiles							
Eastern milksnake	*Lampropeltis triangulum*	SC	—	Not at Risk	S4	In Ontario, milksnake uses a wide range of habitats including prairies, pastures, hayfields, wetlands and various forest types, and is well-known in rural areas where it frequents older buildings. Proximity to water and cover enhances habitat suitability. Hibernation takes place in mammal burrows, hollow logs, gravel or soil banks, and old foundations (COSEWIC 2014).	Low - Species not observed during targetted ACO surveys, however, potential suitable habitat present within with LSA due to the agricultural, wetland, and forest communities with close proximity to water within the LSA.

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Midland painted turtle	*Chrysemys picta marginata*	SC	—	Not at Risk	S4	Painted Turtles occupy slow moving, relatively shallow and well-vegetated wetlands (e.g., swamps, marshes, ponds, fens, bogs, and oxbows) and water bodies (e.g., lakes, rivers, creeks, and streams) with abundant basking sites and organic substrate. The species is semi-tolerant of human-altered landscapes and may occasionally be found occupying urban ponds and lands subject to anthropogenic disturbance (e.g., farm ponds, impoundments, water treatment facilities) (COSEWIC 2018).	Moderate - Potential suitable aquatic habitat present within the LSA, though recent watercourse allignments may limit habitat quality.
Northern map turtle	*Graptemys geographica*	SC	—	SC	S3	In Ontario, the northern map turtle prefers large waterbodies with slow-moving currents, soft substrates, and abundant aquatic vegetation. Ideal stretches of shoreline contain suitable basking sites, such as rocks and logs. Along Lakes Erie and Ontario, this species occurs in marsh habitat and undeveloped shorelines. It is also found in small to large rivers with slow to moderate flow. Hibernation takes place in soft substrates under deep water (COSEWIC 2012).	Low - No suitable habitat found within the LSA.
Snapping turtle	*Chelydra serpentina*	SC	—	SC	S4	In Ontario, snapping turtle utilizes a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. Nesting sites consist of sand or gravel banks along waterways or roadways (COSEWIC 2008).	Moderate - Potential suitable aquatic habitat present within the LSA, though recent watercourse allignments may limit habitat quality.
Timber rattlesnake	*Crotalus horridus*	EXP	EXP	EXP	SX	The most recent Ontario record occurred in the Niagara Gorge in the 1940s. Timber rattlesnake's preferred habitat is coniferous or deciduous forests with rocky slopes and ledges (COSEWIC 2001).	Low - Current species status and habitat preferences limit likelihood of species within the LSA.
Vascular Plants							
Butternut	*Juglans cinerea*	END	END	END	S2?	In Ontario, butternut is found along stream banks, on wooded valley slopes, and in deciduous and mixed forests. It is commonly associated with beech, maple, oak and hickory (Voss and Reznicek 2012). Butternut prefers moist, fertile, well-drained soils, but can also be found in rocky limestone soils. This species is shade intolerant (Farrar 1995).	Low - Only hybrid trees were observed during field investigations.
Cucumber tree	*Magnolia acuminata*	END	END	END	S2	In Ontario, cucumber tree grows in deciduous woodlands in association with species such as black cherry, red maple, beech and white ash. It prefers moist to wet sites, with slightly acidic, sandy loam soils (Waldron 2003). It occurs only in the Niagara Region and Norfolk County.	Low - Potential suitable habitat present within the LSA, though not observed during field investigations
Deerberry	*Vaccinium stamineum*	THR	THR	THR	S1	In Ontario, deerberry inhabits open deciduous woodlands, especially oak, as well as rock barrens on both steep slopes and flat ground. It is currently found only in the Niagara Region and St. Lawrence Thousand Islands area. Deerberry grows in dry, acidic, sandy soils (NDRT 2010).	Low - Potential suitable habitat present within the LSA, though not observed during field investigations
Eastern flowering dogwood	*Cornus florida*	END	END	END	S2	In Ontario, eastern flowernig dogwood grows in the understory of dry to rich deciduous forests, especially on hillsides and riverbanks. It prefers sandy acidic soils but occasionally is found in loams, clays and organic soils (Waldron 2003). This species is restricted to the Carolinian zone of southern Ontario.	Low - Potential suitable habitat present within the LSA, though not observed during field investigations

Species at Risk Screening
Terrestrial and Aquatic Environment Existing Conditions Report
Walker South Landfill Phase 2

Species		Conservation Status				Habitat Requirements	Likelihood of Occurrence within Study Area
Common Name	Scientific Name	SARA[1]	SCA[2]	COSSARO[3]	Provincial (SRank)[4]		
Kentucky coffee-tree	*Gymnocladus dioicus*	THR	THR	THR	S2	*Only considered threatened in the following geographic areas and not classified as at risk in all other jurisdictions in Ontario: The County of Elgin, The County of Essex, The County of Lambton, The County of Middlesex, The County of Norfolk, The County of Oxford, The Municipality of Chatham-Kent. In Ontario, Kentucky coffee-tree is found in rich, mesic and floodplain forests. Populations are scattered throughout the Carolinian forest in Ontario, but are commonly found near streams, rivers, former swamps and wetlands. Kentucky coffee-tree thrives in disturbed areas, but can survive in most habitats, even difficult ones (e.g. bare or poor soils) as long as sunlight is present (Environment Canada 2014). This species prefers deep, rich soils.	Low - Potential suitable habitat present within the LSA, though not observed during field investigations
Round-leaved greenbrier (Great Lakes/Plains population)	*Smilax rotundifolia*	THR	THR	THR	S2	In Ontario, round-leaved greenbrier occurs only in the Carolinian forest region. It grows in open, moist to wet, woodlands, often on sandy soils. Disturbances that open up the canopy generally promote growth (COSEWIC 2007).	Low - Potential suitable habitat present within the LSA, though not observed during field investigations
Swamp rose-mallow	*Hibiscus moscheutos*	SC	—	SC	S3	In Ontario, swamp rose mallow is restricted to shoreline marshes associated with lakes Erie, Ontario, and St. Clair. It is most commonly found in deep-water cattail marshes and meadow marshes, but is also found in dyked wetlands, open wet woods, thickets, spoil banks, and drainage ditches where it grows on organic or clay soils. Periodic water level fluctuations are necessary to sustain swamp rose mallow (Environment Canada 2013).	Low - Preferred habitat not present within the LSA and no individuals were found during field investigations.
White wood aster	*Eurybia divaricata*	THR	—	SC	S3	In Ontario, white wood aster grows in open, dry to moist, deciduous woodlands with well-drained soils. It seems to grow along trails in forests dominated by sugar maple and American beech, with associates such as red, white, and black oak, shagbark hickory, and basswood (COSEWIC 2002).	Low - Potential suitable habitat present within the LSA, though not observed during field investigations

Notes

[1] *Species at Risk Act* (SARA), 2002. Schedule 1; Part 1 (Extirpated), Part 2 (Endangered), Part 3 (Threatened), Part 4 (Special Concern)

[2] Species Conservation Act (SCA), 2025. Protected Species in Ontario List, 2026 (O. Reg. 60/26); Table 1 (Extirpated - EXP; Endangered - END; Threatened - THR)

[3] Committee on the Status of Species at Risk in Ontario (COSSARO) https://cossaroagency.ca/species/

[4] Provincial Ranks (SRANK) are Rarity Ranks assigned to a species or ecological communities, by the Natural Heritage Information Centre (NHIC). These ranks are not legal designations. SRANKS are evaluated by NHIC on a continual basis and updated lists