Mixed Use Development 515 Erbsville Road, Waterloo, ON.

Scoped Environmental Impact Study

Submitted to:

1000507877 Ontario Inc.

Submitted by:

WSP Canada Inc.
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1 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by 2844319 Ontario Ltd. (the Proponent) to complete a Scoped Environmental Impact Study (EIS) in support of a development application at 515 Erbsville Road, Waterloo, Ontario (the Subject Property). The Subject Property is an approximately 9.97 ha parcel of vacant land west of Erbsville Road, located between existing urban residential development to the north and south. However, the planning application relates only to the east portion of the site, approximately 4.7 ha, as shown on Figure 1.

The Proponent has additional lands east of and directly across from the Subject Property, on 500 Erbsville Road; there is a concurrent application for development on that property. The Planning Act applications for 500 and 515 Erbsville Road are interrelated in terms of land use and servicing and have been considered as such, though separate Scoped EIS reports have been prepared.

Scope of work for the current EIS has been informed by an approved Terms of Reference (TOR), revised based on input from City of Waterloo, Region of Waterloo and Grand River Conservation Authority (GRCA) staff. The approved TOR is dated March 2023; it includes the approved TOR for an Hydrogeological Investigation, prepared by Stantec.

Note that WSP is working as part of an integrated project team that includes Arcadis and Stantec. Relevant technical information prepared by Arcadis and Stantec has been considered and documented herein.

1.1 Site Context

The Subject Property fronts onto Erbsville Road and, until recently, was used as a single rural residence, with one home and driveway at the east end, accessed from Erbsville Road. The house was removed in 2023. The majority of the Subject Property was a mixed plantation (removed in 2022 per permit under Regional By-law No. 98-026); additional landscaped areas / access paths, an anthropogenic wetland near Fischer Hallman Road and a central wetland / seepage area are present. Urban residential development is present to the north, east and south.

Adjacent lands to the west consist of a woodland that has natural heritage designations under the City Official Plan.

1.2 Proposed Development

The proposed development envelope will be restricted primarily to the former plantation area and residential portion of the property, in addition to the vegetated areas in Units 1, 2 and 5. The Environmentally Sensitive Policy Area (ESPA) woodland will be retained in full, with a 10m development setback.

The proposed development plan consists of residential blocks / lots, open space (park, trail and natural heritage) and an internal road with connections to existing urban residential roads to the north and south. Municipal services are also included, with stormwater management provided through a proposed SWM facility on 500 Erbsville Road.

See Section 4 for additional information.

2 STUDY APPROACH

2.1 Context and Planning Framework

The Subject Property has been planned to complete the neighbourhood by: completing and connecting existing municipal streets; extending municipal infrastructure (water, sanitary and storm); and extending pedestrian connections through trails and sidewalks. Lands to the south and north have developed as provided by the approved public policies for fully municipally serviced urban residential land uses within a planned design. The land use designations and the policy framework that guided the development of the lands to the south and north are the same as those that apply to the Subject Property. It is our understanding that at the time of the development of adjacent lands, the landowner did not wish to pursue development approvals.

At the northern property limit, White Birch Avenue and Wild Ginger Avenue terminate with a temporary road connecting the two streets to address second access limitations. At the southern property limit, Royal Fern Street terminates in a temporary cul-de-sac. Associated with the existing street terminations, temporary road and temporary turning circle there are seven lots restricted from development together with parts of lots that could be developed through the extension of existing streets and the removal of the temporary street features.

Though there has been no Planning Act application to date for the proposed development on the Subject Property, the plantation that previously occupied the majority of the proposed development envelope was removed in 2022 by the previous owner in accordance with a permit under Regional By-law No. 98-026 (Woodland Conservation Bylaw). A small portion of that plantation was retained around the central seepage area (Veg. Unit 5 per the current report).

The analysis documented in the current study has taken place based on the guidance of relevant planning policies and guidelines, including: the Provincial Planning Statement, PPS (2024) and supporting documents; *Endangered Species Act*, ESA (2007; Amended 2025); *Species at Risk Act*, *SARA* (2002); Regional Official Plan (2015); City of Waterloo Official Plan (2024); GRCA policies; and other relevant legislation and guidelines.

In addition, the following studies are of relevance:

- Columbia Hills District Implementation Plan (1996)

- Laurel Creek Final Subwatershed Management Plan – 313 and 309 (April 1996),
- 515 Erbsville Road, Waterloo, ON. Justification for Woodland Removal (WSP; 2021)
- 515 Erbsville Road, Waterloo. Plantation Evaluation (WSP; 2021)

A brief overview of key findings and recommendations is provided below.

2.1.1 Columbia Hills District Implementation Plan and Laurel Creek Final Subwatershed Management Plans 313 and 309

The Columbia Hills District Implementation Plan (CHDIP) provides guidance on the type of future developments and their extent within the district. It provides additional guidance and policy direction outside of the Official Plan. A component of the overall goals of the Plan is to preserve and enhance natural heritage features and ecological functions to promote a healthy environment, balancing the preservation of natural systems with the needs and aspirations of residents.

The information in the Columbia Hill District Implementation Plan of relevance to ecology and hydrogeology largely gets its information from, and refers to the Laurel Creek Subwatershed Management Plans 313 and 309. Some key notes of relevance to the Subject Property (and adjacent property at 500 Erbsville Road):Environmentally Sensitive Policy Area (ESPA) woodland and buffer (Subwatershed Management Plans; B6.6):

- ESPA woodland and buffer (Subwatershed Management Plans; B6.6):
  - Forested Hills ESPA is identified as Constraint Level 1.
  - No Constraint Levels are identified on 500 Erbsville Road
  - Recommendation for minimum buffer for woodlands without significant, vulnerable or rare species is minimum 7 m, or 1.5 x the dripline of each tree, whichever is larger. Significant woodland buffer size should be determined at Draft Plan of Subdivision.
- Signage:
  - 6.2.13.14. the developer shall be required to design, construct and install, at the developer’s expense, on-site signage that clearly notifies the public of the designated locations and intended functions and/or facilities of the neighbourhood park, parkettes, stormwater management ponds, Clair Creek lands, ESPA’s, Constraint Level 1 woodlands, and their buffers, and the Community Trails.

- Greenspace Links (Figure B7j):
  - None is identified on 515 Erbsville Road
  - Two linkages are identified adjacent to 500 Erbsville Road: north from the Unit 2 woodland to woodland / wetland further north (west of Old Oak Drive); and south from the southeast corner of the property along the easement to an area south of Willow Wood Drive.
- Constraint Level 2 areas:
  - Includes groundwater infiltration / recharge areas, isolated wetlands, greenspace secondary supporting areas (lower quality), greenspace secondary links (lower quality), environmental rehabilitation areas, urban green areas
  - 6.13.8.3. Development may be permitted within Environmental Constraint Level Two Areas provided that the existing (pre-development) ecological functions and processes are protected and maintained during and after construction;
- Groundwater Recharge Areas (Subwatershed Management Plans - B1.14 Recharge Areas):
  - Nearly the entire Subject Property at 515 Erbsville Road is mapped as regionally significant groundwater recharge area, coincident with the proposed “Constraint Level Two Area” shown on Figure B6.6a: Modifications/Additions to Constraint Map.
  - 500 Erbsville Road is not mapped as a locally or regionally significant groundwater recharge area
  - CHDIP Section 6.12.5. To protect and sustain any perched groundwater discharge supply to wetland/marsh areas within and adjacent to Environmental Constraint Level One Areas, grading within buffer areas will not be permitted with the exception of minor cut-and-fill operations in order to provide level community trails;
- Other Wetland Policies
  - 6.14.5. To protect wetlands within and adjacent to Environmental Constraint Areas, the developer shall undertake, prior to draft plan of subdivision submission, an investigation to confirm the existence and extent of potential perched groundwater zones which may be sustaining these wetlands. Such investigation will determine appropriate methods of maintaining this function as well as determine how development can proceed without adverse impacts to these wetlands. Such investigation shall be to the satisfaction of the City and other agencies having jurisdiction.

- Grading:
  - Grading of steep slopes of 10% or greater should be minimized to the greatest extent possible in order to protect the groundwater recharge areas and reduce the risk of potential groundwater contamination (District Plan 6.16.9)
  - Cut-and-fill operations and removal of surficial silt/clay soils are to be minimized to the greatest extent possible to maintain existing (pre-development) groundwater infiltration/recharge rates, to reduce susceptibility to potential groundwater contamination while at the same time enabling development to meet Regional and City requirements for the construction of roads, lotting and the provision of other required municipal infrastructures; (District Plan 6.16.10)
  - Cut-and-fill operations shall not be permitted immediately adjacent to Environmental Constraint Level One Areas in order to protect and maintain potential perched groundwater zones which discharge to wetlands within and adjacent to those Environmental Constraint Level One Areas; (District Plan 6.16.11)
- Monitoring Program (Subwatershed Management Plans, D1.4)
  - System-level pre-construction monitoring carried out by the City was recommended (not sure if this is happening)
  - Proponent-led monitoring must include:
    - 2 years pre-construction monitoring
    - During construction monitoring
    - After a two-year Guarantee period (post-construction monitoring), the agencies with jurisdiction should devise a plan to continue monitoring (not our scope/responsibility)

Assessment

Relevant guidance and objectives of these studies have been addressed as part of the current submission as detailed in the current EIS and other technical studies (hydrogeology, stormwater management), specifically relating to: ecological feature retention / protection; buffers and ecological restoration; maintaining ecological function and genetic diversity; maintaining hydrogeological inputs; invasive species management; consideration of linkages; natural areas signage; and implementation of an approved monitoring program.

2.2 Agency Liaison

As part of the natural environment review and assessment, agency consultation has been on-going and has included:

- **Background Information**. A search of available databases and mapping was conducted at project initiation and updated in 2025 e.g. Natural Heritage Information Centre (NHIC), Land Information Ontario (LIO), GRCA. Information related to a Species at Risk was provided by the City of Waterloo.
- **Terms of Reference (TOR)**. The scope of work was developed by WSP, based on recent EIS experience in the City (i.e., approved Terms of Reference for similar studies), input received from the City, Region and GRCA during pre-consultation and other meetings / correspondence. A TOR for the current study was submitted to the Region, City and GRCA in December 2022 and revised based on comments received. The final approved TOR is dated March 2023.
- **Site walks and key meetings**, held on the following dates:
  - **Plantation assessment**. Meetings with City and Region staff on June 29, 2021 and July 7, 2021.
  - **Pre-consultation.** Record of Pre-consultation per meeting on Dec. 5, 2024. Additional comments from GRCA (Nov. 15, 2024) and Region of Waterloo (Dec. 6, 2024).
  - **ESPA / Core Environmental Feature (CEF) delineation**. Site meeting with Region of Waterloo staff on February 8, 2022 to review the CEF woodland limit pre-flagged by WSP.
  - **Wetland delineation**. Site meeting with GRCA staff on June 6, 2024 to review wetland limits pre-flagged by WSP.
  - **Biological monitoring**. The proposed monitoring program was outlined in the TOR, and confirmed via annual monitoring reports for 2022 and 2023 submitted to agency staff. The 2024 report is in process.
  - **Policy Interpretation.** Meeting with GRCA Oct. 16, 2024 re; interpretation of wetland policy. Meeting and email correspondence with City staff Dec. 16, 2024 re; interpretation of Official Plan policies.

2.3 Natural Environment Review

The following key ecology tasks have been completed as input to this Scoped EIS in support of the proposed development:Review and integration of relevant background information.

1) Review and integration of relevant **background information** and information from WSP memos dated June 2021 and October 2021.

2) **Botanical inventory and Ecological Land Classification**. Three season botanical inventory (spring, summer, fall) from 2021-2025. Vegetation community classification per the Ecological Land Classification for Southern Ontario, ELC (Lee et al. 1998).

3) **Wetland boundary delineation**. Completed, as noted above. Recommendations for wetlands, in consideration of GRCA and other relevant policies, are included herein.

4) **ESPA / CEF delineation**. Completed, as noted above. The ESPA /CEF will be retained in full, with no development encroachment and a buffer as discussed herein.

5) **Breeding Bird Surveys**. Annual surveys (2 rounds) between late May and early July 2022-2025, using standard protocols established in the Ontario Breeding Bird Atlas (Bird Studies Canada, 2001).

6) **Spring Breeding Amphibian Surveys**. Annual surveys (three rounds of survey) between April and late June 2022-2025, following the Marsh Monitoring Program (MMP) amphibian monitoring protocol (Bird Studies Canada 2008). See Figure 5 for locations.

7) **Species at Risk (SAR) habitat and Significant Wildlife Habitat (SWH) Assessment**. Field habitat assessments were completed during all field surveys, with SAR and SWH evaluations documented in the current EIS report. These assessments have considered the Blanding's Turtle Habitat Screening Map (MNRF 2015), provided by City staff.

8) **Technical Information**. Discussion of feature-based water balance and Stormwater Management (SWM) Plan and identification of potential changes in hydrogeologic conditions and ecological impacts on natural features.

9) Assessment of **potential trail locations** - including the required north-south connection that was discussed during the meeting held in July 2021 regarding the former plantation

A comprehensive multi-year, multi-season field survey program (2022-2025) assessing terrestrial vegetation and wetland communities, amphibian use / habitat, breeding birds and other wildlife resources. Since 2022, the total field effort for surveys includes approximately 100 person hours on 32 separate dates. See Appendix A for the full chronology.

Additional methodology details are provided in appropriate report sections. Site photographs were taken during field visits; representative photos are included in Appendix B. Background and other data sources are listed in the References section of this report.

3 EXISTING CONDITIONS

3.1 Past and Present Land Use

A sequence of historical air photos covering 1930, 1946, 1955, 1990, 2006 and 2016 were reviewed (Appendix C), with the following observations:

- Land use in the local landscape changed from predominantly agricultural (with natural habitat blocks) from 1930 to urbanized starting in the 1970s.
- The CEF woodland on adjacent lands to the west has been present since at least 1930. The east limit of that feature adjacent to the Subject Property has not changed; current limits are the same as 1930.
- Prior to early 1970s, the east portion of the Subject Property (i.e., former plantation / residence location) was predominantly cropland with very little tree cover. Cropland covered the adjacent parcels to the north and south.
- The plantation is evident from 1970s onward, showing a progression of maturation but very clear evidence of planted rows of trees. The majority of the plantation (except for a narrow fringe around the central seepage area and property edges) was removed in 2022.
- The residence and associated pond / landscaping / lawn at the front (east end) of the property appears after 1970. The house was removed in 2023.
- Two wetlands are present at 515 Erbsville Road: Veg. Unit 5, a 0.04 ha naturally occurring seepage area, evident in all historic photos; and Veg. Unit 1, a 0.26 ha anthropogenic marsh that becomes evident between 2006 and 2019.

3.2 Physiography and Drainage and Soils

This section incorporates information from the Hydrogeological Investigation 500 and 515 Erbsville Road, Waterloo, ON. (Stantec Consulting Ltd.; 2025a) and observations made during WSP field surveys during the current study.

The Subject Lands are located in the physiographic region classified by Chapman and Putnam (1984, 2007) as the Waterloo Hills (Figure A.2), which is commonly referred to as the Waterloo Moraine. The Waterloo Moraine occupies a large portion of the Regional Municipality of Waterloo, with the surface of this physiographic feature consisting of sandy hills, ridges of sandy till, kames or kame moraines and intervening hollows of outwash sand and gravel, which all can be capped by glacial till. The surface topography of the Waterloo Moraine is hummocky to steeply rolling with elevations ranging from 305 m Above Mean Sea Level (AMSL) to 426 m AMSL (Karrow, 1993). As shown in Figure A.3 of the Hydrogeological Investigation (Stantec

2025a), the central portion of Site 515 represents a topographic high point for the local area, with these lands generally sloping to the northeast into Site 500.

As shown in Figure A.1 of the Hydrogeological Investigation (Stantec 2025a), Site 515 is characterized by notably sloping terrain having a topographic relief of approximately 28.5 m (slopes of up to 10%), with ground surface elevations ranging from 388.5 m AMSL in the central portion of the property and sloping eastward to an elevation of 360 m AMSL at Erbsville Road. From this central topographic high point, the property also slopes less dramatically towards the edge of the Forested Hills ESPA along the western limits of the property where elevations of 380 m AMSL are encountered. Once crossing Erbsville Road and entering Site 500, the lands continue to slope eastward but at a lower topographic relief (i.e., eight meters), ranging from an elevation of 358 m AMSL at the western property boundary of Site 500 to 349 m AMSL at the east end of the property.

3.3 Hydrogeology

3.3.1 Approach

Hydrogeological characteristics have been assessed, as described in: 500 and 515 Erbsville Road, Waterloo. Hydrogeological Investigation (Stantec; 2025a). That study addressed both properties and included the following tasks:

- Characterize hydrogeological conditions of the Subject Lands, including subsurface geology / hydrostratigraphy, seasonal groundwater table positioning and flow patterns, and soil infiltration potential.
- Assess the existing hydraulic relationship between the local groundwater system and wetlands located within the Subject Lands.
- Prepare a pre- and post-development water balance for the Subject Lands.
- Evaluate feasibility of using low impact development (LID) stormwater infiltration measures at the Subject Lands to address potential post-development groundwater recharge deficits.
- Assess whether proposed development structures and associated servicing infrastructure will intercept the groundwater table to evaluate the potential need for temporary construction dewatering and/or installation of a permanent drainage system (for long-term dewatering) and identifying what mitigation measures could be employed at the Subject Lands to minimize any potential disturbances to the groundwater flow system.
- Review the proposed land use activities for conformity with Source Water Protection requirements as stipulated in the *Clean Water Act* 2006 (i.e., evaluate potential impacts to municipal water supply).

- Identify any other potential hydrogeological constraints to the development of the Subject Lands and evaluate potential mitigation measures to alleviate these constraints.

3.3.2 Overview

Regional studies completed by the Grand River Conservation Authority (2001) indicate that groundwater flow through Aquifer 1 (AFB1/ATB2/AFB2) where the Subject Lands reside is in an eastern to northeastern direction towards Laurel Creek (Figure D.1, Appendix D of Stantec 2025a).

Regionally, upward hydraulic gradients are shown to be present beneath Site 500, with downward vertical hydraulic gradients characterizing the subsurface of Site 515 (Figure D.2, Appendix D of Stantec 2025a).

Key results from the Hydrogeological Investigation (Stantec 2025a) are as follows:

- The Subject Lands are located within a Wellhead Protection Area (WHPA-D).
- The Subject Lands are designated as a Significant Groundwater Recharge Area (SGRA).
- The Subject Lands do not occur in an area designated as a Highly Vulnerable Aquifer (HVA).
- Stantec measured water levels in monitoring wells and drive-point piezometers installed throughout the Subject Lands using manual (i.e., water level meter) and continuous (i.e., data loggers) measurement techniques, with this data being collected from January 2023 to April 2025. A summary of the manual water level measurements obtained by Stantec from the monitoring wells and drive-point piezometers is provided in Tables B.2 and B.3, respectively. Hydrographs presenting the continuous water level monitoring data is shown on Figures A.7 to A.11
- **Surficial geology**. OGS (2010) mapping indicates that most of Site 515 is covered by deposits of silty clay to clayey silt till. Ice-contact stratified deposits consisting of silty to gravelly sand, fine sand, and sandy silt, occur at ground surface from the middle portion to the northeast end of Site 515 with these deposits continuing to the central portion of Site 500. Overall, the drilling results completed as a part of the Stantec investigation mostly support the OGS interpreted spatial distribution of surficial soils that cover Site 515, except for the ice-contact deposits of AFB1, which are found to extend further west into the property.

  For Site 500, the western half of the property is shown to be covered by the ice-contact deposits (Unit 6) of AFB1, with the eastern half of the property covered by the Middle Maryhill Till (ATB2) (Unit 5d).

- **Soils**. The drilling results indicate that a 0.1 m to 1.1 m thick layer of topsoil covers Site 515, underlain by native deposits of silty to gravelly sand, fine sand, and sandy silt ranging from 0.7 m to 6.9 m in thickness from the central to northeastern limits of the property. These sandy deposits are then underlain by an approximately 1.7 m to 15.7 m thick deposit of clay-based till (ATB2). Below the Middle Maryhill Till (ATB2) are deposits associated with the Middle Moraine Stratified Sediments and Equivalents (AFB2), to an undetermined depth.

  The silty to gravelly sand, fine sand, and sandy silt deposits of AFB1 encountered beneath Site 515 extend to the northeast and end near the mid-point of Site 500. The thickness of the AFB1 deposits beneath Site 500 range from 0.4 m to 1.5 m. The Middle Maryhill Till (ATB2) continues its horizontal reach from below Site 515 and into Site 500, extending to the eastern limits of Site 500.

- **Groundwater Depth**. The silty to gravelly sand, fine sand, and sandy silt deposits of AFB1/AFB2 and the Middle Maryhill Till (ATB2) contain a perched groundwater system. On Site 515 (i.e., MECP Well 6507303), groundwater is present from 361.3 to 373.6 m AMSL, and absent from MW101-22(D), MW102-22, and MW301-24(D) (i.e., dry to 357.6 m AMSL).

  Similar to the topography at Site 515, groundwater levels demonstrate a notable drop in elevation across the property, with seasonal high groundwater elevations ranging from 383.6 m AMSL (at MW106-22) in the central portion of the property to 361.3 m AMSL (at MW103-22) at the northeastern end of the property, equating to seasonal high groundwater levels ranging from just below ground surface (at MW103-22) to 6.0 m BGS (at MW104-22) over the monitoring period. At their lowest point, groundwater levels in 2023 ranged from 1.3 m BGS (at MW103-22) to 7.0 m BGS (at MW104-22) across the property. Stantec notes that perched groundwater conditions appear to be absent in the western areas of Site 515 (Figure A.14), with MW108-22, MW109-22, and MW301-24(S/D) remaining dry throughout the monitoring period (Table B.2).

  At Site 500, seasonal high groundwater depths across the property ranged from 0.2 m (at MW02-25) to 5.2 m BGS (at MW04-25) over the monitoring period, equating to elevations ranging from 356.1 m AMSL (at MW201-25) to 345.6 m AMSL (at MW203-22). At their lowest point, groundwater levels beneath Site 500 ranged from 0.6 m BGS (at MW02-25) to 5.6 m BGS (at MW04-25).

- **Groundwater Flow.** Figure A.14 presents inferred groundwater elevation contours based on measurements obtained from the monitoring wells in April 2025. Horizontal flow through the perched groundwater system is inferred to move in an eastward to northeastward direction across the Subject Lands (from the central portion of Site 515 across 515 and Site 500). This inferred flow direction is consistent with regional flow mapping, which suggests groundwater

flow through the regional overburden aquifer is to the east and northeast, moving onward towards Laurel Creek.

There is no evidence of groundwater flow westerly from the central portion of Site 515 towards the ESPA to the west.

- **Groundwater-Surface Water Interaction.** The wet low-lying area delineated by WSP (Veg. Unit 5) and postulated to be a groundwater seepage area occurs in the east-central portion of Site 515. As shown in Figure A.13, results of groundwater monitoring indicate that this feature is sustained by groundwater inputs originating from the perched groundwater system.

- The shallow marsh community (Veg. Unit 1) appears to be mostly sustained by overland flow / surface water drainage from most of property, given that the topography slopes to this area of the property from the north, west and south. Although the perched groundwater table remained close to the substrate of this wetland over the monitoring period, vertical hydraulic gradients measured at DP-102-22 are predominantly downward, indicating that this wetland functions mainly as a groundwater recharge feature (Figure A.9).

- Ponded water present in the existing SWMF (Veg. Unit 9) immediately east of Erbsville Road may be partially reflective of the perched groundwater table. However, a drainage ditch that runs parallel to Erbsville Road appears to capture runoff from nearby impervious surfaces (e.g., Erbsville Road) and directs these flows to a catch basin located directly adjacent to Site 515, with this catch basin in turn being connected to a CSP culvert that runs from west to east beneath the road and outlets to the existing SWMF. In addition, runoff currently generated from Site 515 is also directed to this culvert and, ultimately, discharged to the SWMF (Figure A.15). Subsequently, it is reasonable to assume that surface water inputs to the SWMF are likely more important to the maintenance of this waterbody compared to potential inputs from the perched groundwater system.

- Stormwater runoff reaching the existing SWMF discharges into a man-made drainage ditch and then to a ditch inlet catch basin (DICB) and into a municipal storm sewer that, ultimately, conveys this water to the Laurel Creek Reservoir. Along this drainage ditch, a series of wetland vegetation communities have become established (Veg. Units 5, 8, and 11). Results from groundwater level measurements obtained from nearby monitoring wells suggest that the drainage ditch and associated wetland communities are positioned at least 0.5 m above the high groundwater table (up to 1.7 mbgs at the eastern limits of the property). As such, it is reasonable to conclude that the main water inputs to these wetlands is stormwater that discharges to the ditch from the existing SWMF.

- Although evidence is not currently available to suggest the presence of groundwater discharge areas / features on Site 500 (not assessed under the current Hydrogeological

Investigation), even if there is groundwater discharge occurring somewhere on Site 500, the post-development infiltration deficit projected on 515 will be eliminated through the use of LIDs (i.e., infiltration galleries and a clean water collector (CWC) system) and, as such, groundwater flow volumes from 515 to 500 will remain unchanged (i.e., pre-development flow volumes from Site 515 to 500 will remain unchanged post-development). Subsequently, any groundwater discharge features that may exist on 500 that are sustained by groundwater recharge occurring on Site 515 will be unaffected by the proposed development. See Sections 4.2 and 4.3 for additional discussion.

3.4 Environmental Designations

Vegetation Unit 1

- Anthropogenic wetland
- Regulated by the GRCA under Ontario Regulation 41/24
- Meets criteria *for* Supporting “B” Natural Features per the City OP (as Other Wetland).

Vegetation Unit 2

- Early successional meadow
- No natural heritage designations

Vegetation Unit 3

- Formerly mixed plantation established by the previous owner.
- Removed in 2022 by the previous owner per a Region Woodland Conservation Bylaw permit.
- No natural heritage designations.

Vegetation Unit 4

- Adjacent lands to the west consist of a woodland that is part of the Forested Hills ESPA.
- Designated as a Core Environmental Feature (CEF) in the in the Regional Official Plan (2015) and a Core Natural Feature (CNF) in the City of Waterloo Official Plan (2019).

Vegetation Unit 5

- Naturally occurring wetland.
- Regulated by the GRCA under Ontario Regulation 41/24
- Meets criteria for Supporting “B” Natural Features per the City OP (as Other Wetland and Environmentally Significant Discharge Area).

Additional regulated wetlands are present on lands to the west and lands east of Erbsville Road – including portions of the Sunfish Lake Laurel Creek Provincially Significant Wetland (PSW) and 'other' wetlands.

3.5 Aquatic Resources

A dug drainage ditch is present across a portion of the property. The ditch receives flows via a pipe discharge from the Region SWM facility to the west and discharges to an existing municipal storm sewer on City-owned lands immediately to the east. The City storm sewer conveys flows via pipe to a SWM facility approximately 600m downstream / north, which ultimately discharges to the Laurel Creek Reservoir.

A short section of dug ditch is present in the northwest corner of the woodland. It conveys intermittent flow to a catch basin (storm sewer) in a rear yard of the residential property on Old Oak Drive.

No fish have been recorded, and no fish habitat is present on the Subject Property.

3.6 Vegetation and Flora

3.6.1 Approach

A three-season botanical inventory and vegetation assessment was conducted on 11 dates from 2021 to 2025 (including work completed as part of the biological monitoring program), with supplemental surveys on 19 additional dates. Refer to the Field Chronology (Appendix B). The scope of field work and analyses for the current study included the following:

- Classifying, mapping and evaluating vegetation communities within the study area. Vegetation communities were classified using the Ecological Land Classification for Southern Ontario (ELC) (Lee et al. 1998).
    - Vegetation community significance was evaluated using Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario (Bakowsky 1996; NHIC website);
- Botanical inventory and preparation of a vascular plant species list (Appendix E).
    - Plant species status was evaluated using Region of Waterloo Significant Species List: Vascular Plants (Region of Waterloo 1999) for regional significance; the NHIC website for provincial rarity ranks (i.e., S-Ranks); the Species at Risk in Ontario list (MNRF; updated periodically) for provincial status designations; and the Canadian Species at Risk list (COSEWIC; updated periodically) for national status designations. Nomenclature generally follows Database of Vascular Plants of Canada, VASCAN (2024).

- The quality of a particular vegetation community can be reflected in its richness of conservative species as indicated by the Floristic Quality Index (FQI) number (Oldham et al. 1995). FQI is a measurement of a vegetation community's ecological quality based on its plant species composition. FQI is calculated by weighting the mean Coefficient of Conservatism (CC) divided by species richness. Generally, 1 – 10 is low quality, 11 – 20 is moderate, 21 – 35 is high quality, and > 35 is exceptional.
- Refer to Appendix D for additional information regarding plant species rankings and CC values.

- Review of available secondary source information.

3.6.2 Vegetation and Flora Overview

The Subject Property consists primarily of former mixed plantation, with residential / landscaped areas and two wetlands in the east portion (Veg. Units 1, 2, 3 and 5). Woodland is present on adjacent lands to the west (Veg. Unit 4; part of the ESPA).

Five primary vegetation communities were delineated, as mapped on Figure 2 and described in Section 3.5.5. None of the vegetation community types is provincially significant (per Bakowsky 1996; NHIC website).

In total, 185 vascular plant taxa were recorded, 175 identified to species. Some taxa were identified to genus (see Appendix D). Key findings of the botanical inventory are as follows:

- The majority (123 spp; 730) are native species; 30% are non-native (52 species)
- Several priority invasive plant species are present on and adjacent to the Subject Property, as discussed in Section 3.5.4.

3.6.3 Plant Species of Conservation Concern

In total, seven plant species of conservation concern (SCC) were recorded.

- Of the 175 species recorded:
  - The majority have S-ranks of S5 (Secure in the province). Thirteen species have a rank of S4 (Apparently secure), most recorded in Veg. Units 4 and 5.
  - No provincially rare (i.e., S1-S3) species were recorded
  - Five regionally rare / uncommon species were recorded:
    - Black-seed Ricegrass (*Patis racemosa*): Veg. Unit 3 (removed), Veg. Unit 4

  - Lesser Clearweed (*Pilea fontana*): Veg. Unit 4
  - Smooth-sheathed Sedge (*Carex laevivaginata*): Veg. Unit 5
  - Spreading Sedge (*Carex laxiculmis var. laxiculmis*): Veg. Unit 4
  - Virginia Stickseed (*Hackelia virginiana*): Veg. Unit 4

    Note that two additional species, Eastern Cottonwood and Black Walnut, were recorded, however neither is considered regionally rare since they are not demonstrably indigenous on the Subject Property given the land use history and urban context.

- *Coefficient of Conservatism* (CC) values range from 0 to 10, > 90% within the CC range 0 to 6 ('tolerant' to 'moderately tolerant' vegetation communities).

Nine more 'conservative' species (i.e., CC7-8) were recorded, most in Veg. Unit 4, one in Veg. Unit 5.

Refer to Appendix D for discussion of plant species rankings, including S-ranks and regionally rare species.

3.6.4 Vegetation Communities

Vegetation Unit 1: Shallow Marsh

This is an early successional *Cattail Mineral Shallow Marsh* (MAS2-1) community that, based on historic air photo review, appears to have developed as the result of anthropogenic activities after 1970 (e.g., road works, drainage changes, filling with soils from nearby development), as follows:

- The City of Waterloo constructed a sidewalk along the frontage of Erbsville Road in 2005. At that time, there was significant cut generated and it is our understanding that the City approached the previous landowner about using the excess cut to fill in the man-made pond that existed at 515 Erbsville Road.
- As part of the current process, the proponent inquired about the Ditch inlet catchbasin that exists along the frontage of the 515 Erbsville which drains the ditch on the west side of Erbsville to the wet area (assumed to be a Regional SWM facility) on the east side of Erbsville Road. It is likely that this work was undertaken at the same time as the sidewalk was constructed along 515 Erbsville Road, but this is not confirmed.

This feature is dominated by Narrow-leaved Cattail (*Typha angustifolia*) and Reed-canary Grass (*Phalaris arundinacea*), with a patch of dense European Reed (*Phragmites australis* ssp.

australis), as well as wet meadow in the transition between marsh and adjacent Cultural Meadow. Some trees and shrubs are also present in low abundance, including Red-osier Dogwood (*Cornus sericea*), Peach-leaved Willow (*Salix amygdaloides*), and Pussy Willow (*S. discolor*). Overall, the ground layer supports a diverse wetland species, including a variety of sedges such as Bebb's Sedge (*Carex bebbii*), Yellow Sedge (*C. flava*), Graceful Sedge (*C. gracillima*), Meadow Sedge (*C. granularis*), Porcupine Sedge (*C. hystericina*), Stalk-grain Sedge (*C. stipata*), and Fox Sedge (*C. vulpinoidea*), as well as grasses and forbs such as Spotted Joe-pye Weed (*Eupatorium maculatum* var. *maculatum*), Common Boneset (*Eupatorium perfoliatum*), Spotted Jewelweed (*Impatiens capensis*), Soft Rush (*Juncus effusus* var. *solutus*), Reed Canary Grass (*Phalaris arundinacea*), and Woolgrass Bulrush (*Scirpus atrovirens*).

In total, 66 plant species have been recorded (68% native), a mix of wetland species (obligate, facultative, indicator), as well as upland and/or disturbance tolerant species.

No plant Species of Conservation Concern (SCC) or high CC value species have been recorded.

Invasive species – European Reed, European Buckthorn, Purple Loosestrife

Vegetation Unit 2: Cultural Meadow

This is a narrow culturally derived area (Dry – Moist Old Field Meadow (CUM1-1)) around the shallow marsh, including areas that have been regularly or occasionally mown and used for trail access. It is comprised of early successional and disturbance tolerant forbs and grasses typical of such habitats including: Kentucky Bluegrass (*Poa pratensis*); Goldenrods (*Solidago* spp.); Orchard Grass (*Dactylis glomerata*); Queen Anne's Lace (*Daucus carota*); Canada Thistle (*Cirsium arvense*); Fuller's Teasel (*Dipsacus fullonum*); Field Horsetail (*Equisetum arvense*); Dame's Rocket (*Hesperis matronalis*); Common Plantain (*Plantago major*); Coltsfoot (*Tussilago farfara*); and Tufted Vetch (*Vicea cracca*).

In total, 32 plant species have been recorded (31% native), dominated by upland and disturbance tolerant species.

No plant SCC or high CC value species have been recorded.

Invasive species – European Reed and European Buckthorn.

Vegetation Unit 3: Mixed Plantation (removed in 2022)

The majority of the area proposed for development was formerly a Black Walnut – White Pine Mixed Plantation (CUP2-1) established by the owner in the 1970s. This plantation was removed by the former landowner in February 2022, in accordance with a Permit to Cut Trees Pursuant to Regional By-Law No. 08-026 (Type 22-24 Woodland Removal Permit issued January 28, 2022). As of summer 2025, narrow strips of plantation remain in several areas – along the north

and south property limits, adjacent to the CEF forest and around the central seepage area. Some early successional plants are also present.

As noted in previous submissions, the former plantation was distinct from the native deciduous forest (CEF) in the west portion of the property and adjacent lands. There was a clear and abrupt transition from the native forest to the plantation and these vegetation communities had very different floristic composition and ecological sensitivities.

Vegetation Unit 4: Deciduous Forest

Within the portion adjacent to the Subject Property, this a mid-aged to mature Dry-Fresh Sugar Maple – Beech Deciduous Forest (FOD5-2). The overall botanical quality / ecological sensitivity is moderate to high, with a diverse ground layer characteristic of mature deciduous forest community. The topography is rolling upland areas with low-lying areas supporting facultative wetland species. Non-native and invasive species were mostly limited to edges and along logging / access lanes.

The forest is characterized by a canopy of Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), and American Basswood (*Tilia americana*),. The understory is dominated by Sugar Maple, with White Ash, American Beech and Alternate-leaved Dogwood (*Cornus alternifolia*). The ground layer supports predominantly woodland species, with some early successional / sun-tolerant species at edges and wetland associates in low-lying areas. Common species recorded in the east portion include: Wild Sarsaparilla, Wild Ginger (*Asarum canadense*), Bluntleaf Waterleaf (*Hydropyllum canadense*), Pale Jewelweed (*Impatiens pallida*), Jack-in-the-pulpit (*Arisaema triphyllum*), Mayapple (*Podophyllum peltatum*), Christmas Fern (*Polystichum acrostichoides*), Sensitive Fern (*Onoclea sensibilis*), Enchanter's Nightshade, Hairy Solomon's Seal (*Polygonatum pubescens*), Jewelweed, Sensitive Fern (*Onoclea sensibilis*), Evergreen Woodfern (*Dryopteris intermedia*), White Bear Sedge (*Carex albursina*), Plantain-leaved Sedge (*Carex plantaginea*), Rosy Sedge (*Carex rosea*), White Trillium (*Trillium grandiflorum*), Large-flowered Bellwort (*Uvularia grandiflora*), and False Solomon's Seal (*Maianthemum racemosum* ssp. *racemosum*).

This woodland is part of the *Forested Hills* ESPA / *Core Natural Feature*.

In total, 83 plant species were recorded (81% native), a mix of upland / forest species and wetland species in the vernal pools well as upland and/or disturbance tolerant species.

The following plant SCC and/or high CC value species have been recorded:

- Black-seed Ricegrass (Reg. Rare and CC7)
- Lesser Clearweed (Reg. Rare)

- Spreading Sedge (Reg. Rare and CC7)
- Virginia Stickseed (Reg. Rare)
- White Bear Sedge (CC7)
- Plantain-leaved Sedge (CC7)
- Pale Jewelweed (CC7)
- Grove Bluegrass (*Poa alsodes*; CC7)
- Sharp-lobed Hepatica (*Hepatica acutiloba*; CC8)
- Bluntleaf Waterleaf (CC8)

Invasive species – European Buckthorn and Garlic Mustard.

Vegetation Units 5: Seepage Area

This small *Forb Organic Meadow Marsh* (MAM3-9) is associated with an area of groundwater seepage discharged on a slope and conveyed into Vegetation Unit 1 (shallow marsh near Erbsville Road). Per conditions of the Woodland Removal Permit, a 15 m buffer of plantation was retained around the seepage area.

This wetland is characterized by a remnant plantation canopy of Sugar Maple, Black Walnut, and Green Ash (*Fraxinus pennsylvanica*), a subcanopy of Black Walnut and Green Ash and an understory which supports a variety of shrub species, including Alternate-leaved Dogwood, Red-osier Dogwood, European Buckthorn, and Autumn Olive (*Elaeagnus umbellata*).

The ground layer supports woodland species, with some early successional / sun-tolerant species at the margins and wetland associates in the seepage area. Common species recorded include: Jack-in-the-pulpit, Porcupine Sedge (*Carex hystericina*), Retrorse Sedge (*C. retrorsa*), Red-osier Dogwood , Fowl Manna Grass (*Glyceria striata*), Dame's Rocket, Virginia Waterleaf (*Hydrophyllum virginianum*), Spotted Jewelweed, Sensitive Fern (*Onoclea sensibilis*), Fowl Bluegrass (*Poa palustris*), Woolgrass Bulrush, Garlic Mustard (*Alliaria petiolata*), Swamp Aster (*Symphyotrichum puniceum* var. *puniceum*), Broad-leaf Cattail (*Typha latifolia*), and Stinging Nettle (*Urtica dioica* ssp. *dioica*).

In total, 89 plant species were recorded (73 or 82% native), a mix of upland / forest species and wetland species in the vernal pools well as upland and/or disturbance tolerant species.

One plant SCC was recorded:

- Smooth-sheathed Sedge (Reg. Rare and CC8)

Invasive species – European Buckthorn, Garlic Mustard, and Purple Loosestrife.

3.6.5 Invasive Species

The following priority invasive species have been recorded by WSP during field surveys and staff from the Invasive Phragmites Control Centre (IPCC) during an assessment on July 25, 2025:

- Garlic Mustard (*Alliaria petiolata*)
  - Rare to locally abundant in Veg. Units 4 and 5
- European Buckthorn (*Rhamnus cathartica*)
  - Rare to locally frequent in Veg. Units 1, 2, 4 and 5
- European Reed (*Phragmites australis ssp australis)*
  - Locally abundant in Veg. Unit 1; present in Veg. Unit 2
- Purple Loosestrife (*Lythrum salicaria*)
  - Rare to occasional in Veg. Units 1 and 5.

Recommendations for further assessment and/or management area provided in Section 6.1.

3.7 Delineation of Wetland and CEF Limits

The CEF/ESPA forest west of the proposed development envelope was pre-staked by WSP and confirmed by Region of Waterloo staff during a site meeting on February 8, 2022.

The two wetlands (Veg. Units 1 and 5) were pre-flagged by WSP staff and confirmed by GRCA staff during a site meeting on June 6, 2024.

The woodland and wetland limits were surveyed by Stantec for use on base plans, as plotted on Figure 3 and other drawings included in the current application.

3.8 Wildlife

3.8.1 Breeding Bird Surveys

3.8.1.1 Approach

Breeding Bird Surveys

Breeding bird surveys were completed by WSP in 2022, 2023 and 2024 at four stations:

- BB1 and BB2: ESPA/CEF/CNF woodland (Veg. Unit 4)
- BB3: seepage wetland (Veg. Unit 5)
- BB4: marsh (Veg. Unit 1)

Breeding bird surveys were conducted by qualified, experienced staff under appropriate timing and weather conditions (i.e., early morning visits during breeding bird season [May 24th to July 10th]; low wind, and no precipitation). Species presence, abundance and level of breeding evidence were recorded per Ontario Breeding Bird Atlas [OBBA] protocols (Bird Studies Canada 2003). Avifaunal observations were recorded for all directions and distances from the point count stations; therefore, some individuals may have been counted more than once.

In total, 6 targeted breeding bird surveys were completed on the following dates, with supplementary breeding evidence / observations recorded during many other surveys (e.g., vegetation, amphibians etc.):

- 2022: June 2 and June 22
- 2023: May 29 and June 13
- 2024: June 4 and July 8

Avifaunal species status was evaluated using: the Region of Waterloo Significant Species List: Breeding Birds Component (1996) for regional significance; the NHIC website for provincial rarity ranks (i.e. S- Ranks); the Species at Risk in Ontario list (MECP – updated periodically) for provincial status designations; and the national Species at Risk list (COSEWIC - updated periodically) for national status designations.

Avian species of conservation concern (SCC) include: Species at Risk, Provincially rare species, regionally rare species and area-sensitive species. Refer to Appendix E for additional information.

3.8.1.2 Results

Breeding bird survey results are presented in Tables 1 - 5, which summarize the highest number (observed on a given date) and highest level of breeding evidence recorded from 2023 to 2024.

Refer to Appendix E for a list of rankings, status and breeding evidence codes.

Overview

In total, 33 potentially ‘breeding’ bird species were recorded on or immediately adjacent to the Subject Property (i.e., species that exhibited possible, probable or confirmed breeding

evidence). Five species were ‘observed’ with no breeding evidence: Great-blue Heron, Killdeer, Ring-billed Gull, Rock Pigeon and Turkey Vulture.

Breeding avifaunal species recorded during WSP field surveys are expected given the landscape matrix and site conditions: a mix of open-country, edge and generalist species in the open areas and edge habitats, some wetland associated species and woodland-associates in the ESPA.

Forested Hills ESPA Woodland (Veg. Unit 4; BB1 and BB2)

In total, 29 breeding species were recorded from 2022 to 2024, a mix of generalists / urban-tolerant species (e.g., American Goldfinch, Blue Jay, Brown-headed Cowbird, European Starling, House Sparrow, House Wren, Mourning Dove and Northern Cardinal) and woodland-associated species (e.g., Black-capped Chickadee, Downy Woodpecker, Eastern Wood-pewee, Great-crested Flycatcher, Pileated Woodpecker, Red-eyed Vireo and White-breasted Nuthatch).

In total, 5 breeding Species of Conservation Concern were recorded from 2022-2024:

- Eastern Towhee – Regionally Rare
  - Possible breeder (1 individual) in 2023 and 2024
- Eastern Wood-pewee – *Special Concern* in Ontario and Canada
  - Probable breeder (1 or 2 individuals) in 2022, 2023 and 2024
- Mourning Warbler – Regionally Rare
  - Possible breeder (1 individual) in 2023 and 2024
- Pileated Woodpecker – Regionally Rare
  - Probable breeder (1 individual) in 2022
- Red-bellied Woodpecker – Regionally Rare
  - Possible breeder (1 individual) in 2022, 2023 and 2024

Central Wetland / Seepage Area (Veg. Unit 5; BB3)

In total, 23 breeding species were recorded from 2022 to 2024, predominantly generalists / urban-tolerant species (e.g., American Crow, American Goldfinch, American Robin, Blue Jay, Brown-headed Cowbird, Common Grackle, European Starling, House Sparrow, House Wren, Indigo Bunting, Mourning Dove and Northern Cardinal) and a few woodland-associated species (e.g., Black-capped Chickadee, Downy Woodpecker and Red-eyed Vireo).

In total, one breeding *Species of Conservation Concern* was recorded from 2022-2024:

- Eastern Wood-pewee: Possible breeder (1 individual) in 2022.

  Given the limited / inconsistent use and low abundance, Eastern Wood-pewee is more likely to be nesting within the ESPA woodland, and using this small treed patch for foraging.

Anthropogenic Marsh (Veg. Unit 1, BB4)

In total, 10 breeding species were recorded from 2022 to 2024, predominantly generalists / urban-tolerant species, including some that use wetlands (e.g., Common Yellowthroat, Mallard and Red-winged Blackbird).

Species composition has varied year to year. Although some species have been recorded consistently in each year, other species have only been recorded once or in a few years (e.g., Black-capped Chickadee, Cedar Waxwing and Mallard).

No breeding *Species of Conservation Concern* were recorded from 2022-2024.

Table 1: Breeding avian species – BB1 and BB2, 515 Erbsville Road, Waterloo (2022-2024)

Common Name	SRANK	ESA Status	COSEWIC Status	SARA Status-Schedule	Schedule5	Waterloo Region Significance	Area Sensitive Birds - Ecoregion 6E7	Protected under MBCA	Highest Abundance. 2022	Highest Breeding Status. 2022	Highest Abundance. 2023	Highest Breeding Status. 2023	Highest Abundance. 2024	Highest Breeding Status. 2024	Highest Abundance. 2022-2024	Highest Breeding Status. 2022-2024
American Crow	S5								2	PROB	1	PROB	2	POSS	2	PROB
American Goldfinch	S5							x	1	POSS	1	PROB	2	POSS	2	PROB
American Robin	S5							x	1	PROB	2	PROB	2	PROB	2	PROB
Baltimore Oriole	S4B							x					1	POSS	1	POSS
Black-capped Chickadee	S5							x	2	PROB	2	PROB	1	PROB	2	PROB
Blue Jay	S5								1	PROB	1	POSS	2	PROB	2	PROB
Brown-headed Cowbird	S5								1	POSS			1	POSS	1	POSS
Cedar Waxwing	S5							x	5	POSS	3	PROB	1	PROB	5	PROB
Chipping Sparrow	S5B,S3N							x			1	POSS			1	POSS
Common Grackle	S5								1	POSS					1	POSS
Downy Woodpecker	S5							x					1	POSS	1	POSS
Eastern Kingbird	S4B							x			1	POSS			1	POSS
Eastern Towhee	S4B,S3N					W		x			1	POSS	1	POSS	1	POSS
Eastern Wood-pewee	S4B	SC	SC	SC	1			x	2	PROB	1	POSS	1	PROB	2	PROB
European Starling	SNA								4	POSS	8	PROB	3	POSS	8	PROB
Great Blue Heron	S4					W		x			2	OBS			2	OBS
Great Crested Flycatcher	S5B							x	1	PROB	1	POSS	1	POSS	1	PROB
House Sparrow	SNA								2	POSS	1	POSS			2	POSS
House Wren	S5B							x	1	POSS	1	PROB	2	PROB	2	PROB
Indigo Bunting	S5B							x	2	POSS	2	PROB	3	PROB	3	PROB
Killdeer	S4B							x			1	OBS			1	OBS
Mourning Dove	S5							x					1	PROB	1	PROB
Mourning Warbler	S5B					W		x			1	POSS	1	POSS	1	POSS
Northern Cardinal	S5							x	2	PROB	2	PROB	2	PROB	2	PROB
Northern Flicker	S5							x	1	POSS	1	PROB	1	POSS	1	PROB
Pileated Woodpecker	S5					W		x	1	PROB					1	PROB
Red-bellied Woodpecker	S5					W		x	1	POSS	1	POSS	1	POSS	1	POSS
Red-eyed Vireo	S5B							x	2	PROB	2	POSS	2	POSS	2	PROB
Red-winged Blackbird	S5								2	POSS					2	POSS

Common Name	SRANK	ESA Status	COSEWIC Status	SARA Status-Schedule	Schedule5	Waterloo Region Significance	Area Sensitive Birds - Ecoregion 6E7	Protected under MBCA	Highest Abundance. 2022	Highest Breeding Status. 2022	Highest Abundance. 2023	Highest Breeding Status. 2023	Highest Abundance. 2024	Highest Breeding Status. 2024	Highest Abundance. 2022-2024	Highest Breeding Status. 2022-2024
Ring-billed Gull	S5							x					2	OBS	2	OBS
Song Sparrow	S5							x	1	PROB	2	PROB			2	PROB
Turkey Vulture	S5B,S3N					W			3	OBS	2	OBS			3	OBS
White-breasted Nuthatch	S5							x			1	POSS			1	POSS
Totals										**22**		**25**		**22**		**33**
Breeding Totals		**1**	**1**	**1**	**1**	**4**	**0**	**33**		**21**		**22**		**21**		**29**

Table 2: Breeding avian species – BB3, 515 Erbsville Road, Waterloo (2022-2024)

Common Name	SRANK	ESA Status	COSEWIC Status	SARA Status-Schedule	Schedule5	Waterloo Region Significance	Area Sensitive Birds - Ecoregion 6E7	Protected under MBCA	Highest Abundance. 2022	Highest Breeding Status. 2022	Highest Abundance. 2023	Highest Breeding Status. 2023	Highest Abundance. 2024	Highest Breeding Status. 2024	Highest Abundance. 2022-2024	Highest Breeding Status. 2022-2024
American Crow	S5										1	POSS	1	POSS	1	POSS
American Goldfinch	S5							x	2	PROB	1	PROB	2	POSS	2	PROB
American Robin	S5							x	2	PROB	1	POSS	1	PROB	2	PROB
Baltimore Oriole	S4B							x					1	POSS	1	POSS
Black-capped Chickadee	S5							x	1	POSS	1	PROB	1	POSS	1	PROB
Blue Jay	S5								1	POSS					1	POSS
Brown-headed Cowbird	S5								1	PROB	2	POSS			2	PROB
Cedar Waxwing	S5							x	1	POSS					1	POSS
Common Grackle	S5												2	POSS	2	POSS
Downy Woodpecker	S5							x	1	POSS	1	POSS			1	POSS
Eastern Kingbird	S4B							x					1	POSS	1	POSS
Eastern Phoebe	S5B							x					1	POSS	1	POSS
Eastern Wood-pewee	S4B	SC	SC	SC	1			x	1	POSS					1	POSS
European Starling	SNA								1	POSS			1	POSS	1	POSS
House Wren	S5B							x			1	POSS			1	POSS
Indigo Bunting	S5B							x			1	POSS	1	PROB	1	PROB
Mourning Dove	S5							x	1	PROB	1	POSS	4	PROB	4	PROB
Northern Cardinal	S5							x	1	POSS	1	POSS	1	POSS	1	POSS
Northern Flicker	S5							x	2	PROB			2	PROB	2	PROB
Red-eyed Vireo	S5B							x					1	POSS	1	POSS
Red-winged Blackbird	S5								4	POSS	2	PROB	3	POSS	4	PROB
Ring-billed Gull	S5							x					3	OBS	3	OBS
Rock Pigeon	SNA												2	OBS	2	OBS
Song Sparrow	S5							x	2	POSS	2	PROB	2	PROB	2	PROB
Turkey Vulture	S5B,S3N					W			1	OBS					1	OBS
White-breasted Nuthatch	S5							x					1	POSS	1	POSS
Totals										**15**		**12**		**19**		**26**
Breeding Totals		**1**	**1**	**1**	**1**	**0**	**0**	**26**		**14**		**12**		**17**		**23**

Table 3: Breeding avian species – BB4, 515 Erbsville Road, Waterloo (2022-2024)

Common Name	SRANK	ESA Status	COSEWIC Status	SARA Status-Schedule	Schedule5	Waterloo Region Significance	Area Sensitive Birds - Ecoregion 6E7	Protected under MBCA	Highest Abundance. 2022	Highest Breeding Status. 2022	Highest Abundance. 2023	Highest Breeding Status. 2023	Highest Abundance. 2024	Highest Breeding Status. 2024	Highest Abundance. 2022-2024	Highest Breeding Status. 2022-2024
American Goldfinch	S5							x	1	POSS	1	POSS			1	POSS
Black-capped Chickadee	S5							x	1	POSS					1	POSS
Cedar Waxwing	S5							x			2	POSS			2	POSS
Common Grackle	S5												1	PROB	1	PROB
Common Yellowthroat	S5B,S3N							x			1	PROB			1	PROB
European Starling	SNA								1	PROB	4	PROB	1	POSS	4	PROB
Gray Catbird	S5B,S3N							x					1	POSS	1	POSS
Mallard	S5							x			1	POSS			1	POSS
Red-winged Blackbird	S5								8	PROB	7	POSS	8	PROB	8	PROB
Song Sparrow	S5							x	1	PROB	1	POSS	1	PROB	1	PROB
Totals										**5**		**7**		**5**		**10**
Breeding Totals		**0**	**0**	**0**	**0**	**0**	**0**	**10**		**5**		**7**		**5**		**10**

3.8.2 Amphibians

3.8.2.1 Approach

Amphibian use and breeding activity was assessed via spring amphibian breeding (calling) surveys and supplementary observations during other field work.

Spring Breeding (calling Surveys)

Spring amphibian breeding was assessed primarily using a passive three-minute auditory survey as specified by the Marsh Monitoring Program (MMP) amphibian monitoring protocol (Bird Studies Canada, 2008). Observations of species present, call levels and a count of individuals present, where applicable, were recorded on standardized field data sheets. The MMP protocol uses the following assessment approach:

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

Per MMP protocols, surveys began a half-hour after sunset on nights with suitable weather conditions and concluded near midnight. Appropriate timing for the amphibian calling surveys was confirmed by referencing other local sites with known amphibian populations, liaison with other researchers and tracking weather information for the site. In accordance with MMP guidelines, nighttime air temperatures were greater than 5°C for the first survey, 10°C for the second survey, and 17°C for the third survey.

Amphibian calling surveys were completed at four stations:

- AC1 and AC2: ESPA / CEF woodland (targeting vernal pools)
- AC 3: central wetland (Veg. Unit 5)
- AC 4: anthropogenic marsh (Veg. Unit 1)

Surveys were completed on the following dates:

- 2022: April 11, May 15 and June 21
- 2023: April 11, May 8 and June 22
- 2024: April 8, May 16 and June 18
- 2025: April 24, May 27 and June 17

For additional details regarding survey conditions, refer to the Field Chronology in Appendix A.

3.8.2.2 Amphibian Survey Results

Very limited amphibian use was documented through MMP surveys from 2022-2025. In total, two anuran species were recorded: Grey Treefrog and Spring Peeper. A summary of annual survey results is provided in Table 6, where MMP level of evidence and abundance are included.

No amphibian breeding was documented at AC2 or AC3 in any year, and very limited use (i.e., L1 / 1 individual in one year) was recorded at AC1 and AC4.

Infrequent incidental observations of one or two Northern Leopard Frog and Green Frog were recorded during other surveys.

No reptile species were recorded.

Table 4: Summary of spring breeding amphibian surveys, 2022-2025

Species	AC1 (2022)	AC1 (2023)	AC1 (2024)	AC1 (2025)	AC1 (2022-2025)	AC2 (2022)	AC2 (2023)	AC2 (2024)	AC2 (2025)	AC2 (2022-2025)	AC3 (2022)	AC3 (2023)	AC3 (2024)	AC3 (2025)	AC3 (2022-2025)	AC4 (2022)	AC4 (2023)	AC4 (2024)	AC4 (2025)	AC4 (2022-2025)
American Toad					0					0					0					0
Northern Leopard Frog					0					0					0					0
Green Frog					0					0					0					0
Chorus Frog					0					0					0					0
Gray Treefrog			L1(1)		1					0					0					0
Wood Frog					0					0					0					0
Spring Peeper					0					0					0		L1(1)			1
Species Richness	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**

3.9 Significant Wildlife Habitat

3.9.1 Evaluation

WSP has undertaken an assessment of Significant Wildlife Habitat (SWH) using the Significant Wildlife Habitat Ecoregion Criteria Schedules, Ecoregion 6E (MNRF 2015). The full assessment is included in Appendix F; key results are presented below.

SWH was confirmed for two criteria:

- Winter Deer Yarding Areas (Criterion # 14)
  - Confirmed SWH is present in the ESPA to the west
- Special Concern and Rare Wildlife Species (Criterion # 35)
  - Confirmed SWH for Eastern Wood-pewee is present in Veg. Units 4 and 5.
  - With retention of Veg. Unit 4, no impacts to the local population / SWH for this species is anticipated.

In addition, candidate (unconfirmed) SWH was identified for one criterion:

- Bat Maternity Colonies (Criterion #6)
  - Candidate (unconfirmed) SWH is present in the ESPA to the west (Veg. Unit 4), which will be retained in full. No impacts are anticipated.

Conclusion: With implementation of recommended mitigation and protection measures, no impacts to SWH are anticipated.

3.10 Species at Risk

3.10.1 Approach

We have undertaken a screening exercise to identify which SAR have reasonable potential to be present on or adjacent to the Subject Property based on known occurrences of the species and the habitats present. First, we developed a list of SAR known to occur within the vicinity of Subject Property or region from review of various sources including: NHIC data; MNRF regional SAR lists; DFO SAR mapping; Ontario Breeding Bird Atlas; Ontario Reptile and Amphibian Atlas; and personal / corporate experience. Each species' known preferred habitat was then cross-referenced against habitats identified within the Subject Property or adjacent lands, with consideration of species distribution and range, to determine the reasonable likelihood of the species being present - based on the 'key habitats used by species'. Considering findings of surveys and habitat suitability, we then

assessed 'likelihood and magnitude of impacts to species or habitats' based on the recommended development envelope discussed herein.

The full SAR habitat evaluation is included in Appendix G.

3.10.2 Results and Conclusions

For most species, **no suitable habitat is present** or only a small amount / marginally suitable habitat is present **and the likelihood of occurrence / potential for impact is low or none.**

- We are aware of no confirmed SAR records on the Subject Property based on available background information (though several SC and THR species records are known from NHIC grid 17NJ3312).
- One SAR species, Eastern Wood-pewee, was recorded by WSP during field surveys from 2022 to 2025: recorded with probable breeding evidence in Veg. Unit 4 (ESPA) in 2022, 2023 and 2024; and recorded with possible breeding evidence in Veg. Unit 5 in 2022.
    - Minimal impacts are anticipated to this species (i.e., loss of a very small amount of marginally suitable habitat – remnant plantation trees, no forest). Much larger, higher quality forest habitat to the west (within the ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.

The following species have mapped habitat or potential for use / suitable habitat on the Subject Property. For all of these, likelihood and magnitude of impacts were assessed as minimal (i.e., loss of marginal and/or small areas of habitat well-represented in the local landscape).

- **Blanding's Turtle**. In consideration of the Blanding's Turtle Habitat Screening Map (MNRF 2015), provided by City staff, we have assessed habitat suitability on the Subject Property.
- Per NHIC (Make-a-Map; accessed June 26, 2025), there are no records of Blanding's Turtle within the Subject Property: grid 17NJ3312 – covering the entire development envelope; and grid 17NJ3212 – covering ESPA lands to the west. There is a record(s) of Blanding's Turtle on lands to the northeast: grid 17NJ3313.
- No turtles of any species were recorded by WSP on any survey date from 2022 to 2025.
- Wetland habitat suitability (Veg. Unit 1) is marginal at best based on lack of open water, dominance by dense Cattail and European Reed growth and minimal standing water

(0-3 cm). Potential for use on the Subject Property is limited by existing development and roads.

Minimal impacts are anticipated (i.e., removal of a small amount (~0.2 ha) of marginally suitable anthropogenic marsh adjacent to Erbsville Road. There will be no impact to known dwelling places. Potential impacts to individuals can be mitigated with timing of removals, installation of interim exclusion fencing during construction and awareness / encounter protocols.

- **Midland Painted Turtle and Snapping Turtle:**

- Records of both species are known from the area, but no turtles were recorded by WSP on any survey date from 2022 to 2025 and we are aware of no confirmed records from background sources.

- Minimal impacts are anticipated (i.e., removal of a small amount (~0.2 ha) of anthropogenic marsh adjacent to Erbsville Road, with no open water ponded areas or suitable overwintering habitat. Potential impacts to individuals can be mitigated with timing of removals, interim exclusion fencing (ESC fencing) during construction and awareness / encounter protocols.

- **SAR bats**

    - A small amount of potentially suitable habitat (remnant plantation trees and other scattered trees) is present, but it is less likely to be used by various SAR bat species given: lack of forest habitat; lack of large diameter / mature trees; lack of trees in specific stages of decay; lack of proximity to large-bodied water; and high degree of anthropogenic disturbance. No suitable anthropogenic habitat (i.e., buildings) is present.

    - Minimal impacts are anticipated (i.e., removal of a small number of remnant plantation trees and other scattered trees). Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31).

See additional discussion in Section 5.4.

4 DEVELOPMENT PROPOSAL

4.1 Development Plan Overview

The proposed development plan consists of: residential and multi-residential (+/- 175 units in 6 blocks and individual lots in 3 future blocks); open space (park, trail and natural heritage); and an internal road with connections to existing urban residential roads to the north and south.

The proposed development limit respects the recommended 10m environmental setback from the *Forested Hills* ESPA, as discussed in Section 6.1.

In addition to the proposed residential development on the Subject Property, a SWM facility is proposed for 500 Erbsville Road. Analysis of potential indirect impacts is considered herein; additional analysis re; direct impacts are addressed under the concurrent site-specific Scoped EIS for that property (WSP 2025).

The Draft Plan and environmental management recommendations are provided on Figure 4.

4.2 Hydrogeology and Water Balance

For an overview of hydrogeology, refer to Section 3.2.2. Information provided in this section is from the Hydrogeological Investigation (Stantec 2025a) and Preliminary Stormwater Management Report (Stantec 2025b).

The pre-development water balance for the Subject Lands was evaluated using the existing surface water catchments delineated for these lands as presented in Figure 2.0 of the Preliminary Stormwater Management Report (Stantec 2025b). Infiltration factors were assigned following MECP (2003) guidance, with values ranging from 0.35 to 0.80, reflecting the influence of forested cover, meadow areas, and underlying silty to sandy soils. Using long-term climate data from the City of Kitchener-Waterloo weather station, the annual infiltration volume under pre-development conditions was estimated at 19,089 m3 (154 mm/year), while annual runoff was estimated at 26,867 m3 (217 mm/year).

Groundwater flow mapping (Hydrogeological Investigation report, Stantec, Figure A.14) indicated that approximately 16,743 m3 of annual precipitation infiltrates to a perched groundwater system that flows northeast toward Laurel Creek, while about 2,346 m3 infiltrates deeper to recharge the regional aquifer. Of the total runoff volume, 24,577 m3 is directed northeast to the municipal storm sewer system, 1,380 m3 flows toward E.S.P.A. #19, and 910 m3 discharges to adjacent urban areas.

The post-development water balance assumed unchanged soil distributions but accounted for altered topography, increased impervious cover, and the proposed SWM facility. Under these conditions, annual infiltration across the Site is projected to decrease to 13,581 m^3 (110 mm/year), while annual runoff is projected to increase significantly to 52,611 m^3 (425 mm/year). This equates to an overall infiltration deficit of 5,508 m^3 and a runoff surplus of 25,744 m^3 compared to pre-development conditions.

Groundwater mapping (Hydrogeological Investigation report, Stantec, Figure A.14) suggests that 12,522 m^3 will infiltrate into the perched groundwater system and 1,059 m^3 will recharge the regional aquifer. Runoff directed northeast to the municipal storm sewer system is estimated to increase to 50,886 m^3, representing a rise of 26,309 m^3 relative to pre-development. Runoff to E.S.P.A. #19 is expected to slightly decline to 1,267 m^3 annually (a very minor reduction), while discharge to adjacent urban areas will also reduce from 910 m^3 to 458 m^3.

The water balance assessment, as outlined in the Hydrogeological Investigation report, identified an infiltration deficit of 5,508 m^3/year. Based on total annual precipitation of 851 mm/year across the site, additional infiltration measures were evaluated to address this deficit. As highlighted in Section 3.3.1.1, rooftop areas assumed to contribute 100% of their drainage area and capture the first 25 mm of runoff, provide an annual infiltration volume of 3,975 m^3/year. Sloped landscaped areas located downstream of the seepage zone (outlined in Section 4.2.3 and Figure A.13 of the Hydrogeological Investigation report), included at 80% of their drainage area and assumed to capture approximately the first 5 mm of runoff, provide an additional annual infiltration volume of 1,689 m^3/year. The combined infiltration from rooftops and landscaped areas is 5,664 m^3/year, very slightly exceeding the deficit of 5,508 m^3/year.

Drawing C-400 of the SWM report shows preliminary infiltration areas. Note that it is acceptable to infiltrate all required volumes on Site 515 to address the combined deficit for both properties, as infiltration occurring on Site 515 ultimately flows to Site 500.

4.3 Stormwater Management

The stormwater management (SWM) strategy is summarized below. For additional details, refer to the Preliminary Stormwater Management Report (Stantec 2025b). The SWM strategy includes the following components:

- An end-of-pipe constructed wetland SWM Facility (SWM facility) that will collect minor and major flows. Minor storm events include all storm events up to and including the 5-year storm. Major storm events include all storm events above the 5-year storm including the regional storm event. The SWM facility outlets via a pipe to the existing

downstream storm sewer network east of Site 500. The SWM facility is designed with adequate extended detention / active storage volume to meet water quantity control requirements. This storm sewer eventually drains to the existing Laurelwood Basin D, with the subject site accommodated in this facility under pre-development conditions.

- Water quality provided via the permanent pool and extended detention volume in the SWM facility to provide long-term removal of total suspended solids (TSS) prior to discharging to the storm sewer system.
- A combination of clean water collection (CWC) systems and upstream infiltration galleries will infiltrate site runoff to achieve water balance targets.

4.4 Erosion and Sediment Control

Per the Functional Servicing Report (FSR; Stantec 2025c), an erosion and sediment (ESC) control strategy will be developed during detailed design and implemented during the construction process to minimize the potential for on-site erosion, off-site discharge of sediment and any associated negative environmental impacts.

The FSR includes an evaluation of erosion potential, with the conclusion that 515 Erbsville is ‘high erosion risk’ and 500 is ‘moderate to high erosion risk’. The erosion risk assessment informed the Preliminary ESC Plan per Section 6.2 of the FSR, with the following recommendations:

Prior to any grading or servicing works commencing onsite, erosion and sedimentation control measures shall be implemented as detailed on the Erosion and Sedimentation Control Plans (to be prepared during detail design). The erosion and sedimentation controls will include the following items:

- Erosion blankets on steep slopes (>3:1).
- Light and/or heavy-duty silt fencing on all site boundaries where there is potential for runoff to be discharged offsite, and around all protected wetlands and natural areas, to protect adjacent downstream lands from migration of sediment in overland flow. The location of this fencing will be adjacent to the limit of grading.
- Storm service outlets installed during servicing and roadworks construction to provide lot level dead and live storage.
- Erosion control berms/swales located in appropriate (critical) areas to divert flows to temporary sediment basins.

- A construction entrance feature (“mud-mat”) at all site entrances to minimize the offsite transport of sediment via construction vehicles.
- Swales constructed onsite will have temporary rock check dams to help attenuate flows and encourage deposition of suspended sediment where appropriate.
- All disturbed areas where construction is not expected for 30 days shall be re-vegetated with 50 mm of topsoil and hydro-seeding according to OPSS 572.
- During construction, all catchbasins are to be sealed until roads are paved to prevent sediment deposition in the catchbasins sumps and conveyance of silt to the SWM Facility.
- Sediment traps to provide settling of sediment during on-site grading operations for areas < 2 ha.
- A temporary sediment basin to provide settling of sediment during the on-site grading operations for drainage areas >2 ha.
- Flow / Runoff Diversion in areas where stabilization is not feasible, through use of interceptor swales directed to a rock-check or straw-bale dam.
- Straw bales placed to intercept localized overland flow.
- Street sweeping to remove soil accumulation caused by construction traffic.

Following completion of construction, defined as 90% house construction, and site stabilization, all erosion and sediment control measures and accumulated sediment are to be removed.

The erosion control measures shall be maintained in good repair during the entire construction period and shall only be removed as contributing drainage areas are restored and stabilized. In addition, the condition of erosion control works, their overall performance, and any repairs, replacement or modifications to the installed items shall be noted in Monitoring Reports submitted to the Grand River Conservation Authority (GRCA) and the City of Waterloo.

5 POLICY ASSESSMENT

Relevant planning legislation and policy pertinent to this study are discussed in the following sections. An overview of key policies and implications is provided, along with an

assessment of the policy as it relates to natural heritage features within and immediately adjacent to the Subject Property.

5.1 Fisheries Act

5.1.1 Overview of Key Policies

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

- causing the death of fish
- harmful alteration, disruption, or destruction (HADD) of fish habitat in your work, undertaking or activity

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

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

5.1.2 Study Assessment

No habitats subject to the *Fisheries Act* are present on the Subject Property.

Although there are no habitats subject to the *Fisheries Act* on the Subject Property, downstream of the site, the Laurel Creek Reservoir provides fish habitat. The reservoir is located approximately 1.4 km downstream and is hydrologically disconnected from the Subject Property by a series of features: a stormwater management (SWM) pond immediately east of Erbsville Road; drainage ditches on 500 Erbsville Road; and a storm sewer east of 500 Erbsville Road. Notably, at least 600 m of the storm sewer downstream of 500 Erbsville Road consists of a piped section (underground), which precludes the potential for upstream fish movement onto the Subject Property. Furthermore, no fish have

been observed at either 500 or 515 Erbsville Road. No direct impacts to waterbodies that are subject to the *Fisheries Act* (i.e., Laurel Creek Reservoir) are anticipated to occur as a result as the proposed development.

While there is some potential for indirect impacts to downstream fish habitat due to construction activities, SWM operations and discharges, changes in adjacent land use, hydrological or hydrogeological modifications, and occupancy-related effects, this potential is considered minimal. This is due to the distance from the fish habitat, the absence of a direct hydrological connection, and the capacity of the contractor to implement effective mitigation measures.

To mitigate potential indirect impacts, a suite of mitigation measures is proposed, as outlined in Section 6. These include: best management practices (BMPs) during construction; a detailed Erosion and Sediment Control (ESC) plan; a SWM strategy that includes measures to mitigate erosion; a strategy to maintain pre-development water balance; and additional measures to mitigate occupancy-related impacts.

5.1.3 Conclusion

With proper implementation of recommended mitigation and protection measures as outlined herein and in other supporting technical documents (SWM Report, Hydrogeological Investigation etc.), potential impacts to downstream fish and fish habitat in the Laurel Creek Reservoir will be effectively mitigated, ensuring compliance with the Fisheries Act. Given the absence of fish on-site, the lack of hydrological connectivity to fish-bearing waters, and the presence of piped infrastructure downstream, there is no requirement to submit a request for review to DFO.

5.2 Species at Risk Act

5.2.1 Overview of Key Policies

At a federal level, species at risk (SAR) designations for species occurring in Canada are initially determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). If approved by the federal Minister of the Environment and Climate Change, species are added to the federal List of Wildlife Species at Risk (Canada 2002).

It is prohibited to kill, harm, harass, capture, possess, collect, buy, sell, or trade individuals, as well as damage or destroy the residence of a species listed as extirpated, endangered, or threatened on Schedule 1 of the *Species at Risk Act* (SARA). Furthermore, species that are included on Schedule 1 as *Extirpated*, *Endangered* or *Threatened* are afforded protection of species-specific critical habitat on federal lands once critical habitat is defined in a recovery strategy. Any alterations to critical habitat on federal lands require a permit

under Section 73(3) of SARA. A permit may only be issued if the following conditions are met:

- all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted
- all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals
- the activity will not jeopardize the survival or recovery of the species

Although species listed as Special Concern (SC) are not afforded the same degree of legal protection, Section 65 of SARA requires that a management plan be developed that includes measures for the conservation of the species and their habitats, and it is expected that federal landowners will implement these measures on their lands.

On private or provincially-owned lands, only individuals and residences of aquatic species and migratory birds (as defined by the MBCA) that are listed as endangered (END), threatened (THR) or extirpated are protected under SARA, and critical habitat protection on non-federal lands is afforded only to aquatic species, unless ordered by the Governor in Council.

5.2.2 Study Assessment

Applicability

The project is on non-federal (private) lands and there is no order by Governor in Council; hence SARA only applies to aquatic and migratory bird species / habitat. There is potentially suitable habitat for migratory birds subject to SARA on and adjacent to the Subject Property.

Results and Conclusions

One SARA -listed migratory bird species was recorded on / adjacent to the Subject Property: Eastern Wood-pewee (*Special Concern*), as discussed above.

There are no records of other federal SAR or their habitat on the Subject Property and we are aware of no records on adjacent lands that could be indirectly impacted by the proposed development.

Recommendations

Retain habitat for Eastern Wood-pewee within the ESPA. Implement all recommended during-construction measures / best-management practices to mitigate potential impacts to

individuals and recommended SWM measures to mitigate potential impact to downstream aquatic habitat.

Implement all requirements for MBCA compliance (see Section 5.3) and ESA compliance (as described in Section 5.4).

5.3 Migratory Birds Convention Act

5.3.1 Overview of Key Policies

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

Although Environment and Climate Change Canada (ECCC) can issue permits allowing the destruction of nests for scientific purposes or to prevent damage being caused by birds, there are currently no permits available to exempt development, including maintenance and rehabilitation activities. ECCC advises that proponents schedule activities outside of the migratory bird nesting season to avoid incidental take. Proponents can apply for a damage or danger permit to remove or actively deter migratory birds from structures if it can be clearly demonstrated that the bird activity is causing damage to the structure or poses a health and safety concern for people.

5.3.2 Study Assessment

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

Twenty-eight migratory bird species subject to the MBCA were recorded with breeding evidence in on or adjacent to the Subject Property. Areas where vegetation removals are proposed provide habitat primarily for generalist and/or urban adapted, tolerant species; no unique / specialized avian habitat features will be directly impacted by the proposed development.

Compliance with the MBCA and MBR is best achieved through a due diligence approach, which identifies potential risk, based on a site-specific analysis in consideration of the

Avoidance Guidelines and Best Management Practices information on the ECCC website: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/guidelines.html

- Proponent awareness of the MBCA, potential for nesting in the area and potential for impacts to migratory birds, nests and eggs. Areas within the local landscape provide suitable nesting habitat for forest-associated and generalist species and will not be impacted by the proposed development.
- Implementation of the following avoidance and mitigation measures, where possible:
- Avoiding works (i.e., vegetation / potential nesting habitat removal) within the "regional nesting period" for this area. Refer to the ECCC website for additional information: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html
- Minimizing area of vegetation removals.
- Recommending Best Management Practices (BMPs) during construction to minimize potential indirect impacts to vegetation / potential nesting habitat outside of the direct footprint.

5.4 Endangered Species Act

5.4.1 Overview of Key Policies

SAR designations for species in Ontario are initially determined by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Minister of Environment, Conservation and Parks, species are added to the *Endangered Species Act* (ESA) which came into effect June 30, 2008 (Ontario 2007). Subsection 9(1) of the ESA 2007 prohibits the killing or harming of species identified as Endangered or Threatened in the various schedules to the Act. The ESA also provides habitat protection to all species listed as threatened or endangered. Subsection 10(1)(a) of the ESA states that "No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario (SARO) list as an endangered or threatened species". The Species at Risk Ontario (SARO) list is contained in Ontario Regulation 230/08.

General habitat protection is provided by the ESA to all threatened and endangered species listed in Ontario Regulation 230/08. Species-specific habitat protection is only afforded to those species for which a habitat regulation has been prepared and passed into law as a regulation of the ESA. The ESA has permitting, registration and other processes to allow some activities that would otherwise not be permitted under the ESA.

On June 5, 2025, the Province of Ontario passed Bill 5: Protecting Ontario by Unleashing our *Economy Act*, 2025 which included amendments to the *Endangered Species Act,* 2007 that are now in force, and the creation of the *Species Conservation Act,* 2025 which is not yet in effect.

Amendments to the ESA include the changes related to harassment of species and the definition of habitat. Those amendments have been considered in the analysis / discussion presented herein.

5.4.2 Study Assessment

Applicability

Potentially suitable and confirmed habitat for species afforded protection under the ESA (2007; as amended 2025) is present on and adjacent to the Subject Property.

Results and Conclusions

Field inventories and a SAR habitat suitability evaluation was undertaken - as discussed in Section 3.9 and Appendix G. Key findings are as follows:

- No provincially Endangered or Threatened SAR were recorded on the Subject Property during WSP field surveys
- No habitat for Blanding's Turtle that is subject to the amended ESA (2025) (i.e., 'dwelling places') is present on the Subject Property. .
    - Potential impacts to individuals can be mitigated with timing of removals, interim exclusion fencing during construction and contractor awareness / encounter protocols.
    - **Conclusion/recommendation**: No impacts to individuals or habitat subject to the amended ESA (2025) are anticipated with implementation of proposed mitigation measures.
- A small amount of potentially suitable habitat for Endangered bat species is present within the development envelope (remnant plantation trees and other scattered trees which provide potential roosting sites), but that habitat is less likely to be used given: lack of forest habitat; lack of large diameter / mature trees; lack of trees in specific stages of decay; lack of proximity to large-bodied water; and high degree of anthropogenic disturbance. Additional suitable habitat is present on adjacent lands (Veg. Unit 4).
    - **Conclusion/recommendation**: Minimal impacts are anticipated (i.e., removal of a small number of remnant plantation trees and other scattered trees). Forested

habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31).

5.5 Provincial Planning Statement

5.5.1 Overview of Key Policies

The Provincial Planning Statement (PPS; MMAH 2024) identifies natural heritage objectives and provisions related to development and site alteration in and/or adjacent to certain natural heritage features.

Per Section 4.1.4, development and site alteration shall not be permitted in

a) Significant wetlands in Ecoregions 5E, 6E and 7E.

b) Significant coastal wetlands.

Per Section 4.1.5, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted in:

a) Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E.

a) Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

c) Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

d) Significant wildlife habitat.

e) Significant areas of natural and scientific interest.

f) Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).

Per Section 4.1.6, "Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

Per Section 4.1.7, "Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements."

Per Section 4.1.8, “Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 4.1.4, 4.1.5 and 4.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.”

Per Section 4.2.2, “Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored, which may require mitigative measures and/or alternative development approaches.”

5.5.2 Study Assessment

Based on field surveys, background information and in consideration of relevant guidance documents, an assessment of PPS features and functions in relation to the proposed development, is provided below:

- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1.
  - Not applicable.
- Significant Coastal Wetlands.
  - Not applicable.
- Significant Wetlands in Ecoregions 5E, 6E and 7E1.
  - None is present on or immediately adjacent to the Subject Property. The two small wetlands present (Veg. Units 1 and 5) have been delineated and assessed herein.
- Significant Woodlands in Ecoregions 6E and 7E.
  - Significant Woodland is present in the ESPA west of the proposed development. The woodland limit was delineated, confirmed by review agencies, surveyed and included on all relevant plans. All Significant Woodland habitat has been retained in full, with a development setback of 10 m and other mitigation measures discussed herein.
  - **Conclusion**: No impacts to Significant Woodland.
- Significant Valleylands in Ecoregions 6E and 7E.

- None is present on or immediately adjacent to the Subject Property.

- Significant Wildlife Habitat.
  - An SWH evaluation was undertaken, as discussed in Section 3.8 and Appendix F.
  - **Conclusion**: No impacts to SWH are anticipated with implementation of recommended protection, mitigation and enhancement measures. The plan will retain all confirmed and potentially suitable SWH in the ESPA (i.e., winter deer yarding area, SCC habitat for Eastern Wood-pewee, potential bat maternity colony habitat). With retention of Veg. Unit 4, and enhancements via installation of a naturalized buffer, no impacts to the local population of Eastern Wood-pewee or SWH for this species is anticipated.

- Areas of Natural and Scientific Interest (ANSI).
  - No ANSI's are present on the Subject Property or adjacent lands.

- Fish Habitat.
  - No fish habitat subject to the *Fisheries Act* is present on the Subject Property. Downstream fish habitat (i.e., in Laurel Creek Reservoir) is separated from the Subject Property by a SWM pond, dug ditches and municipal storm sewer.
  - **Conclusion**: No impacts to fish habitat are anticipated.

- Habitat of Endangered and Threatened Species.
  - No confirmed Endangered or Threatened species habitat is present on the Subject Property. .
  - Removal of a small amount of potentially suitable habitat for Endangered bat species within the development envelope (remnant plantation trees and other scattered trees) will not result in a contravention to the ESA since much larger, higher quality habitat will be retained in the ESPA. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period.

- Sensitive Surface Water Features and Sensitive Ground Water Features
  - No sensitive surface water features are present on or adjacent to the Subject Property

- One sensitive ground water feature is present: Veg. Unit 5. This provides a function of conveyance of water to downstream features on lands east of Fischer Hallman Road; however, none of those downstream features (SWM facility, dug drainage ditch and small anthropogenic wetlands) is sensitive per the PPS definition. Ultimately, water is conveyed to Laurel Creek via the municipal storm sewer system.
  - Function will be maintained via the recommended SWM strategy discussed herein.
  - Per PPS Policy 4.2.2, development is restricted, not prohibited, and through the City Official Plan policies, it is restricted in such a way that the function of the discharge area needs to be maintained; by maintaining the function, it is 'protected' per the PPS.

5.6 Waterloo Regional Official Plan

As of January 1, 2025, the Regional Official Plan (ROP) became an Official Plan of each of the area municipalities. This means that until the policies in the ROP are repealed or amended, they will continue to apply and be the responsibility of each Area Municipality to enforce.

As of January 1, 2025, changes to Ontario's land use planning framework under Bill 23 (the *More Homes Built Faster Act*, 2022) came in effect for the Regional Municipality of Waterloo. As a result, certain land-use planning responsibilities were transferred from the Region to the area municipalities - the cities and townships within Waterloo Region.

ROP policies and designations as they existed on January 1, 2025 are discussed in Section 5.7.

5.7 City of Waterloo Official Plan

As noted, the Region of Waterloo became an upper-tier municipality without planning responsibilities on January 1, 2025. At that time, the Province of Ontario shifted most regional land use planning responsibilities to the lower-tier municipalities, including the City of Waterloo. Until the City updates its Official Plan and repeals the Region's Official Plan, the City will be responsible for enforcing both the Regional and City Official Plans within the geographic limits of the City of Waterloo.

5.7.1 Overview of Key Policies

The City of Waterloo Official Plan (Office Consolidation 2024) includes a Natural Heritage System consisting of Landscape Level Systems, Core Natural Features (CNFs),

Supporting Natural Heritage Features (SNHFs), fish habitat, Restoration Areas and Linkages.

Schedule A4 (Natural System) identifies natural heritage features, some of which are present on or adjacent to the Subject Property – as discussed below.

5.7.2 Study Assessment

Policy 8.2.3. Landscape Level Systems:

- A portion of the Laurel Creek Headwaters ESL is present on lands northwest of the Subject Property (approximately 475 m from the ESPA / Significant Woodland limit as discussed below).
- No Significant Valleys are present
- A Regional Recharge Area is present on lands ~175-200m southwest / west of the Subject Property within ESPA 19. However, that area does not receive any groundwater inputs from the Subject Property; hence, no change to the Regional Recharge Area function is anticipated.

Policy 8.2.4. Core Environmental Features (CEFs):

a) Significant Habitat of Endangered or Threatened Species

  - See discussion in Section 3.9 and Section 5.4. None is present within the proposed development envelope.

b) Provincially Significant Wetlands

  - None is present.

c) Environmentally Sensitive Policy Areas

  - The Forested Hills ESPA is present on lands west of the development envelope. The limit of the ESPA adjacent to the Subject Property was delineated through the current study; it will be retained in full, with a 10m development setback and naturalized buffer.

d) Regionally Significant Woodlands

  - Significant woodland is present on lands west of the development envelope, coincident with the ESPA limit. It will be retained in full, with a 10m development setback and naturalized buffer.

e) Environmentally Significant Valley Features

- None is present on or adjacent to the Subject Property.

Fish Habitat

- None is present on or adjacent to the Subject Property and no downstream impacts are anticipated.

Policy 8.2.5. Supporting Environmental Features (SEFs):

Supporting "A" Natural Features:

a) Locally Significant Wetlands

- None is present; neither wetland meets the minimum size criterion. The naturally occurring wetland (Veg. Unit 5) is 0.04 ha. The anthropogenic wetland (Veg. Unit 1) is 0.26 ha.

b) Locally Significant Woodlands

- None is present. One woodland community is present on adjacent lands to the west: Veg. Unit 4. It is a Regionally Significant Woodland.

c) Significant Wildlife Habitat

- Present in Veg. Units 4 and 5, as discussed in Section 3.8 and Section 5.5.2.
- No impact to SWH with retention of the ESPA/ Significant Woodland

d) Perennial Watercourses.

- None is present

Supporting "B" Natural Features:

a) Intermittent Watercourses

- None is present

b) Other Wetlands

- Two 'other wetlands' are present: Veg. Unit 1 and Veg. Unit 5.

c) Other Woodlands

- None is present

d) Environmentally Significant Discharge Areas and Environmentally Significant Recharge Areas.

- As noted above, there will be no impact to the Regional Recharge Area on lands southwest / west of the Subject Property. No other Environmentally Significant Recharge Areas are present on the Subject Property.
- The Veg. Unit 5 seepage area is an Environmentally Significant Discharge Area. Function will be maintained via the SWM strategy and sedge transplant strategy.
- The pre-development infiltration / groundwater recharge function provided by the Subject Property will be maintained under the post-development condition, with the recommended SWM strategy which includes LIDs.

Policy 8.2.6. Restoration Areas

No areas appropriate for restoration are present on the Subject Property given the urban context (developed residential areas to the north and south) and suitability for infill / residential development.

Policy 8.2.7. Linkages

No areas that exist as, or provide opportunity for, natural linkages are present across the Subject Property given the urban context (developed residential areas to the north and south) and lack of contiguous natural vegetation and presence of a barrier at Erbsville Road.

5.7.3 Policy Compliance

Landscape Level Features

In accordance with relevant policies of Policy 8.2.3, no development or site alteration is proposed within the Laurel Creek Headwaters ESL. No impacts to the Regional recharge area are anticipated.

Core Natural Features

In accordance with relevant policies of Policy 8.2.4, no development or site alteration is proposed within the Forested Hills ESPA, a “Supporting A Natural Feature” (Core Natural Feature / Significant Woodland / Significant Wildlife Habitat). Development on adjacent lands will not result in adverse impacts to that feature or its ecological function, with implementation of recommended mitigation measures, including establishment of a 10m naturalized buffer.

Supporting Natural Features

Veg. Unit 1

The Veg. Unit 1 Other Wetland does not sustain any Core Natural Feature, any Supporting "A" Natural Feature or any other Supporting "B" Natural Feature. Veg. Unit 1 functions to provide habitat for a common wetland vegetation community type and common suite of species.

In accordance with Policy 8.2.5(19), the Veg. Unit 1 Other Wetland can be developed / altered since it does not have any of the attributes listed under (a) to (f).

Veg. Unit 5

The Veg. Unit 5 Other Wetland does not sustain any Core Natural Feature or any Supporting "A" Natural Feature (since SWH for Eastern Wood-pewee will be maintained in the ESPA). Veg. Unit 5 functions to provide habitat for a regionally significant species (Smooth-sheathed Sedge [Carex laevivaginata]) and to convey water to downstream areas (SWM facility east of Erbsville Road; ditch and 'other wetlands' on 500 Erbsville Road).

In accordance with Policy 8.2.5(18) and Policy 8.2.5(19), the Veg. Unit 5 Other Wetland can be modified or developed / altered since it does not have any of listed attributes under (a)(c)(d)(e) or (f). In accordance with Policy 8.2.5(19)(b), the ecological functions will be maintained via the proposed SWM strategy (conveying water to downstream areas), rare plant salvage strategy (maintaining this species) and naturalized SWM pond / buffer plantings.

Per Policy 8.2.5(21), the Environmentally Significant Discharge Area associated with Veg. Unit 5 does not support Core Natural Features or Supporting A Natural Features.

5.8 GRCA Policies

5.8.1 Overview of Key Policies

Per Section 28 of the *Conservation Authorities Act*, R.S.O. 1990, GRCA has the responsibility to regulate activities in hazardous lands, wetlands, or river or stream valleys. Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits is a regulation issued under the *Conservation Authorities Act* that provides a mechanism for GRCA to issue permits for development within areas regulated under Section 28 of the *Conservation Authorities Act.*

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

- An authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority:
  - The activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;
  - the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; and
  - Any other requirements that may be prescribed by the regulations are met.

5.8.2 Study Assessment

Three regulated wetlands are present:

- Veg. Unit 1, an 0.04 ha anthropogenic wetland; and
- Veg. Unit 5, an 0.26 ha naturally-occurring wetland.

No other regulated areas are present (e.g., watercourses, valleys…).

In accordance with Policy 8.4.4 and Policy 8.4.5 of the Policies for the Administration of Prohibited Activities, Exemptions and Permits Regulation, Ontario Regulation 41/24 (GRCA; May 24, 2024), Ontario Regulation 41/24, both wetlands are proposed for removal to facilitate the development plan based on the following:

- Neither wetland is within a floodplain or watercourse
- No adverse impacts related to flooding or erosion are anticipated with the proposed SWM strategy.
- Potential impacts related to unstable soils will be mitigated with an ESC Plan to be finalized at construction.

Further, the water balance assessment completed by Stantec in support of the current development proposal demonstrates that there will be no loss of hydrogeological (groundwater) and/or hydrological (surface water) functions of the on-site (i.e., the pre-development functions of the wetlands will not be adversely impacted under the post-development condition).

6 IMPACTS AND MITIGATION

6.1 Mitigation and Protection Measures

Recommended mitigation and protection measures are outlined below, and shown on Figure 4.

1) Retain the Forested Hills ESPA Significant Woodland with a Development Setback

   a) Retain the ESPA/ CNF/ Significant Woodland in full. This will also retain Confirmed SWH (for Eastern Wood-pewee and winter deer yarding) and Candidate SWH (for bat maternity colonies)
   b) Implement a Development Limit at the recommended 10m setback from the ESPA/ CNF limit, as confirmed through the current study.

These limits are shown on all relevant plans and drawings included in the current submission.

2) Buffer Enhancement Plan

Prepare a buffer enhancement plan that includes herbaceous seeding and native species plantings, as well as restricted access (fencing) and sensitive areas signage. The buffer planting plan is intended to protect the edge of the woodland and eventually to become a functional part of the natural features.

Refer to the Ecological Enhancement Plan - Drawings L-0, L-100, L-400, L-410 and L-500 of the Arborist Report (WSP 2025) for details.

3) Stormwater Management Strategy and Water Balance

Implement the Preliminary SWM Strategy (Stantec 2025), and relevant updates and refinements at detailed design. This will maintain hydrogeological (groundwater) inputs to receiving areas (i.e., water balance), treat runoff and mitigate potential erosion impacts in downstream and/or receiving areas.

4) Aquatic Habitat

While there is some potential for indirect impacts to downstream fish habitat due to construction activities, SWM operation and discharge, changes in adjacent land use, hydrological or hydrogeological modifications, and occupancy-related effects, this potential is considered minimal. This is due to the distance from the fish habitat, the absence of a direct hydrological connection, and the capacity of the contractor to implement effective mitigation measures.

To mitigate potential indirect impacts, the other mitigation measures proposed herein will be implemented (e.g., BMPs, ESC measures, SWM strategy).

5) Smooth-sheathed Sedge Transplant Strategy

To maintain the Regionally Rare Smooth-sheathed Sedge, a transplant strategy has been prepared. It is proposed to transplant sedges from Veg. Unit 5 to suitable habitat in the adjacent Forested Hills ESPA. For details, refer to Appendix H.

6) Occupancy-Related Mitigation Measures

Implement the following measures to mitigate potential impacts of occupancy-related activities:

a) **Permanent Fencing** (e.g., chain link) at the development limit to limit human access and minimize disturbance to retained natural areas.

b) **Stewardship Measures**

- Sensitive Features Signage at the Development Limit / natural area interface. Refer to Arborist Report Drawing L-500.
- Ecological Stewardship Brochure. To be prepared at detailed design.

7) Vegetation Protection Measures

Implement protection measures for retained vegetation, including fencing at grading limits and other measures identified through the Arborist Report (WSP 2025).

8) Timing of Vegetation Removals and Grading

Undertake vegetation removals and grading at appropriate times to mitigate potential impacts to nesting migratory birds and SAR bats, as follows:

a) MBCA: all vegetation removal to occur outside the ‘regional nesting period’ for this area (i.e., approximately early September to April).

b) SAR bats: removal of hazard trees and trees outside of the ESPA to occur between December 1 and March 14.

Note that grading may be undertaken outside of recommended timing windows if areas have been isolated by exclusion fencing prior to grading.

9) Invasive Species

10) WSP to continue to document priority invasive species presence during annual biological monitoring.

Undertake invasive species control via: 1) removal of invasives within the development envelope and areas proposed for enhancement, with proper disposal / treatment; and 2) removal / treatment of Garlic Mustard and Common Buckthorn within the east edge of Veg. Unit 4 as per Drawing L-400 (WSP 2025). It is important to note that, given existing invasive species abundance and landscape context, eradication may not be possible.

11) Erosion and Sediment Control

Implement an ESC Plan per recommendations of the preliminary ESC plan in the Functional Servicing Report (Stantec 2025c; to be finalized at detailed design.

The ESC fencing will also act as wildlife exclusion fencing during construction.

12) Best Management Practices during construction

Implement the following additional BMPs:

a) Contractor **awareness training** and **encounter response protocols**. To be prepared at detailed design.

b) **Spills Management Plan,** as required based on construction or Site Plan requirements. Refer to recommendations in Section 6.5 of the Hydrogeological Investigation (Stantec 2025a).

c) Follow **guidelines for heavy equipment use** to reduce potential for damage to retained natural areas (mechanical damage to trees, soils compaction, etc.).

d) Follow recommended measures in the Clean Equipment Protocol for Industry (Holloran 2013), as applicable.

13) Monitoring

Continue to undertake biological monitoring as discussed in Section 7, and other monitoring as recommended in other technical reports submitted with the current application.

6.1.1 Pre-Grading

The following measures are to be prepared, confirmed / finalized and installed prior to any site grading / construction, as applicable:

1) Finalize the SWM strategy, including SWM planting plan, outlet design and confirmation of recommendations and conclusions

2) Finalize the ESC Plan and implement any required measures (e.g., fencing at grading limits)

3) Establish the Grading Limit / Vegetation Protection Limit, with ESC / tree protection fencing (post and paige wire, with ESC fabric). Note that this will also function as temporary wildlife exclusion fencing. Maintain fencing in good condition throughout construction.

4) Finalize the buffer enhancement plan, including design of 'Sensitive Natural Areas' Signage. See Drawings L-500 for specifications (WSP 2025).

5) Prepare a contractor awareness / wildlife encounter training manual.

6) Prepare an ecological stewardship brochure.

7) Prepare a spills management plan or equivalent; retain on site throughout construction.

8) Follow guidelines for heavy equipment use and applicable measures in the Clean Equipment Protocol for Industry (Holloran 2013).

9) Document results of 2024 and 2025 pre-construction biological monitoring in reports submitted to the City and GRCA.

10) Undertake sedge transplant as documented in Appendix H.

6.1.2 During-Construction

The following measures are to be installed / implemented throughout the construction period:

1) Regularly inspect and maintain ESC / Vegetation Protection fencing; immediately implement any needed repairs.

2) Undertake vegetation removals within recommended timing windows; dispose of any invasive species appropriately.

3) Implement all applicable ESC measures.

4) Implement / install approved SWM measures, including any interim SWM controls.

5) Undertake grading within defined grading limits; do not store materials / equipment / fill, flush or re-fuel, or wash equipment beyond the ESC / tree protection fencing.

6) Follow guidelines for heavy equipment use and applicable measures in the Clean Equipment Protocol for Industry (Holloran 2013).

7) Implement / install Buffer Enhancement Plan elements.

8) Follow all relevant Best Management Practices.

9) Undertake during-construction monitoring, including additional monitoring of sedge transplants. Document in annual reports submitted to the City and GRCA.

6.1.3 Post-Construction

The following measures are to be installed / implemented post-construction:

1) Remove ESC / Vegetation Protection fencing once construction is complete and the site has been confirmed to be stabilized.

2) Install permanent chain link fencing at the development limit.

3) Install Sensitive Natural Areas signage at the development limit.

4) Inspect buffer plantings; address any deficiencies.

5) Remove garbage and construction debris within adjacent natural area or buffer.

6) Undertake during-construction monitoring, including additional monitoring of sedge transplants. Document in annual reports submitted to the City and GRCA.

6.2 Impact Assessment

This section reviews potential impacts or condition changes to natural environment features on and adjacent to the Subject Property, on the basis of direct activities (e.g., construction activities such as clearing and grading) or indirect activities (e.g., occupancy activities such as dumping of waste material and uncontrolled access).

As of summer 2025, the Subject Property is comprised former plantation areas (mulched to prevent erosion), wetlands and former residential area / paved areas, with scattered trees and perimeter trees. No buildings or other structures are present.

The proposed development envelope is the entirety of the Subject Property. The Forested Hills ESPA and associated 10m buffer will be retained, thereby avoiding direct impacts to

that area. Potential for indirect impacts will be addressed via mitigation measures listed in Section 6.1.

The proposed development includes residential and multi-residential blocks, with associated parking, amenity areas and parks, roads and required services (storm sewer, sanitary sewer, water supply).

In Table 5, each potential impact factor is reviewed in terms of anticipated and residual effects, as well as proposed mitigation measures. The identified mitigation measures are to be incorporated with appropriate wording on construction drawings and detailed grading plans prior to the initiation of works on site.

With the implementation of recommended mitigation measures, potential impacts to retained natural heritage features adjacent to the Subject Property will be effectively mitigated.

Table 5. Impact Assessment and Recommended Mitigation Measures

Feature Significance and Sensitivity	Natural Environment Impacts	Recommended Mitigation Measures	Residual Effects
Vegetation and Flora			
Development Envelope (Subject Property) **Vegetation.** The development envelope area consists primarily of former plantation, with one natural wetland (Veg. Unit 5) and cultural vegetation (anthropogenic wetland [Veg. Unit 1], meadow and individual trees / tree clusters). **Designated Areas**. Veg. Unit 5 – *Supporting B Natural Feature* (*Other Wetland*) **Plant Species at Risk**: None **Species of Conservation Concern:** One Regionally Rare Species (Smooth-sheathed Sedge) in Veg. Unit 5 **Flora significance and sensitivity**: Low overall, higher in Veg. Unit 5 due to the Regionally Rare Sedge **Lands Adjacent to Subject Property** **Designated Areas.** CNF / Significant Woodland (Forested Hills ESPA) **SAR and SCC:** ▪ No SAR recorded ▪ Regionally significant and/or high CC value species: Black-seed Ricegrass; Lesser Clearweed; Spreading Sedge; Virginia Stickseed; White Bear Sedge; Plantain-leaved Sedge; Pale Jewelweed; Grove Bluegrass; Sharp-lobed Hepatica; Bluntleaf Waterleaf **Vegetation significance and sensitivity:** moderate to high, with good native species representation and diversity	**Direct Impacts** **Vegetation and Flora Removals.** Vegetation removal is restricted primarily to small cultural habitats, with a very small amount of naturally-occurring wetland (~0.04 ha). Wetland habitat function / attributes will be maintained with the sedge transplant strategy and SWM pond plantings / enhancement plan on 500 Erbsville Road. **Indirect Impacts** There is potential for indirect impacts to vegetation in the adjacent ESPA as the result of construction, changes in adjacent land use, changes to hydrology and occupancy related activities. **Construction-related Impacts (short-term),** including: damage to vegetation outside the work zone; sedimentation; spills of contaminants/ fuels; root pruning; damage to limbs; soil compaction; short-term impacts related to dewatering. **Surface Water** quality impacts to sensitive areas (long-term). Potential for increased sedimentation / erosion, contamination and salt loading. **Hydrology**. Potential changes to the hydrological regime in sensitive natural areas (particularly wetland) resulting from increases in impervious surfaces and reduction of run-off inputs. **Hydrogeology.** Potential impacts to the groundwater regime (decreased recharge/infiltration) and subsequent impacts to sensitive natural areas (particularly wetland). **Occupancy-related Impacts**, including: woodland edge effects (e.g. invasive species proliferation); trail creation; vandalism; refuse/vegetation dumping; water quality effects related to residential uses (i.e. salt, pesticides). Note that there is evidence of recreational use of the ESPA, and occupancy-related impacts of the former landowner (i.e., trails, tree removals).	**Direct Impacts** to be mitigated by: Buffer enhancements adjacent to the ESPA to compensate for removals of cultural vegetation and implementation of the sedge transplant strategy to maintain present of the regionally rare species in the local landscape. **Indirect Impacts** to be mitigated by: ▪ **During-construction BMPs**: ESC Plan; Contractor awareness training and encounter response protocols; Spills Management Plan, as required based on construction or Site Plan requirements; Follow guidelines for heavy equipment use; Follow the Clean Equipment Protocol for Industry ▪ Install **temporary vegetation protection fencing** prior to any site grading to delineate work areas and prevent direct damage to adjacent vegetation (i.e., mechanical damage, root damage, soil compaction). Retain fencing until construction is complete. ▪ **Development Setback.** ESPA woodland + 10 m ▪ **Buffer Management**. Implement the buffer planting plan ▪ **Permanent Fencing.** Installed between the development and retained ESPA woodland See Figure 4. ▪ **Invasive species management.** To be undertaken in 2025 as discussed herein. See Figure 4. As noted, given existing abundance and landscape context, eradication may not be possible. ▪ **Stewardship.** An integrated stewardship approach is recommended, including: sensitive areas signage at the development limit; and provision of a stewardship brochure ▪ **Hydrogeology and Hydrology.** Surface water and groundwater inputs to downstream fish habitat subject to the *Fisheries Act* (Laurel Creek Reservoir) will be maintained post-development. ▪ **Surface Water quality** (short term and long-term). Mitigated by: BMPs during construction; development setbacks and fencing / restricted access (to reduce potential for direct impact / contamination); stewardship; ESC fencing installed prior to site grading; Spills Response Plan; risk management plan to mitigate potential chloride impacts; and SWM strategy (recharge measures, ESC measures, water balance and maintenance of surface and ground water inputs). **Monitoring**. See Section 7; includes vegetation plot monitoring, buffer monitoring and sedge transplant monitoring.	Residual impacts to vegetation in the retained natural area adjacent to the Subject Property (Forested Hills ESPA) are not anticipated, with proper implementation of recommended mitigation and protection measures. Specifically: ▪ Residual impacts from construction are not anticipated, with implementation of recommended vegetation protection fencing, ESC fencing, spills management plan and other BMPs. ▪ ESPA woodland will be retained in full and protected with a development setback and enhanced buffer. ▪ The recommended setback will provide good dripline and root zone protection. This setback, coupled with buffer zone management measures, will enhance botanical / vegetation diversity and help to maintain or improve edge integrity by establishing a thicker, more diverse edge zone. ▪ Permanent fencing and stewardship measures will help to reduce secondary effects on woodland integrity following development and occupancy. ▪ Residual long-term effects to hydrogeology and surface water quality in offsite wetlands are not anticipated, considering: ▪ There will be no direct disturbance to any offisite / retained wetlands. ▪ Hydrogeological inputs to natural heritage features will be provided via the proposed post-development infiltration strategy. ▪ An enhanced buffer will be established, providing improved nutrient filtering ▪ Long-term impacts to groundwater quality are not anticipated as no post-development land uses are proposed that would pose a threat to groundwater quality.

Feature Significance and Sensitivity	Natural Environment Impacts	Recommended Mitigation Measures	Residual Effects
Wildlife			
Development Envelope (Subject Property) **Habitat.** Predominantly cleared area (former plantation), with a small amount of cultural meadow, wetland and anthropogenic areas which provide limited foraging and movement opportunity for common, disturbance-tolerant wildlife. Very limited amphibian use and no reptile use was documented through extensive field surveys. Limited movement opportunities for sensitive species due to the lack of natural cover, major roads and urban development. **Wildlife SAR and SCC**: Very limited use by one *Special Concern* bird (Eastern Wood-pewee) in Veg. Unit 5, but likely associated with the larger ESPA woodland where it was recorded regularly. No SCC were recorded across most of the Subject Property. **Significance and sensitivity**: Low overall. Predominantly small tolerant anthropogenic or culturally influenced habitats on a site with a long history of anthropogenic use. **Lands Adjacent to Development Envelope** **Habitat**. Large contiguous woodland with low lying areas / vernal pools in the ESPA. Supports habitat for woodland-associated species and opportunities for movement of less tolerant species. **Wildlife SAR, SCC and SWH:** Habitat for: SAR (Eastern Wood-pewee); potential SAR habitat (bat roosting); regionally significant and area-sensitive bird species; candidate and confirmed SWH. **Significance and sensitivity**: High overall. Part of a larger contiguous woodland that provides habitat for many provincially significant amphibian, bird and plant species..	**Direct impacts** **Habitat removals.** Loss of wildlife habitat is restricted to anthropogenic habitat (cultural meadow, cleared areas) and a small amount of wetland habitat which is widespread / abundant in the local landscape. No direct impact to unique or sensitive wildlife habitats or impact to their ecological function. No impact to defined / naturally vegetated movement areas (none is present). No impact to confirmed Endangered or Threatened SAR habitat. Removal of a very small amount of potentially suitable bat roosting habitat (unconfirmed), but much larger, higher quality habitat will be retained in the ESPA. **Indirect Impacts** There is potential for indirect impacts to wildlife habitat on adjacent lands as a result of construction, changes to hydrology and occupancy-related activities. However, this is an urban area with a long history of anthropogenic land uses and indirect impacts are likely present already (noise, lighting, recreational use, exotic / invasive species, pet predation). **Construction-related impacts**. As above; also, potential impacts to wildlife entering construction areas. **Surface Water quality impacts to offsite wetland habitats (long-term).** As above. Hydrology. As above. **Movement opportunities.** No impact to offsite movement areas. **Occupancy-related impacts**. As noted above, with additional wildlife-specific concerns: pet predation, increased noise / light disturbance.	**Habitat for wildlife SAR, SCC and SWH**. Retain all unique, sensitive and specialized wildlife habitat within the ESPA including: confirmed / potential SAR habitat; area-sensitive habitat; potential herpetofauna breeding / foraging / nesting / overwintering / movement habitat; confirmed / potential SWH. Implement other mitigation as described above, in addition to specific measures to address SAR: awareness training / encounter protocol; interim (during-construction) wildlife exclusion fencing (; and recommended timing for construction activities. **Wildlife Movement.** Local wildlife movement opportunities within retained ESAP west of the Subject Property will be maintained and enhanced with proposed buffer enhancements. **Indirect Impacts** to be mitigated by: ▪ **During-construction BMPs**. As above ▪ **Surface Water inputs / quality (long-term).** As above ▪ **Groundwater inputs / quality (long-term).** As above. ▪ **Permanent Fencing**. As above. ▪ **Interim Wildlife exclusion Fencing (ESC fencing).** As above. ▪ **Buffer Management.** As above ▪ **Erosion and Sediment Control Plan.** As above. ▪ **Stewardship.** As above. **Monitoring.** See Section 7; includes breeding bird and spring amphibian breeding surveys.	Residual impacts to wildlife and wildlife habitat resulting from development on the Subject Property are not anticipated. Direct impacts will be limited to anthropogenically influenced, non-sensitive wildlife habitat that currently supports common, disturbance-tolerant wildlife species and very limited movement opportunities. Residual impacts from construction and development / occupancy are not anticipated, with implementation of recommended measures: ▪ Installing vegetation protection fencing / ESC fencing / temporary wildlife exclusion fencing ▪ Implementing Spills Management Plan, ESC and other during-construction BMPs ▪ Following recommended timing for vegetation removals ▪ Installing permanent fencing and implementing stewardship measures to reduce secondary effects on forest / wetland integrity following development and occupancy. ▪ Maintaining hydrogeological inputs to features that provided wildlife habitat, particularly wetlands/ open water features ▪ Providing additional or improved habitat via buffer enhancements ▪ Implementing contractor awareness training and wildlife encounter protocols In any populated area there is potential for unauthorized intrusion and damage to natural areas, and less tangible but inferred effects of occupancy on breeding bird and other wildlife activity. In particular, the Forested Hills ESPA is well-used for recreational purposes, with potential for impacts related to that. Population changes in breeding birds and amphibians are related to the transformation of the broader landscape in the Region. Changes can also be caused by factors outside the Region (such as alteration/loss of wintering habitat, severe climatic conditions during migration activity, and changes in migratory stopover habitat). Hence, it must be recognized that shifts in wildlife species composition may be inevitable in this area over time, and in fact have probably already occurred with changes in the regional landscape.

7 BIOLOGICAL MONITORING

The Biological Monitoring program was established in the approved Terms of Reference (March 2023); that TOR included scope for Hydrologic Monitoring (as prepared by and undertaken by Stantec). Pre-construction monitoring has been undertaken by WSP and Stantec in 2022, 2023 and 2024, as documented in annual reports submitted to the City and GRCA.

7.1 Biological Monitroring Program

The biological monitoring program includes the following components:

- **Vegetation**. Plot Surveys (spring / summer – 2 visits per year)
  - Completed at 6 plots (two in Veg. Unit 1, two in Veg. Unit 4 and two in Veg. Unit 5)
  - Includes a general vegetation overview (recording general biophysical conditions and noting site changes, including photographs) and quantitative vegetation monitoring of transects
  - Buffer monitoring: completed in the during- and post-construction phases
  - Smooth-sheathed Sedge Transplant success monitoring (completed as part of the biannual vegetation monitoring plot surveys).
- **Avifauna**. Breeding Bird Surveys (spring and summer – 2 visits per year)
  - Completed at 4 monitoring stations (one in Veg. Unit 1, two in Veg. Unit 4 and one in Veg. Unit 5)
- **Amphibians**. Calling (Breeding) Surveys (spring and summer – 3 visits per year)
  - Completed at 4 monitoring stations (one in Veg. Unit 1, two in Veg. Unit 4 and one in Veg. Unit 5)
- Monitoring is proposed in three stages: Pre-construction (1 year); During-construction; and Post-construction (2 years). It is recommended that monitoring extends from one year pre-construction to two years following 90% build-out. Monitoring is the responsibility of the proponent.

All biological monitoring components completed in the pre-construction monitoring stage will continue in the during- and post-construction monitoring stages. A qualitative assessment of the woodland buffer and monitoring of Smooth-sheathed Sedge transplant success will be completed in conjunction with the vegetation plot monitoring in the during- and post-construction monitoring stages.

Reporting: Results of biological monitoring will be summarized in annual reports submitted to the City and GRCA.

Status: Pre-construction monitoring has been undertaken by WSP in 2022, 2023 and 2024, as documented in annual reports submitted to the City, GRCA and Region.

8 HYDROLOGICAL MONITORING PROGRAM

In addition to biological monitoring undertaken by WSP, hydrogeological monitoring is being undertaken by Stantec, as per the scope in Attachment B of the approved ToR (March 2023).

Hydrogeological monitoring includes continued recording of seasonal groundwater levels and fluctuations in the on-site monitoring wells to confirm that post-development infiltration / groundwater recharge mitigation measures are functioning as designed.

Relevant information from the hydrogeological analysis is included in the biological monitoring reports.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

Based on the natural heritage field surveys and analyses discussed herein, and in consideration of applicable natural heritage policy, the development can be undertaken as proposed while protecting environmental features and their functions. Key conclusions are as follows:

- Targeted surveys confirm that sensitive habitat within ESPA 19 will be retained in full, protected and enhanced with a naturalized buffer, fencing/signage and invasive species management
- The function the wetland seep within the proposed development envelope will be retained with the proposed SWM strategy, sedge transplant strategy and buffer / enhancement plans for 500 and 515 Erbsville Road.
- The Subject Property is ideally suited for this type of development given its location within the City of Waterloo and surrounding land uses (urban residential to the north and south, major road to the east) and ability to protect sensitive / significant habitats with the proposed development.

9.2 Recommendations

The following recommendations / actions are identified and are to be finalized as conditions of approval.

- Adhere to recommended timing windows for removal of trees and other vegetation as it relates to SAR bats and compliance with the MBCA.
- Implement the proposed SWM strategy, other mitigation measures and Best Management Practices identified in Section 6.1, including finalization of any preliminary recommendations.
- Undertake recommended invasive species management and monitoring.
- Undertake rare sedge transplant and monitoring
- Continue with ongoing biological and hydrogeological monitoring as documented herein and in previously submitted reports.

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Signature Page

WSP Canada Inc.



Corey Burt, M.Sc
Terrestrial Ecologist



Jeff Gross, M.Sc.
Senior Ecologist

CB/JG/ld

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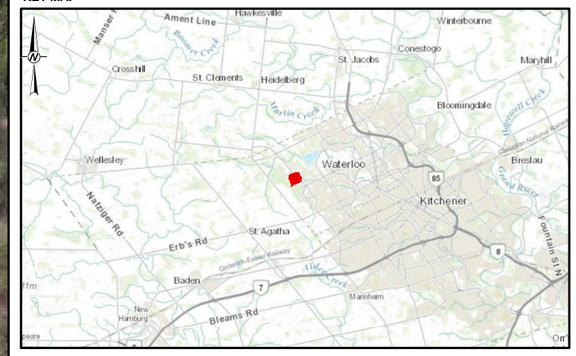
FIGURES



KEY MAP



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LEGEND

SUBJECT PROPERTY (APPROXIMATE)

OFFICIAL PLAN DESIGNATIONS (APPROXIMATE)

CORE NATURAL FEATURES

OTHER OPEN SPACE LAND USES

0 10 20 30 40 50

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
ACTIVA

PROJECT
515 ERBSVILLE ROAD, WATERLOO
SCOPED EIS

TITLE
SUBJECT PROPERTY & DESIGNATED FEATURES

CONSULTANT

wsp

YYYY-MM-DD	2025-08-22
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PREPARED	LT
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
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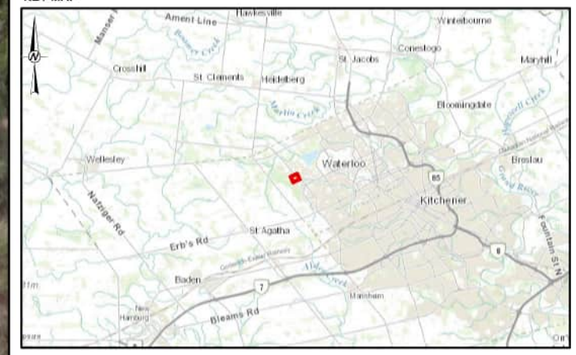

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LEGEND

- SUBJECT PROPERTY (APPROXIMATE)
- SEEPAGE AREA
- ELC

ELC Code	Description
CUM1-1	Dry - Moist Old Field Meadow
CUP2-1	Black Walnut - White Pine Mixed Plantation
FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous
MAM3-9	Forb Organic Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh

0 10 20 30 40 50

1:1,500 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
ACTIVA

PROJECT
515 ERBSVILLE ROAD, WATERLOO
SCOPED EIS

TITLE
VEGETATION COMMUNITIES

CONSULTANT

wsp

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PREPARED	LT
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
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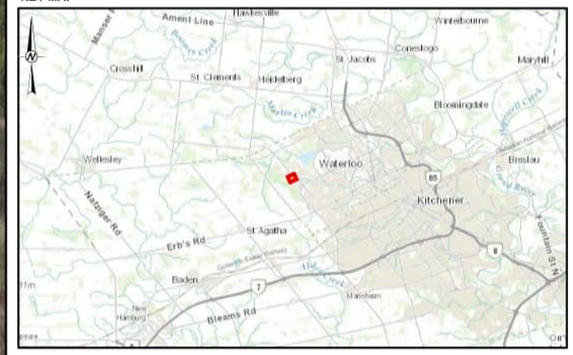

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LEGEND

- SUBJECT PROPERTY (APPROXIMATE)
- SURVEYED DRIPLINE, CONFIRMED BY REGION FEB 2023
- 10M SETBACK TO SURVEYED DRIPLINE
- SURVEYED WETLAND, CONFIRMED BY GRCA MAY 6, 2024

0 10 20 30 40 50

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
ACTIVA

PROJECT
515 ERBSVILLE ROAD, WATERLOO
SCOPED EIS

TITLE
SURVEYED DRIPLINE / WETLAND AND WOODLAND SETBACK

CONSULTANT

wsp

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APPROVED	----

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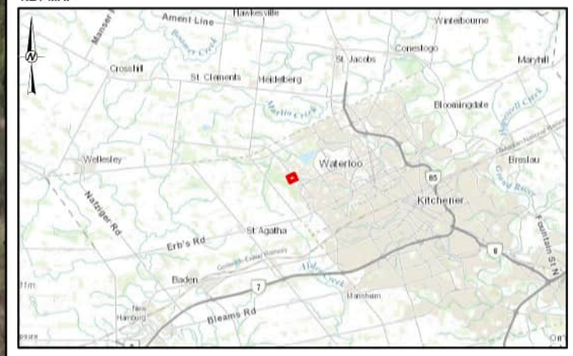

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LEGEND

- SUBJECT PROPERTY (APPROXIMATE)
- SURVEYED DRIPLINE, CONFIRMED BY REGION FEB 2023
- 10M SETBACK TO SURVEYED DRIPLINE
- SURVEYED WETLAND, CONFIRMED BY GRCA MAY 6, 2024
- FENCING / SENSITIVE NATURAL AREAS SIGNAGE
- BUFFER / ENHANCEMENT AREA
- INVASIVE SPECIES MANAGEMENT AREA
- DRAFT PLAN

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1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
ACTIVA

PROJECT
515 ERBSVILLE ROAD, WATERLOO
SCOPED EIS

TITLE
DRAFT PLAN & ENVIRONMENTAL MANAGEMENT RECOMMENDATIONS

CONSULTANT

wsp

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APPROVED	----

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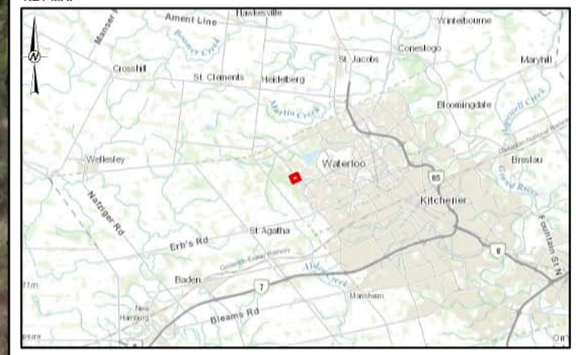
KEY MAP



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LEGEND

- SUBJECT PROPERTY (APPROXIMATE)
- VEGETATION MONITOIRNG PLOT
- AMPHIBIAN CALLING STATION
- BREEDING BIRD POINT COUNT LOCATION
- DRAFT PLAN

Note: V3, V4, V5, V6, BB3, BB4, AC3 and AC4 to be monitored in pre-construction only

0 10 20 30 40 50

1:1,500 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

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ACTIVA

PROJECT
515 ERBSVILLE ROAD, WATERLOO
SCOPED EIS

TITLE
BIOLOGICAL MONITORING LOCATIONS

CONSULTANT

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APPENDIX A

Field Survey Chronology

Table A.1. Field chronology, 515 Erbsville Road, Waterloo

Date	Level of Effort (person hours)	Task	Weather Conditions [1, 2]
June 17, 2021	3	ELC and plant inventory	N/A
April 11, 2022	1	Amphibian Calling Survey – Round 1	**Temperature:** Start: 11°C, End: 11°C; **Sky Code:** Start: 3, End: 2; **Wind Speed:** Start: 1, End: 1, **Precipitation:** No
May 15, 2022	1	Amphibian Calling Survey – Round 2	**Temperature :** Start: 21°C, End: 20°C; **Sky Code:** Start: 2, End: 2; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
June 2, 2022	1	Breeding Bird Survey - Round 1	**Temperature :** Start: 14°C, End: 20°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
June 21, 2022	1	Amphibian Calling Survey – Round 3	**Temperature :** Start: 29°C, End: 26°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
June 30, 2022	1	Breeding Bird Survey – Round 2	**Temperature :** Start: 23°C, End: 25°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 0, End: 2, **Precipitation:** No
June 30, 2022	7.5	Vegetation Buffer Monitoring and Plot Monitoring – Summer Visit	**Temperature :** Start: 22°C, End: 26°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 0, End: 2; **Precipitation:** No
September 27, 2022	3	ELC and plant inventory	N/A
September 30, 2022	7.5	Vegetation Buffer Monitoring and Plot Monitoring – Fall Visit	N/A
April 11, 2023	1.5	Amphibian Calling Survey – Round 1	**Temperature :** Start: 17°C, End: 17°C; **Sky Code:** Start: 1, End: 2; **Wind Speed :** Start: 2, End: 2, **Precipitation:** No

Date	Level of Effort (person hours)	Task	Weather Conditions [1, 2]
May 8, 2023	2	Amphibian Calling Survey – Round 2	**Temperature :** Start: 13°C, End: 14°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
May 29, 2023	1	Breeding Bird Survey - Round 1	**Temperature :** Start: 20°C, End: 25°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 2, End: 3, **Precipitation:** No
June 13, 2023	1	Breeding Bird Survey – Round 2	**Temperature :** Start: 15°C, End: 16°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 1, End: 2, **Precipitation:** No
June 22, 2023	2	Amphibian Calling Survey – Round 3	**Temperature :** Start: 21°C, End: 21°C; **Sky Code:** Start: 2, End: 2; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
June 26, 2023	7.5	Vegetation Buffer Monitoring and Plot Monitoring – Summer Visit	N/A
September 28, 2023	7.5	Vegetation Buffer Monitoring and Plot Monitoring – Fall Visit	N/A
April 8, 2024	2	Amphibian Calling Survey – Round 1	**Temperature :** Start: 12°C, End: 10°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
May 16, 2024	2	Amphibian Calling Survey – Round 2	**Temperature :** Start: 20°C, End: 19°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
June 3, 2024	3	Wetland inventory and delineation	N/A
June 4, 2024	1	Breeding Bird Survey - Round 1	**Temperature :** Start: 14°C, End: 19°C; **Sky Code:** Start: 4, End: 1; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No

Date	Level of Effort (person hours)	Task	Weather Conditions [1, 2]
June 18, 2024	1.5	Amphibian Calling Survey – Round 3	**Temperature :** Start: 25°C, End: 25°C; **Sky Code:** Start: 2, End: 2; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
July 5, 2024	7	Vegetation Buffer Monitoring and Plot Monitoring – Summer Visit	N/A
July 8, 2024	1.5	Breeding Bird Survey – Round 2	**Temperature :** Start: 16°C, End: 24°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
July 26, 2024	3	Habitat assessment / botanical inventory of Veg. Unit 5 and vernal pools in Veg. Unit 4	N/A
September 24-25, 2024	6	Vegetation Buffer Monitoring and Plot Monitoring – Fall Visit	N/A
April 24, 2025	2	Amphibian Calling Survey – Round 1	**Temperature :** Start: 23°C, End: 23°C; **Sky Code:** Start: 1, End: 1; **Wind Speed :** Start: 0, End: 0, **Precipitation:** No
May 27, 2025	2	Amphibian Calling Survey – Round 2	**Temperature :** Start: 12°C, End: 12°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
May 27, 2025	2.5	Breeding Bird Survey – Round 1	**Temperature :** Start: 15°C, End: 19°C; **Sky Code:** Start: 2, End: 2; **Wind Speed :** Start: 1, End: 1, **Precipitation:** No
June 20, 2025	2.5	Breeding Bird Survey – Round 2	**Temperature :** Start: 15°C, End: 15°C; **Sky Code:** Start: 2, End: 2; **Wind Speed :** Start: 2, End: 2, **Precipitation:** No
June 17, 2025	2	Amphibian Calling Survey – Round 3	**Temperature :** Start: 21°C, End: 21°C; **Sky Code:** Start: 0, End: 0; **Wind Speed :** Start: 3, End: 3, **Precipitation:** No

Date	Level of Effort (person hours)	Task	Weather Conditions [1, 2]
July 3, 2025	6	Vegetation Buffer Monitoring and Plot Monitoring – Summer Visit	N/A
Oct. 3, 2025	6	Vegetation Buffer Monitoring and Plot Monitoring – Fall Visit	N/A

[1]Beaufort Wind Scale 2Sky

0 = calm, smoke rises vertically (0-2km / hr)

1 = Light air movement, smoke drifts (3-5)

2 = Slight breeze, wind felt on face; leaves rustle (6-11)

3= Gentle breeze, leaves & twigs in constant motion (12-19)

4= Moderate breeze, small branches moving, raises dust & loose paper (20-30);

5= Fresh breeze, small trees begin to sway (31-39)

6= Strong breeze, large branches in motion (40-50)

[2]Sky Code

0 = clear (no cloud cover)

1 = partly cloudy (scattered or broken) or variable

2 = cloudy or overcast

3 = Sandstorm, dust storm or blowing snow

4 = fog, smoke, thick dust or haze

5 = drizzle or light rain

6 = rain

7 = snow or snow / rain mix showers 8 = showers

9 = thunderstorms

APPENDIX B

Representative Site Photographs

APPENDIX C - REPRESENTATIVE PHOTOGRAPHS

Dates Taken: July 2, July 3, and October 3, 2025



Photo 1. Vegetation Unit 1 (MAS2-1), facing east, July 3, 2025.



Photo 2. Vegetation Unit 2 on the left (CUM1-1), Vegetation Unit 1 on the right (MAS2-1), facing east, July 3, 2025.



Photo 3. Vegetation Unit 3 (former CUP2-1; now removed), west portion of Subject Property, October 3, 2025.



Photo 4. Vegetation Unit 4 (FOD5-2), facing northeast, July 2, 2025.



Photo 5. Vegetation Unit 5 (remnant CUP2-1 / MAM3-9 seepage area), seepage area in the foreground, remnant trees in the background, facing northwest, July 3, 2025.



Photo 6. Vegetation Unit 5 (remnant CUP2-1 / MAM3-9 seepage area), seepage area in the center, remnant CUP2-1 in the foreground and background, facing southeast, October 3, 2025.

APPENDIX C

Historic Air Photos

1930



1946



1955



2006


Regional Road 70
Butternut Ave
White Elm Blvd
Star Flower Ave
Basswood St
Google Earth

2016


Tremblino Aspen Ave
Wild Ginger Ave
White Birch Ave
Regional Road 70
Butternut Ave
White Elm Blvd
Royal Fern St
Star Flower Ave
Google

2019


Tremblino Aspen Ave
Wild Ginger Ave
White Birch Ave
Regional Road 70
Butternut Ave
White Elm Blvd
Erbsville Rd
Basswood St
Royal Fern St
Star Flower Ave
Image © 2021 CNES / Airbus
Google Eart

APPENDIX D

Plant List

Appendix D - Plant List

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Acer negundo	Manitoba Maple	0	0	S5								X	
Equisetum arvense	Field Horsetail	0	0	S5					X	X			X
Erigeron annuus	Annual Fleabane	0	3	S5							X	X	X
Phalaris arundinacea	Reed Canarygrass	0	-3	S5					X	X			X
Poa pratensis	Kentucky Bluegrass	0	3	S5					X	X		X	
Rudbeckia hirta	Black-eyed Susan	0	3	S5					X	X			
Vitis riparia	Riverbank Grape	0	0	S5					X	X	X	X	X
Erigeron philadelphicus var. philadelphicus	Philadelphia Fleabane	1	-3	S5						X		X	
Juncus dudleyi	Dudley's Rush	1	-3	S5					X				
Rhus typhina	Staghorn Sumac	1	3	S5					X	X	X		
Solidago altissima var. altissima	Eastern Tall Goldenrod	1	3	S5					X			X	X
Typha latifolia	Broad-leaved Cattail	1	-5	S5					X				X
Agrimonia gryposepala	Hooked Agrimony	2	3	S5							X		X
Carex pellita	Woolly Sedge	2	-5	S5					X				
Carex rosea	Rosy Sedge	2	5	S5								X	
Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade	2	3	S5							X	X	X
Cornus sericea	Red-osier Dogwood	2	-3	S5					X			X	X
Eupatorium perfoliatum	Common Boneset	2	-3	S5					X				X
Euthamia graminifolia	Grass-leaved Goldenrod	2	0	S5					X				
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	3	S5								X	X
Geranium robertianum	Herb-Robert	2	3	S5							X	X	X
Geum aleppicum	Yellow Avens	2	0	S5					X		X	X	X
Prunus virginiana	Chokecherry	2	3	S5									X
Ranunculus abortivus	Kidney-leaved Buttercup	2	0	S5								X	
Rubus allegheniensis	Allegheny Blackberry	2	3	S5								X	
Rubus idaeus ssp. strigosus	North American Red Raspberry	2	3	S5							X	X	X
Rubus occidentalis	Black Raspberry	2	5	S5							X	X	X
Symphyotrichum novae-angliae	New England Aster	2	-3	S5					X	X			X
Toxicodendron radicans var. radicans	Eastern Poison Ivy	2	0	S5								X	
Urtica gracilis ssp. gracilis	Slender Stinging Nettle	2	0	S5									X

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Carex bebbii	Bebb's Sedge	3	-5	S5					X				
Carex blanda	Woodland Sedge	3	0	S5								X	
Carex cristatella	Crested Sedge	3	-3	S5					X				
Carex granularis	Limestone Meadow Sedge	3	-3	S5					X				
Carex stipata	Awl-fruited Sedge	3	-5	S5					X				X
Carex vulpinoidea	Fox Sedge	3	-5	S5					X				X
Epilobium ciliatum	Northern Willowherb	3	-3	S5					X				
Epilobium coloratum	Purple-veined Willowherb	3	-5	S5									X
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	3	-5	S5					X				
Fraxinus pennsylvanica	Red Ash	3	-3	S4								X	X
Geum canadense	Canada Avens	3	0	S5					X		X	X	X
Glyceria striata	Fowl Mannagrass	3	-5	S5					X				X
Leersia oryzoides	Rice Cutgrass	3	-5	S5					X				X
Mentha canadensis	Canada Mint	3	-3	S5					X				
Prunus serotina	Black Cherry	3	3	S5								X	X
Salix discolor	Pussy Willow	3	-3	S5					X				
Salix petiolaris	Meadow Willow	3	-3	S5					X				
Scirpus atrovirens	Dark-green Bulrush	3	-5	S5					X				X
Symphyotrichum lanceolatum ssp. lanceolatum var. lanceolatum	Eastern Panicled Aster	3	-3	S5					X				X
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	0	S5					X				X
Acer saccharum	Sugar Maple	4	3	S5							X	X	X
Aralia nudicaulis	Wild Sarsaparilla	4	3	S5							X		
Athyrium filix-femina var. angustum	Northeastern Lady Fern	4	0	S5							X	X	X
Carex gracillima	Graceful Sedge	4	3	S5					X				
Carex radiata	Eastern Star Sedge	4	0	S5									X
Eleocharis erythropoda	Red-stemmed Spikerush	4	-5	S5					X				
Fragaria vesca	Woodland Strawberry	4	3	S5								X	
Fraxinus americana	White Ash	4	3	S4							X	X	
Galium aparine	Common Bedstraw	4	3	S5					X		X	X	X
Galium triflorum	Three-flowered Bedstraw	4	3	S5								X	
Geum laciniatum	Rough Avens	4	-3	S4								X	

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Impatiens capensis	Spotted Jewelweed	4	-3	S5					X	X			X
Juncus effusus ssp. solutus	Soft Rush	4	-5	S5?					X				X
Lysimachia ciliata	Fringed Yellow Loosestrife	4	-3	S5					X				X
Maianthemum racemosum	Large False Solomon's Seal	4	3	S5								X	
Onoclea sensibilis	Sensitive Fern	4	-3	S5								X	
Parthenocissus vitacea	Thicket Creeper	4	3	S5							X	X	X
Pinus strobus	Eastern White Pine	4	3	S5						X	X		
Populus deltoides	Eastern Cottonwood	4	0	S5				W+	X				
Ranunculus recurvatus	Hooked Buttercup	4	-3	S5								X	X
Ribes cynosbati	Eastern Prickly Gooseberry	4	3	S5								X	X
Salix bebbiana	Bebb's Willow	4	-3	S5					X				
Salix eriocephala	Cottony Willow	4	-3	S5					X				
Solidago gigantea	Giant Goldenrod	4	-3	S5					X				
Tilia americana	Basswood	4	3	S5							X	X	
Viburnum lentago	Nannyberry	4	0	S5									X
Arisaema triphyllum	Jack-in-the-pulpit	5	-3	S5							X	X	X
Bidens connata	Purple-stemmed Beggarticks	5	-3	S4?									X
Carex flava	Yellow Sedge	5	-5	S5					X				
Carex hystericina	Porcupine Sedge	5	-5	S5					X				X
Carex pedunculata	Long-stalked Sedge	5	3	S5								X	
Carex pensylvanica	Pennsylvania Sedge	5	5	S5								X	
Carex retrorsa	Retrorse Sedge	5	-5	S5					X				
Caulophyllum thalictroides	Blue Cohosh	5	5	S5							X	X	
Dryopteris carthusiana	Spinulose Wood Fern	5	-3	S5							X		
Dryopteris intermedia	Evergreen Wood Fern	5	0	S5								X	
Dryopteris marginalis	Marginal Wood Fern	5	3	S5							X		
Hackelia virginiana	Virginia Stickseed	5	3	S5				W*				X	
Juglans nigra	Black Walnut	5	3	S4?				W*+			X	X	X
Lycopus uniflorus	Northern Water-horehound	5	-5	S5					X				
Pilea fontana	Lesser Clearweed	5	-3	S4				W				X	
Poa palustris	Fowl Bluegrass	5	-3	S5					X				X
Podophyllum peltatum	May-apple	5	3	S5								X	

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Polystichum acrostichoides	Christmas Fern	5	3	S5								X	
Sambucus canadensis	Common Elderberry	5	-3	S5								X	
Sambucus racemosa	Red Elderberry	5	3	S5							X	X	
Sanguinaria canadensis	Bloodroot	5	3	S5								X	
Solidago caesia	Blue-stemmed Goldenrod	5	3	S5								X	
Trillium grandiflorum	White Trillium	5	3	S5								X	
Acer x freemanii	(Acer rubrum X Acer saccharinum)	6	-5	SNA									X
Actaea pachypoda	White Baneberry	6	5	S5								X	
Actaea rubra ssp. rubra	Red Baneberry	6	3	S5								X	
Asarum canadense	Canada Wild-ginger	6	5	S5								X	
Carex intumescens	Bladder Sedge	6	-3	S5								X	
Cornus alternifolia	Alternate-leaved Dogwood	6	3	S5								X	X
Fagus grandifolia	American Beech	6	3	S4								X	
Festuca subverticillata	Nodding Fescue	6	3	S4								X	
Hydrophyllum virginianum	Virginia Waterleaf	6	0	S5							X	X	
Leersia virginica	White Cutgrass	6	-3	S4									X
Monarda fistulosa	Wild Bergamot	6	3	S5						X			
Quercus rubra	Northern Red Oak	6	3	S5							X		
Salix amygdaloides	Peach-leaved Willow	6	-3	S5					X				
Solidago flexicaulis	Zigzag Goldenrod	6	3	S5								X	
Symphyotrichum puniceum	Purple-stemmed Aster	6	-5	S5								X	X
Uvularia grandiflora	Large-flowered Bellwort	6	5	S5								X	
Viburnum acerifolium	Maple-leaved Viburnum	6	5	S5								X	
Carex albursina	White Bear Sedge	7	5	S5								X	
Carex laxiculmis var. laxiculmis	Spreading Sedge	7	3	S4				W				X	
Carex plantaginea	Plantain-leaved Sedge	7	5	S5								X	
Impatiens pallida	Pale Jewelweed	7	-3	S4								X	
Patis racemosa	Black-seed Ricegrass	7	5	S4				W			X	X	
Poa alsodes	Grove Bluegrass	7	0	S4								X	
Carex laevivaginata	Smooth-sheathed Sedge	8	-5	S4				W					X
Hepatica acutiloba	Sharp-lobed Hepatica	8	5	S5								X	
Hydrophyllum canadense	Bluntleaf Waterleaf	8	0	S4								X	

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Agrostis gigantea	Redtop		-3	SNA					X				
Alcea rosea	Hollyhock		5	SNA									X
Alliaria petiolata	Garlic Mustard		0	SNA							X	X	X
Arctium lappa	Great Burdock		3	SNA							X		
Arctium minus	Common Burdock		3	SNA								X	
Bromus inermis	Smooth Brome		5	SNA							X		X
Cerastium fontanum	Common Mouse-ear Chickweed		3	SNA								X	
Chelidonium majus	Greater Celandine		5	SNA							X	X	
Cirsium arvense	Canada Thistle		3	SNA					X	X			
Cirsium vulgare	Bull Thistle		3	SNA								X	
Dactylis glomerata	Orchard Grass		3	SNA						X	X	X	X
Daucus carota	Wild Carrot		5	SNA					X	X			
Dipsacus fullonum	Common Teasel		3	SNA					X	X			
Elaeagnus umbellata	Autumn Olive		3	SNA						X			X
Epilobium hirsutum	Hairy Willowherb		-3	SNA					X				X
Epilobium parviflorum	Small-flowered Hairy Willowherb		3	SNA									X
Epipactis helleborine	Broad-leaved Helleborine		3	SNA								X	
Erigeron sp.	Fleabane sp.												X
Galium mollugo	Smooth Bedstraw		5	SNA					X	X			
Geum urbanum	Wood Avens		5	SNA								X	X
Glechoma hederacea	Ground-ivy		3	SNA									X
Hesperis matronalis	Dame's Rocket		3	SNA						X	X		X
Hypericum perforatum	Common St. John's-wort		5	SNA					X				
Leersia sp.	Rice Cutgrass sp.										X	X	
Leonurus cardiaca ssp. cardiaca	Common Motherwort		5	SNA							X	X	
Leucanthemum vulgare	Oxeye Daisy		5	SNA					X	X	X		
Linaria vulgaris	Butter-and-eggs		5	SNA						X			
Lotus corniculatus	Garden Bird's-foot Trefoil		3	SNA					X				
Lythrum salicaria	Purple Loosestrife		-5	SNA					X				X
Medicago lupulina	Black Medick		3	SNA					X				
Myosotis sp.	Forget-me-not sp.												X
Oxalis stricta	Upright Yellow Wood-sorrel		3	SNA					X			X	

SCIENTIFIC NAME	COMMON NAME	CC	CW	S RANK	COSEWIC	ESA	COSSARO	WATERLOO REGION (1999)8	Unit 1 (MAS2-1)	Unit 2 (CUM1-1)	Unit 3 (CUP2-1; removed)	Unit 4 (FOD5-2)	Unit 5 (CUP2-1 / MAM3-9)
Phragmites australis ssp. australis	European Reed		-3	SNA					X	X			X
Plantago lanceolata	English Plantain		3	SNA						X			
Plantago major	Common Plantain		3	SNA						X		X	
Poa compressa	Canada Bluegrass		3	SNA								X	
Prunus avium	Sweet Cherry		5	SNA									X
Ranunculus acris	Common Buttercup		0	SNA							X		X
Ranunculus sp.	Buttercup sp.										X		
Rhamnus cathartica	European Buckthorn		0	SNA					X	X	X	X	X
Ribes sp.	Gooseberry sp.										X		
Rumex crispus	Curled Dock		0	SNA						X			X
Securigera varia	Purple Crown-vetch		5	SNA					X	X	X		
Silene vulgaris	Bladder Campion		5	SNA							X		
Smilax sp.	Greenbrier sp.											X	
Solanum dulcamara	Bittersweet Nightshade		0	SNA									X
Solidago sp.	Goldenrod sp.									X	X		
Symphyotrichum pilosum	Old Field Aster		3	S5						X			
Symphyotrichum sp.	Aster sp.								X				
Taraxacum officinale	Common Dandelion		3	SNA							X	X	X
Trifolium repens	White Clover		3	SNA						X			
Tripleurospermum sp.	Chamomile sp.												X
Tussilago farfara	Coltsfoot		3	SNA					X	X			
Typha angustifolia	Narrow-leaved Cattail		-5	SNA					X				
Typha x glauca	(Typha angustifolia X Typha latifolia)		-5	SNA					X				
Urtica dioica ssp. dioica	European Stinging Nettle		0	SNA						X			
Verbascum thapsus	Common Mullein		5	SNA						X			
Veronica anagallis-aquatica	Water Speedwell		-5	SNA									X
Vicia cracca	Tufted Vetch		5	SNA					X	X			
Viola sp.	Violet sp.											X	
Totals	**185**				**0**	**0**	**185**	**7**	**67**	**33**	**44**	**86**	**72**

APPENDIX E

Breeding Bird Survey Results - Legend

Breeding Bird Survey Results - Legend

S-Rank (provincial)

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

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

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

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

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

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

S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SAN Non-breeding accidental.

SE Exotic - not believed to be a native component of Ontario's fauna.

SZN Non-breeding migrants/vagrants.

SZB Breeding migrants/vagrants.

ESA (Endangered Species Act) Status

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

ESA Conservation Status Ranks

EXT Extinct - A species that no longer exists anywhere in the world.

EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.

END Endangered - A species that is facing imminent Extinction or extirpation.

THR Threatened - A species that is likely to become Endangered if steps are not taken to address factors threatening to lead to its Extinction or extirpation.

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

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

The federal review process is implemented by COSEWIC

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

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

COSEWIC Conservation Status Ranks

EXT Extinct - A species that no longer exists.

EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.

END Endangered - A species facing imminent extirpation or Extinction.

THR Threatened - A species likely to become Endangered if limiting factors are not reversed.

SC Special Concern (formerly vulnerable) - A species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.

NAR Not At Risk - A species that has been evaluated and found to be not at risk of Extinction given the current circumstances.

DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of Extinction.

SARA (Species at Risk Act) Status and Schedule

Federal status from the Government of Canada's Species at Risk Public Registry

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

EXT Extinct - A wildlife species that no longer exists.

EXP Extirpated - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END Endangered - A wildlife species that is facing imminent extirpation or Extinction.

THR Threatened - A wildlife species that is likely to become Endangered if nothing is done to reverse the factors leading to its extirpation or Extinction.

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

Schedule 1: is the official list of species that are classified as Extirpated, Endangered, Threatened and Special Concern.

Schedule 2: species listed in Schedule 2 are species that had been designated as Endangered or Threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

Schedule 3: species listed in Schedule 3 are species that had been designated as Special Concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

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

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

Waterloo Region Significance (1996)

From Regional Municipality of Waterloo Significant Species List Breeding Birds (1996). Significant ONLY when evidence of breeding (many are common and widespread as migrants).

Main purpose of the list is in evaluation of the 'significant species' criterion for the designation of Environmentally Sensitive Policy Areas.

W = Waterloo: Regionally Significant

W* = Significant only when nesting in natural circumstances

V = Very Rare (0-3 occurrences)

R = Rare (0-5)

S = Scarce (6-20)

U = Uncommon (21-100)

C = Common (>100)

I = Introduced

CV = Canada (COSEWIC) Vulnerable; CT = Canada (COSEWIC) Threatened; CE = Canada (COSEWIC) Endangered

OV = Ontario (MNR) Vulnerable; OT = Ontario (MNR) Threatened; OE = Ontario (MNR) Endangered

Note: A number of the COSEWIC and MNR designations have changed since when the Region of Waterloo list was created in 1996.

Area Sensitive Species

Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers

From: Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E. January, 2015. Regional Operations Division, Southern Region Resources Section. 39pp.

Protected Under MBCA

Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers

Birds protected under the Migratory Birds Convention Act (MBCA) are listed at:

https://www.canada.ca/en/environment-climate-change/services/migratory-birds-legal-protection/convention-act.html

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED

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

POSSIBLE

H Species observed in its breeding season in suitable nesting habitat.

S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE

A Agitated behaviour or anxiety calls of an adult.

B Brood Patch on adult female or cloacal protuberance on adult male.

D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.

M Multiple (at least 7) individuals with S

N Nest-building (Wren/Woodpecker)

P Pair observed in suitable nesting habitat in nesting season.

T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.

V Visiting probable nest site

CONFIRMED

AE Adult leaving or entering nest sites in circumstances indicating occupied nest.

CF Adult carrying food for young.

DD Distraction display or injury feigning.

FS Adult carrying fecal sac.

FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.

NB Nest-building (non-Wren/Woodpecker)

NE Nest containing eggs.

NU Used nest or egg shells found (occupied or laid within the period of the survey).

NY Nest with young seen or heard.

APPENDIX F

Evaluation of Significant Wildlife Habitat

This evaluation is based on the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 6E (MNRF January 2015). The following text and tables are from that document, but include an additional 'evaluation' column, with discussion of site-specific attributes at 515 Erbsville Road, Waterloo.

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Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling. 34

1.5 Exceptions for EcoRegion 6E 35

SCHEDULE 6E: IDENTIFICATION OF Significant Wildlife Habitat

This schedule is designed to provide the recommended criteria for identifying Significant Wildlife Habitat (SWH) within Ecoregion 6E. Tables 1.1 through 1.4 within the Schedules provide guidance for SWH designation for the four categories of SWH outlined in the Significant Wildlife Habitat Technical Guide and its Appendices. Table 1.5 contains and provides descriptions for exceptions criteria for ecoregional SWH which will be identified at an ecodistrict scale. Exceptions occur when criteria for a specific habitat are different within an ecodistrict compared to the remainder of an ecoregion or if a habitat only occurs within a restricted area of the ecoregion.

The schedules, including description of wildlife habitat, wildlife species, and the criteria provided for determining SWH, are based on science and expert knowledge. The ELC Ecosite codes are described using the Ecological Land Classification (ELC) for Southern Ontario. The information within these schedules will require periodic updating to keep pace with changes to wildlife species status in the Species at Risk in Ontario (SARO) list, or as new scientific information pertaining to wildlife habitats becomes available. Therefore, MNRF will occasionally need to review and update these schedules and provide addenda. A reference document for all SWH is found after the schedules and includes citations for all ecoregional schedules. Each citation used to assist with the criteria for SWH will be indicated by a roman numeric symbol. Where no reference exists, MNRF expert opinion was used for determination of criteria, this symbol "Ⓔ" represents when MNRF expert opinion was utilized to develop defining criteria.

Evaluation results:

Candidate (unconfirmed) SWH:

- Bat Maternity Colonies: Veg. Unit 4

Confirmed

- Winter Deer Yarding Areas: Veg. Unit 4 (ESPA)
- Special Concern and Rare Wildlife Species: Veg. Units 4 and 5 (Eastern Wood-pewee)

Criteria For Significant Wildlife Habitat in Ecoregion 6E

1. 1 SEASONAL CONCENTRATION AREAS OF ANIMALS

Seasonal concentration areas are areas where wildlife species occur annually in aggregations at certain times of the year. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Examples of seasonal concentration areas include deer wintering areas, breeding bird colonies and hibernation sites for reptiles, amphibians and some mammals. Table 1.1 outlines what wildlife habitats and defining criteria that are considered for seasonal concentration areas within Ecoregion 6E.

Table 1.1 Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
1. Waterfowl Stopover and Staging Areas (Terrestrial) **Rationale;** Habitat important to migrating waterfowl.	American Black Duck American Wigeon Blue-winged Teal Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Wood Duck	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid-March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. 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 (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC)Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Any mixed species aggregations of 100Ⓔ or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius, dependant on local site conditions and adjacent land use is the significant wildlife habitat . • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWH MiSTIndex #7 provides development effects and mitigation measures.	No Candidate SWH is present. CUM habitat (VU2) is too small and disturbed to support this type of SWH. There is no known stopover use. Survey results: • No evidence of spring flooding to support this type of habitat • One of the listed species (Mallard) was recorded as a possible breeder (1 individual) **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
2. Waterfowl Stopover and Staging Areas (Aquatic) **<u>Rationale;</u>** 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.	American Black Duck American Wigeon Black Scoter Blue-winged Teal Brant Bufflehead Cackling Goose Canada Goose Canvasback Common Goldeneye Common Merganser Gadwall Greater Scaup Green-winged Teal Hooded Merganser Lesser Scaup Long-tailed Duck Northern Pintail Northern Shoveler Red-breasted Merganser Redhead Ring-necked duck Ruddy Duck Ruddy Duck Snow Goose Surf Scoter White-winged Scoter	MAS1 MAS2 MAS3 SAF1 SAM1 SAS1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are • The combined area of the ELC ecosites and a 100m radius area is the • Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWH MIST Index #7 provides development effects and mitigation measures.	No Candidate SWH is present. Marsh habitats (VU1 MAS2-1 and VU5 MAM3-9) are too small and disturbed to support this type of SWH. There is no known stopover use. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
3. Shorebird Migratory Stopover Area **<u>Rationale;</u>** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	American Golden-Plover Baird's Sandpiper Black-bellied Plover Dunlin Greater Yellowlegs Hudsonian Godwit Least Sandpiper Lesser Yellowlegs Marbled Godwit Pectoral Sandpiper Purple Sandpiper Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Semipalmated Plover Semipalmated Sandpiper Short-billed Dowitcher Solitary Sandpiper Spotted Sandpiper Stilt Sandpiper White-rumped Sandpiper	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 MAM1 MAM2 MAM3 MAM4 MAM5 SDO1 SDS2 SDT1	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Centre (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects • SWH MiST Index #8 provides development effects and mitigation measures.	No Candidate SWH is present. No lakes or rivers are present and MAM habitat is too small for this type of SWH. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
4. Raptor Wintering Area **<u>Rationale;</u>** Sites used by multiple species, a high number of individuals and used annually are most significant	American Kestrel Northern Harrier Red-tailed Hawk Rough-legged Hawk Snowy Owl **<u>Special Concern:</u>** Bald Eagle Short-eared Owl	<u>Hawks/Owls:</u> 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. <u>Bald Eagle:</u> 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 with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands • 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 <u>Information Sources</u>: • OMNRF Ecologist or Biologist • Naturalist clubs • Natural Heritage Information Centre (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 least10 individuals and two of the listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWH MiST Index #10 and #11 provides development effects and mitigation measures.	No Candidate SWH is present. While FOD is present in the ESPA, no large upland habitats are present. The site has a high level of disturbance and is within an urbanized area, making it less likely for concentrations of the indicator species to be present. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**
5. Bat Hibernacula **<u>Rationale;</u>** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #1 provides development effects and mitigation measures.	**No Candidate or Confirmed SWH is present on the Subject Property and none is known in the area.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
6. Bat Maternity Colonies **<u>Rationale;</u>** Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	• Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario. • Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by; >10 Big Brown Bats >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #12 provides development effects and mitigation measures.	Candidate SWH is present within the FOD vegetation community in the ESPA to the west (Veg. Unit 4). No Candidate SWH is present within the development envelope. To facilitate development, trees will be removed per MECP guidance (2025) outside of the bat active window (i.e., removed between December 1 and March 14). **Conclusion: Candidate SWH is present in FOD west of the development envelope (Veg. Unit 4). It will be retained in full, with a naturalized buffer. No impact is anticipated.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
7. 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. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May). Congregation of turtles is more common where wintering areas are limited and therefore significant. • Congregation of turtles is more common where wintering areas are limited and therefore significant. • SWH MiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	No Candidate SWH is present; the marsh habitats (VU1 and VU5) are very small and do no provide deep water for overwintering. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
8. Reptile Hibernaculum **Rationale;** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**Snakes:** Eastern Gartersnake Northern Brownsnake Northern Red-bellied Snake Northern Ring-necked Snake Northern Watersnake Smooth Green Snake **Special Concern:** Eastern Ribbonsnake Milksnake **Lizard:** **Special Concern** (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures . 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 • Natural Heritage Information Centre (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) . • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m buffer is the SWH • SWHMiST[x] Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	No Candidate SWH is present. None of the listed habitat types (talus, rock barren, crevice, cave or alvar) is present and no anthropogenic features are present. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
9. 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 [cxcix].	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 8or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #4 provides development effects and mitigation measures	No Candidate SWH is present. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**
10. 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.	Black-crowned Night-Heron Great Blue Heron Great Egret Green Heron	**SWD1 SWD2** SWD3 SWD4 SWD5 SWD6 SWD7 FET1 SWM2 SWM3 SWM5 SWM6	• 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, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (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	Studies confirming: • Presence of 5 or more active nests of Great Blue Heron or other listed species. • The edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiST Index #5 provides development effects and mitigation measures.	No Candidate SWH is present. Survey results: • None of the listed species was recorded with breeding evidence, and no evidence of nesting was observed. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
11. 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.	Brewer's Blackbird Caspian Tern Common Tern Great Black-backed Gull Herring Gull Little Gull Ring-billed Gull	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) CUM CUT CUS MAS1-3; MAM1-6	• 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. • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist Clubs.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #6 provides development effects and mitigation measures.	No Candidate SWH is present. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
12. 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 Ontario. • 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. • 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. • 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 <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant • SWHMiST Index #16 provides development effects and mitigation measures.	No Candidate SWH is present as the site is greater than 5 km from Lake Ontario. **Conclusion: no Candidate or Confirmed SWH is present.**
13. 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: <u>http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1</u> All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant. • Sites have a variety of habitats; forest, grassland and wetland complexes . • The largest sites are more significant • Woodlots and forest fragments are important habitats to migrating birds[i], these features located along the shore and located within 5km of Lake Ontario are Candidate SWH. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and field naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #9 provides development effects and mitigation measures.	No Candidate SWH is present as the site is greater than 5 km from Lake Ontario. **Conclusion: no Candidate or Confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
14. Deer Yarding Areas **Rationale:** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual" • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • MNRF District Offices • LIO/NRVIS	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	No SWH is present within the development envelope. Per LIO online mapping (Wildlife Values Area | Ontario GeoHub), a White-tailed Deer Wintering Area (Stratum 2) is a present on lands to the west (i.e., associated with the ESPA). The proposed development will not directly impact this deer wintering area and indirect impacts will be minimal given the surrounding urbanized landscape and anthropogenic barriers (existing urban land uses, roads). **Conclusion: No impacts to SWH on adjacent lands are expected to result from the proposed development.**

Wildlife Habitat	Wildlife Species	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Criteria and Information Sources	Confirmed SWH - Defining Criteria	Evaluation
15. Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii].	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha . • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> • MNRF District Offices. • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	Per LIO online mapping, no SWH is present on the Subject Property or adjacent lands. **Conclusion: No SWH is present.**

1.2 RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE

1.2.1 Rare Vegetation Communities

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. When assessing rare vegetation communities, one of the most important criteria is the current representation of the community in the planning area based on its area relative to the total landscape or the number of examples within the planning area. There are a number of criterion used to define rare vegetation communities, however the NHIC uses a system that considers the provincial rank of a species or community type as a tool to prioritize protection efforts. These ranks are not legal designations but have been assigned using the best available scientific information, and follow a systematic ranking procedure developed by The Nature Conservancy (U.S.). The ranks are based on three factors: estimated number of occurrences, estimated community aerial extent, and estimated range of the community within the province:

S1 Extremely rare - usually 5 or fewer occurrences in the province, or very few remaining hectares.

S2 Very rare - usually between 5 and 20 occurrences in the province, or few remaining hectares.

S3 Rare to uncommon - usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.

The setting of criteria for significant wildlife habitat (SWH) has incorporated this ranking system into its process of determining rare vegetation communities and as such, a rare vegetation community is defined to include areas that contain a provincially rare vegetation community and/or areas that contain a vegetation community that is rare within the planning area. SWH Table 1.2.1 contains a listing of rare vegetation communities that are considered SWH for the planning area contained within Ecoregion 6E.

Table 1.2.1 Rare Vegetation Communities.

Rare Vegetation Community	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Description	Candidate SWH - Detailed Information and Sources	Confirmed SWH - Defining Criteria	Evaluation
16. 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 >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes • SWHMiST Index #21 provides development effects and mitigation measures.	**SWH is not present.**

Rare Vegetation Community	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Description	Candidate SWH - Detailed Information and Sources	Confirmed SWH - Defining Criteria	Evaluation
17. Sand Barren **Rationale;** Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in sizeⒺ. Information Sources • OMNRF Districts. • Natural Heritage Information Centre (NHIC) has location information available on their website. • Field Naturalist Clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics) • SWHMiST Index #20 provides development effects and mitigation measures.	**SWH is not present.**

Rare Vegetation Community	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Description	Candidate SWH - Detailed Information and Sources	Confirmed SWH - Defining Criteria	Evaluation
18. Alvar **<u>Rationale;</u>** Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 CUM2 CUS2 CUT2-1 CUW2 FOC1 FOC2 **Five Alvar Indicator Species:** 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 6EⒺ[cxlix]	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover [lxxviii].	An Alvar site > 0.5 ha in size. <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Districts. • Field Naturalist Clubs. • Conservation Authorities.	• Field studies that identify four of the fiveⒺ Alvar Indicator Species at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses • SWHMiST Index #17 provides development effects and mitigation measures.	**SWH is not present.**

Rare Vegetation Community	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Description	Candidate SWH - Detailed Information and Sources	Confirmed SWH - Defining Criteria	Evaluation
19. Old Growth Forest **<u>Rationale;</u>** Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest <u>Information Sources</u> • 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 ecosite are >140 years old, then the area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics • SWHMiST Index #23 provides development effects and mitigation measures.	**SWH is not present within the development envelope; may be present in ESPA lands to the west.**
20. Savannah **<u>Rationale:</u>** Savannahs are extremely rare habitats in Ontario.	CUS2 TPS1 TPS2 TPW1 TPW2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60% [lxxix, lxxx, lxxxi, lxxxii, lxxxiii]	No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) has location data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used[i]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST Index #18 provides development effects and mitigation measures.	**SWH is not present.**

Rare Vegetation Community	Candidate SWH - ELC Ecosite Codes	Candidate SWH - Habitat Description	Candidate SWH - Detailed Information and Sources	Confirmed SWH - Defining Criteria	Evaluation
21. 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]	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts. • Natural Heritage Information Centre (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 Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST Index #19 provides development effects and mitigation measures.	**SWH is not present.**
22. 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 The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Centre (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 • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST Index #37 provides development effects and mitigation measures.	**SWH is not present.**

1.2.2 Specialized Habitat for Wildlife

Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size[cxlviii]. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife. The specialized habitats for wildlife that are considered as SWH are outlined in Table 1.2.2.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
23. Waterfowl Nesting Area **<u>Rationale;</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Blue-winged Teal Gadwall Green-winged Teal Hooded Merganser Mallard Northern Pintail Northern Shoveler Wood Duck	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST Index #25 provides development effects and mitigation measures.	Candidate SWH is not present. Upland habitat adjacent to VU1 (CUM) is very narrow. Survey results: • One of the listed species was recorded with ‘Possible’ breeding evidence during targeted breeding bird surveys: Mallard, 1 individual **Conclusion: no Candidate or Confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
24. Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **<u>Rationale;</u>** Nest sites are fairly uncommon in Eco-region 6E 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 **<u>Special Concern:</u>** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities. • Field Naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area . • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependant on sight lines from the nest to the development and inclusion of perching and foraging habitat • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for <u>≥</u>3 years or suspected of not being used for >5 years before being considered not significant. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #26 provides development effects and mitigation measures	No Candidate SWH is present. Survey results: • None of the listed species was recorded. **Conclusion: No Candidate or Confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
25. 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.	Barred Owl Broad-winged Hawk Cooper's Hawk Northern Goshawk Red-shouldered Hawk Sharp-shinned Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer • 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 or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of suitable habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH. • Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST Index #27 provides development effects and mitigation measures.	No Candidate SWH is present. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
26. 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 Species:</u>** Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) [cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Centre (NHIC) • Field Naturalist Clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No Candidate SWH is present. Areas of exposed mineral soil adjacent to VU1 and VU5 are not close to open water and do not provide viable nesting habitat given land use and proximity to a busy road / urban development. Survey results: • None of the listed species was recorded. **Conclusion: no Candidate or Confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
27. Seeps and Springs **<u>Rationale;</u>** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Ruffed Grouse Salamander spp. Spruce Grouse White-tailed Deer Wild Turkey	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system . • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species <u>Information Sources</u> • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists Clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an 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 of the habitat. • SWHMiST Index #30 provides development effects and mitigation measures	No Candidate SWH is present; the seepage area (VU5) is not within a forested area. Survey results: • None of the listed species was recorded at the seep. **Conclusion: no Candidate or Confirmed SWH is present.**
28. 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	Blue-spotted Salamander Eastern Newt Gray Treefrog Spotted Salamander Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts • OMNRF wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area . If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMiST Index #14 provides development effects and mitigation measures.	Candidate SWH is present within VU4 (vernal pools). Candidate habitat was evaluated with MMP surveys in 4 years (2022-2025), and supplemental surveys on multiple dates. Survey results: • Gray Treefrog recorded in low abundance (L1) in the ESPA in one year (2024). Not recorded in 2022, 2023 or 2025 **Conclusion: no Confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
29. Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickerel Frog Spotted Salamander Western Chorus Frog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands	• Wetlands>500m^2 (about 25m diameter),supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats . • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3Ⓔ. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #15 provides development effects and mitigation measures.	Candidate SWH is present in VU1 (MAS2-1), an ~0.25ha wetland. Candidate habitat was evaluated with MMP surveys in 4 years (2022-2025), and supplemental surveys on multiple dates. Survey results: • None of the listed species was recorded during 4 years of MMP surveys • Green Frog and Northern Leopard Frog were recorded infrequently and in very low abundance (1 to several individuals) **Conclusion: no Confirmed SWH is present**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH- ELC Ecosite Codes	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
30. Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale:</u>** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Blackburnian Warbler Black-throated Blue Warbler Black-throated Green Warbler Blue-headed Vireo Northern Parula Ovenbird Red-breasted Nuthatch Scarlet Tanager Veery Winter Wren Yellow-bellied Sapsucker **<u>Special Concern:</u>** Canada Warbler Cerulean Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. • Interior forest habitat is at least 200 m from forest edge habitat. <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.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiSTIndex #34 provides development effects and mitigation measures.	Candidate SWH may be present in the ESPA to the west. Avian use was evaluated through breeding bird surveys in 3 years (2022 to 2024), and supplemental surveys on multiple dates – in the east portion of the ESPA. Survey results: • None of the listed species was recorded. **Conclusion: no Confirmed SWH is present.**

1.3 HABITAT FOR SPECIES OF CONSERVATION CONCERN (NOT INCLUDING ENDANGERED OR THREATENED SPECIES)

Habitats of Species of Conservation Concern include wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Habitats of Species of Conservation Concern do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007. Table 1.3 assists with the identification of SWH for Species of Conservation Concern.

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH-ELC Ecosite	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
31. Marsh Breeding Bird Habitat **<u>Rationale;</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern American Coot Common Loon Common Moorhen Green Heron Marsh Wren Pied-billed Grebe Sandhill Crane Sedge Wren Sora Trumpeter Swan Virginia Rail **<u>Special Concern:</u>** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH . • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #35 provides development effects and mitigation measures	Candidate SWH is present in Veg. Unit 1 (MAS2-1) and Veg. Unit 5 (MAM3-9), though both are very small habitats. Avian use was evaluated through breeding bird surveys in 3 years (2022 to 2024), and supplemental surveys on multiple dates. Survey results: • None of the listed species was recorded. **Conclusion: no Confirmed SWH is present.**

Wildlife	Species	CANDIDATE SWH-ELC Ecosite	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
32. Open Country Bird Breeding Habitat **<u>Rationale;</u>** **This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.**	Grasshopper Sparrow Northern Harrier Savannah Sparrow Upland Sandpiper Vesper Sparrow **<u>Special Concern:</u>** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #32 provides development effects and mitigation measures	No Candidate SWH is present. Avian use was evaluated through breeding bird surveys in 3 years (2022 to 2024), and supplemental surveys on multiple dates. Survey results: • None of the listed species was recorded. **Conclusion: No Candidate or Confirmed SWH is present.**
33. 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)**	**<u>Indicator Spp:</u>** Brown Thrasher Clay-colored Sparrow **<u>Common Spp.:</u>** Black-billed Cuckoo Eastern Towhee Field Sparrow Willow Flycatcher **<u>Special Concern:</u>** Golden-winged	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 **Patches of shrub ecosites can be complexed into a larger habitat for some bird species**	Large field areas succeeding to shrub and thicket habitats>10ha 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. • 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.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow	No Candidate SWH is present. Avian use was evaluated through breeding bird surveys in 3 years (2022 to 2024), and supplemental surveys on multiple dates. Survey results: • One of the ‘common’ species was recorded: Eastern Towhee, one individual recorded with ‘Possible’ breeding evidence in VU4 (ESPA). **Conclusion: No Candidate or Confirmed SWH is present.**

Wildlife	Species	CANDIDATE SWH-ELC Ecosite	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
trend records [cxcix].	Warbler Yellow-breasted Chat		• Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	"Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #33 provides development effects and mitigation measures.	
34. Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [ccii]	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish; (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or terrestrial sites • 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 • SWHMiST Index #36 provides development effects and mitigation measures.	Candidate SWH is present in association with VU1 and VU5. Potential use was evaluated by multi-year, multi-season field surveys from 2022 to 2025. Survey results: • No evidence of terrestrial crayfish use was recorded. **Conclusion: No Confirmed SWH is present.**
35. Special Concern and Rare Wildlife Species **Rationale:** These species are quite rare or have experienced significant population	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites Information Sources • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca	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 presence of Special Concern and Provincially Rare plant and animal species was assessed through multi-year, multi-season field surveys from 2022 to 2025. Confirmed SWH for Eastern Wood-pewee (*Special Concern*): • Veg. Unit 4: recorded with 'probable' breeding evidence in 2022, 2023 and 2204 • Veg. Unit 5: single individual recorded with 'Possible' breeding evidence in 2022. Marginally suitable habitat; more likely to be nesting with the ESPA woodland (Veg. Unit 4)

Wildlife	Species	CANDIDATE SWH-ELC Ecosite	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
declines in Ontario.	Centre (NHIC).	prior to GPS being available, therefore location informatio± may lack accuracy.	• Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST Index #37 provides development effects and mitigation measures.	A small amount of marginally suitable habitat for Eastern Wood-pewee in Veg. Unit 5 will be removed; however, confirmed SWH for Eastern Wood-pewee in Veg. Unit 4 (ESPA), which includes a much larger area and higher quality habitat, will not be impacted by the proposed development. That habitat will be retained in full and protected with a development setback and other mitigation measures. **Conclusion: Confirmed SWH for Eastern Wood-pewee is present in Veg. Units 4 and 5. With retention of Veg. Unit 4, no impacts to the local population of Eastern Wood-pewee / SWH for this species are anticipated.**

1.4 ANIMAL MOVEMENT CORRIDORS

Animal Movement Corridors are elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity in populations, to allow seasonal migration of animals (e.g. deer moving from summer to winter range) and to allow animals to move throughout their home range from feeding areas to cover areas. Animal movement corridors function at different scales often related to the size and home range of the animal. For example, short, narrow areas of natural habitat may function as a corridor between amphibian breeding areas and their summer range, while wider, longer corridors are needed to allow deer to travel from their winter habitat to their summer habitat.

Identifying the most important corridors that provide connectivity across the landscape is challenging because of a lack of specific information on animal movements. There is also some uncertainty about the optimum width and mortality risks of corridors. Furthermore, a corridor may be beneficial for some species but detrimental to others. For example, narrow linear corridors may allow increased access for racoons, cats, and other predators. Also, narrow corridors dominated by edge habitat may encourage invasion by weedy generalist plants and opportunistic species of birds and mammals. Corridors often consist of naturally vegetated areas that run through more open or developed landscapes. However, sparsely vegetated areas can also function as corridors. For example, many species move freely through agricultural land to reach natural areas. Despite the difficulty of identifying exact movement corridors for all species, these landscape features are important to the long-term viability of certain wildlife populations.

Animal Movement Corridors should only be identified as SWH where:
Where a Confirmed or Candidate SWH has been identified by MNRF or the planning authority based on documented evidence of a habitat identified within these Criterion Schedules or the Significant Wildlife Habitat Technical Guide. The identified wildlife habitats Table 1.4.1 will have distinct passageways or rely on well defined natural features for movements between habitats required by the species to complete its life cycle.

Table 1.4.1 Animal Movement Corridors

Habitat	Species	CANDIDATE SWH- ELC Ecosite	CANDIDATE SWH- Habitat Criteria and Information Sources	CONFIRMED SWH- Defining Criteria	Evaluation
36. Amphibian Movement Corridors **Rationale;** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickeral Frog Spotted Salamander Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat – Wetland)** of this Schedule Information Sources • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant • Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • SWHMiST Index #40 provides development effects and mitigation measures	**Not present.**
37. Deer Movement Corridors Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	**White-tailed Deer**	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). Information Sources • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas . • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors. • SWHMiST Index #39 provides development effects and mitigation measures	Per LIO online mapping , a White-tailed Deer Wintering Area (Stratum 2) is a present on lands to the west (i.e., associated with the ESPA). Given the lack of natural habitat and presence of urban residential development and major roads, no deer movement corridors are present within the development envelope. **Conclusion: No Confirmed SWH is present.**

1.5 Exceptions for EcoRegion 6E

Exceptions are candidate wildlife habitats that will have different criteria than what is proposed in the above schedules for an area within the Eco-region. The Exceptions will be based on Eco-Districts and municipalities can apply the exception for the eco-district within their planning area

Table 1.5.1 Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	CANDIDATE SWH- Ecosites	CANDIDATE SWH- Habitat Description	CONFIRMED SWH- Habitat Criteria and Information	CONFIRMED SWH- Defining Criteria	Evaluation
6E-14 **Rationale:** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears. [clxxxvi, ccxvii]	**Mast Producing Areas** Black Bear	All forested habitat represented by ELC Community Series: FOM FOD	• Black bears require forested habitat that provides cover, winter hibernation sites, and mast producing tree species.	Woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). Information Sources • Important forest habitat for black bears may be identified by OMNRF.	• All woodlands > 30ha with a 50%composition of these ELC Vegetation Types are considered significant: FOM1-1, FOM2-1, FOM3-1, FOD1-1, FOD1-2, FOD2-1, FOD2-2, FOD2-3, FOD2-4, FOD4-1, FOD5-2, FOD5-3, FOD5-7, FOD6-5 • SWHMiST Index #3 provides development effects and mitigation measures.	**Not within Ecodistrict 6E-14.**
6E- 17 **Rationale:** Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population	**Lek** Sharp-tailed Grouse	CUM CUS CUT	• The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated.	Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland. Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting. Information Sources • OMNRF District Office • Bird watching clubs • Local landowners • Ontario Breeding Bird Atlas	Studies confirming lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant. • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat • SWHMist Index #32 provides development effects and mitigation measures.	**Not within Ecodistrict 6E-17.**

APPENDIX G

Species at Risk Habitat Evaluation

Table G.1. Species At Risk Habitat Assessment – Proposed Development at 515 Erbsville Road, Waterloo

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Jefferson Salamander (*Ambystoma jeffersonianum*)	**Endangered. Known to Occur**	Species Protection and Habitat Regulation	MNRF Waterloo Region List (2014)	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).	**None.** No deciduous or mixed forest in the development envelope; no vernal pools present. Potentially suitable habitat in adjacent ESPA forest to the west	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**None.** No suitable habitat within development limits. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.
Acadian Flycatcher (*Empidonax virescens*)	**Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines.	**None**. No large, mature natural forests in the development envelope. Potentially suitable habitat in adjacent ESPA forest to the west	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable habitat within development limits. Not recorded during field surveys. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Bald Eagle (*Haliaeetus leucocephalus*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014), eBird.org (Columbia Forest Trails, 2020)	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers. They roost in super canopy trees such as Pine.	**None.** Potential for occasional flyovers, but no suitable lakeshore / river habitat with super canopy trees.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable habitat within development limits.
Bank Swallow (*Riparia riparia*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014), eBird.org (Columbia Forest Trails, 2020)	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers.	**Minimal.** Potential for flyovers and foraging over the site. No suitable nesting habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. Not recorded during field surveys. No suitable nesting habitat within development limits; potential foraging habitat is abundant in the local landscape. Recommended mitigation measure: ensure that construction areas maintain slopes of less than 70° for any soil piles / excavation sites.
Barn Swallow (*Hirundo rustica*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014), NHIC, eBird.org (Columbia Forest Trails, 2021)	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	**Minimal.** Potential for flyovers and foraging over the site. No suitable nesting habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No breeding observations	**None.** No breeding individuals recorded during field surveys. No suitable nesting habitat within development limits; potential foraging habitat is abundant in the local landscape.
Black Tern (*Childonias niger*)	**Special Concern. Historically Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefer freshwater marshes and wetlands; nest either on floating material in a marsh or on the ground very close to water.	**None**. No freshwater marshes present on or adjacent to the Subject Property.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable habitat within development limits.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Bobolink (*Dolichonyx oryzivorus*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014); NHIC	Generally, prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands.	**None.** No suitable nesting habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Canada Warbler(*Cardellina canadensis; formerly Wilsonian canadensis*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	**None.** No large, mature natural forest habitat is present in the development envelope. Potentially suitable habitat is present in the ESPA forest to the west.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable habitat within development limits. Not recorded during field surveys. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.
Cerulean Warbler (*Setophaga cerulea; formerly Dendroica cerulea*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014), NHIC	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.	**None.** No large, mature natural forest habitat is present in the development envelope. Potentially suitable habitat is present in the ESPA forest to the west.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable habitat within development limits. Not recorded during field surveys. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.
Chimney Swift (*Chaetura pelagica)*	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Historically found in deciduous and coniferous, usually wet forest types, all with a well-developed, dense shrub layer; now most are found in urban areas in large, un-capped chimneys	**Minimal.** Potential for flyovers and foraging over the site. No suitable nesting habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.

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Common Nighthawk (*Chordeiles minor*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and riverbanks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops).	**Minimal.** Low potential for flyovers and foraging habitat above the site. No suitable nesting habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable nesting habitat is present. Not recorded during field surveys.
Eastern Meadowlark(*Sturnella Magna*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014); NHIC	Generally, prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	**None**. No suitable nesting habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Eastern Wood-Pewee (*Contopus virens*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014), NHIC, eBird.org (Columbia Forest Trails, 2021)	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	**Minimal.** No forest habitat is present in the development envelope. Suitable breeding/nesting habitat is present in the ESPA forest to the west.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	Recorded as a probable breeder in the ESPA and possible breeder in the central wetland (1 individual in 2022).	**Minimal.** No forest habitat within development limits, though remnant plantation trees are present. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.
Eastern Whip-poor-will (*Caprimulgus vociferus*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	**None.** No suitable nesting habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.

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Golden-winged Warbler (*Vermivora chrysoptera*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefer areas of early successional vegetation, found primarily on field edges, hydro or utility rights-of-way, or recently logged areas.	**None.** No suitable nesting habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable nesting habitat is present. Not recorded during field surveys.
Henslow's Sparrow (*Ammodramus henslowii*)	**Endangered. Historically Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally found in old fields, pastures and wet meadows. They prefer areas with dense, tall grasses, and thatch, or decaying plant material	**None.** No suitable nesting habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable nesting habitat is present. Not recorded during field surveys.
Least Bittern (*Ixobrychus exilis*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants.	**None.** No suitable habitat is present	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable nesting habitat is present. Not recorded during field surveys.
Louisiana Waterthrush (*Seiurus motacilla*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps.	**None.** No suitable habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Northern Bobwhite (*Colinus virginianus*)	**Endangered. Historically Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands.	**None.** No suitable habitat is present. This species has an extremely limited range in Ontario (restricted to Walpole Island).	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None**. No suitable nesting habitat is present. Not recorded during field surveys.

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Peregrine Falcon (*Falco peregrinus*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, nest on tall, steep cliff ledges adjacent to large waterbodies; some birds adapt to urban environments and nest on ledges of tall buildings, even in densely populated downtown areas.	**None.** No suitable habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Red-Headed Woodpecker (*Melanerpes erythrocephalus*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks.	**Minimal.** No suitable open forest habitat is present and there are no known records within development limits; however, known to occur in variety of treed habitats.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No confirmed habitat within development limits and abundant suitable habitat is present in the local landscape. Potential impacts to individuals mitigated through timing of vegetation removal (i.e., outside of the regional nesting period).
Short-eared Owl (*Asio flammeus*)	**Special Concern. Suspected to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields.	**None**. No suitable habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Wood Thrush (*Hylocichla mustelina)*	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014), NHIC, eBird.org (Columbia Forest Trails, 2021)	Nests mainly in second growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	**Minimal.** No forest habitat is present within the development limits. Suitable breeding/nesting habitat is present in the ESPA forest to the west.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No forest habitat within development limits and not recorded during field surveys. Forest habitat west of the Subject Property (within ESPA) will be retained in full and protected with a 10 m development setback and buffer enhancements.

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Yellow-breasted Chat (*Icteria virens*)	**Endangered. Historically Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, prefer dense thickets around wood edges, riparian areas, and in overgrown clearings.	**None.** No suitable thicket habitat is present.	Breeding bird surveys conducted on 12 dates (2022-2025). Supplemental surveys on 17 additional dates	No observations	**None.** No suitable nesting habitat is present. Not recorded during field surveys.
Northern Brook Lamprey *(Ichthyomyzon fossor*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, inhabits small rivers and clear streams of varying sizes. Adults spawn in gravelly riffles.	**None.** No aquatic habitat is present on the Subject Property.	n/a	n/a	**None.** No habitat is present within development limits.
Black Redhorse *(Moxostoma duquesnei*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, lives in moderately sized rivers and streams, with generally moderate to fast currents.	**None**. No aquatic habitat is present on the Subject Property.	n/a	n/a	**None**. No habitat is present within development limits.
Silver Shiner (*Notropis photogenis)*	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients.	**None**. No aquatic habitat is present on the Subject Property.	n/a	n/a	**None.** No habitat is present within development limits.
Monarch Butterfly (*Danaus plexippus*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces.	**Minimal.** No There are small areas cultural meadow habitat; however, concentrations of milkweed and other wildflowers have not been recorded. There is some potential for use during migration / dispersal.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**None.** No sensitive reproduction habitat is present within the development limits. Suitable habitat is prevalent in the broader landscape.
Rusty-patched Bumble Bee (*Bombus affinis*)	**Endangered. Formerly Occurred and May Still Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows.	**None.** Only small areas of foraging habitat (i.e. wildflowers) occur within development limits; however, this species is very rare in Ontario and has only been observed at Pinery Provincial Park since 2002.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**None.** No confirmed habitat within development limits.

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West Virginia White (*Pieris virginiensis*)	**Special Concern. Formerly Occurred and May Still Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort (Cardamine diphylla), which is a small, spring-blooming plant of the forest floor.	**None.** No large, mature natural forests on the Subject Property.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**None.** No suitable habitat within development limits. Forest habitat north of the Subject Property (within HNA) that may provide suitable habitat will be retained in full and protected with a development setback and buffer enhancements.
Mammals								
American Badger (*Taxidea taxus jacksoni*)	**Endangered. Known to Occur**	Species Protection and Habitat Regulation	MNRF Waterloo Region List (2014)	Generally, prefer open habitats, whether natural (grasslands) or man-made (agricultural fields, road rights-of-way, golf courses).	**Minimal.** No Potential habitat within development limits is limited to small areas of cultural meadow / woodland edge. No known records within development limits or local landscape.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations / no potential burrows observed	**None.** No observations or known records on the Subject Property.

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Eastern Red Bat (*Lasiurus borealis*)	**Endangered. Known to Occur**	Species and General Habitat Protection as of Jan. 27, 2025		Eastern Red Bats occupy a wide diversity of habitats across their geographic range. They use both deciduous and coniferous forests, of any age class. Trees used as maternity roosts tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy. They typically roost among the foliage of trees and occasionally shrubs. Male Eastern Red Bats in particular have been observed to use saplings as roosts, which is rarely reported for reproductive females. They forage in both forested and non-forested habitats. Heavily disturbed habitats are generally avoided. Eastern Red Bats migrate to overwintering areas in the southern United States but their migration routes are not known.	No forest habitat is present within the development envelope (though some treed areas remain from the former plantation / residential use. The site and local landscape context have been heavily disturbed from urban development (except for the ESPA). Suitable forest habitat is present in the ESPA.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**Minimal.** Potential habitat impacts are limited to removal of a small number of remnant plantation trees and other scattered trees within a disturbed site / context. Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)

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Eastern Small-footed Myotis (*Myotis leibii)*	**Endangered. Known to Occur**	Species and General Habitat Protection as of June 27, 2014	MNRF Waterloo Region List (2014)	In Ontario, eastern small-footed myotis is not known to roost in 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 and rock piles, but it occasionally inhabits buildings. Entrances of caves or abandoned mines where humidity is low, and temperatures are cool and sometimes subfreezing may be used as hibernacula (Humphrey 2017).	A small amount of potentially suitable treed habitat is present within the development envelope. No buildings or rocks / talus etc. or hibernacula are present. Woodland habitat is present in the ESPA. No known records from the site.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**Minimal.** Potential habitat impacts are limited to removal of a small number of remnant plantation trees and other scattered trees. Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)
Little Brown Myotis (*Myotis lucifugus*)	**Endangered. Known to Occur**	Species and General Habitat Protection. Jan. 24, 2013	MNRF Waterloo Region List (2014)	In Ontario, this species' range is extensive and covers much of the province. It will roost in both natural and man-made structures. Roosting colonies require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	No suitable roosting colony habitat, nursing colony habitat or hibernacula are present within the development envelope. Potentially suitable habitat is present in the ESPA. No known records from the site.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**None.** Suitable habitat is not present within the development envelope and suitable ESPA habitat will be retained in full with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)

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Northern Hoary Bat (*Lasiurus cinereus*)	**N/A**	Species and General Habitat Protection. Jan. 27, 2025		Hoary Bats occupy a wide diversity of habitats across their geographic range. They use both deciduous and coniferous forests, of any age class. Trees used as maternity roosts tend to be large diameter and tall, reaching or exceeding the height of the surrounding canopy. They typically roost among the foliage of trees and occasionally shrubs. They forage in the open, and suitable habitats may include wetlands, grasslands and open fields with patchily distributed trees. Heavily disturbed habitats are generally avoided. Hoary Bats migrate to overwintering areas in the southern United States but their migration routes are not known.	A small amount of potentially suitable treed roosting habitat and foraging habitat is present within the development envelope, but the site is highly disturbed. Woodland habitat is present in the ESPA. No known records from the site	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**Minimal.** Potential habitat impacts are limited to removal of a small number of remnant plantation trees and other scattered trees. Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)
Northern Myotis (*Myotis septentrionalis*)	**Endangered. Known to Occur**	Species and General Habitat Protection. Jan. 24, 2013	MNRF Waterloo Region List (2014)	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 as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	A small amount of potentially suitable treed habitat is present within the development envelope, though mature trees are not abundant. No suitable hibernacula habitat is present. No known records from the site.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**Minimal.** Potential habitat impacts are limited to removal of a small number of remnant plantation trees and other scattered trees. Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)

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Silver-haired Bat (*Lasionycteris noctivagans)*	**Endangered. Known to Occur**	Species and General Habitat Protection. Jan. 27, 2025		Silver-haired Bats occupy a wide diversity of habitats across their geographic range. They roost in a variety of large diameter coniferous and deciduous trees. Roosting occurs primarily under bark and in the cavities of trees, and occasionally buildings. They forage in young and old forest, as well as forest openings (canopy gaps), but are concentrated along forest edges and intact forest. Silver-haired Bats overwinter in the United States, southeastern British Columbia and sometimes the Great Lakes region. In British Columbia, they have been documented hibernating in mines, rock crevices, trees, and snags. Little else is known about their winter ecology.	A small amount of potentially suitable treed roosting habitat is present within the development envelope, but mature trees are not abundant. No suitable hibernacula habitat is present. Woodland habitat with mature trees is present in the ESPA. No known records from the site.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**Minimal**. Potential habitat impacts are limited to removal of a small number of remnant plantation trees and other scattered trees. Forested habitat in the ESPA to the west will be retained in full, with development setbacks and an enhanced buffer. Potential impacts to individuals will be mitigated with appropriate timing for tree removals during the non-active period (i.e., removals between December 1 and March 31)
Tri-colored Bat (*Perimyotis subflavus*)	**Endangered. Known to Occur**	**Species and General Habitat Protection. June 15, 2016**		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. 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 (ECCC 2018).	A small amount of potentially suitable treed roosting habitat is present within the development envelope, but not in close proximity to large-bodied water. No suitable hibernacula habitat is present. Woodland habitat with mature trees is present in the ESPA. No known records from the site.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	No observations	**N/A**

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Rainbow Mussel (*Villosa iris*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Most abundant in shallow, well-oxygenated reaches of small- to medium-sized rivers and sometimes lakes, on substrates of cobble, gravel, sand and occasionally mud	**None**. No aquatic habitat is present on the Subject Property.	n/a	n/a	**None.** No habitat is present within development limits.
Wavy-rayed lampmussel (*Lampsilis fasciola*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, inhabit clear rivers and streams of a variety of sizes, where the water flow is steady and the substrate is stable	**None**. No aquatic habitat is present on the Subject Property.	n/a	n/a	**None**. No habitat is present within development limits.
American Chestnut (*Castanea dentata*)	**Endangered. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils.	**None.** No suitable upland forest habitat on the Subject Property. Potentially suitable habitat is present in the ESPA forest to the west.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None**. No suitable habitat and not recorded within development limits. Forest habitat in the ESPA will be retained in full and protected with a 10m development setback and buffer enhancements.
American Ginseng (*Panax quinquefolius*)	**Endangered. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock).	**None.** No suitable upland forest habitat on the Subject Property. Potentially suitable habitat is present in the ESPA forest to the west.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None**. No suitable habitat and not recorded within development limits. Forest habitat in the ESPA will be retained in full and protected with a 10m development setback and buffer enhancements.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Butternut (*Juglans cinerea*)	**Endangered. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldom, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows.	Some potentially suitable habitat is present.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None**. Not recorded within development limits or in proximity to proposed development. Forest habitat in the ESPA will be retained in full and protected with a 10m development setback and buffer enhancements.
Eastern Flowering Dogwood (*Cornus florida*)	**Endangered. Known to Occur - Planted**	Species Protection and Habitat Regulation	MNRF Waterloo Region List (2014)	Generally, grows in deciduous and mixed forests, in the drier areas of its habitat, although it is occasionally found in slightly moist environments; Also grows around edges and hedgerows.	**None**. No suitable forest habitat on the Subject Property. Potentially suitable habitat is present in the ESPA forest to the west.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None.** No suitable habitat and not recorded within development limits. Forest habitat in the ESPA will be retained in full and protected with a 10m development setback and buffer enhancements.
Green Dragon (*Arisaema dracontium*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	Generally, grows in damp deciduous forests and along streams.	**None**. No suitable forest habitat on the Subject Property. Potentially suitable habitat is present in the ESPA forest to the west.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None**. No suitable habitat and not recorded within development limits. Forest habitat in the ESPA will be retained in full and protected with a 10m development setback and buffer enhancements.
Kentucky Coffee-tree (*Gymnocladus dioicus*)	**Threatened. Known to Occur - Planted**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	Generally, inhabits open areas of floodplains and the edges of wetlands. Shade-intolerant.	**None**. No suitable habitat on the Subject Property.	3-season vegetation field surveys conducted on 10 dates from 2022 to 2024. Supplemental surveys on 19 additional dates	Not present within development limits	**None**. No suitable habitat and not recorded within development limits.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Blanding's Turtle (*Emydonidea blandingii*)	**Threatened. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014); MNRF 2015 mapping (City of Waterloo Screening Area); NHIC mapping	In Ontario, Blanding's Turtle will use a range of aquatic habitats, but favor those with shallow, standing or slow-moving water, rich nutrient levels, organic substrates and abundant aquatic vegetation. This species is known to travel great distances over land in the spring in order to reach nesting sites, which can include open areas in dry conifer or mixed forests, partially vegetated fields, and roadsides. Suitable nesting substrates include organic soils, sands, gravel and cobble. They hibernate underwater (COSEWIC 2016).	**Low.** Although there are NHIC records of Blanding's Turtle in the area, there is no suitable aquatic habitat on the property for turtles to carry out life processes. The meadow marsh habitat on the property is densely vegetated with Cattail and European Reed and has minimal standing water (0-3 cm) and does not provide open water areas for movement, basking, escape, foraging, breeding or overwintering. At best, the meadow marsh may provide a temporary stopover for turtles (i.e. rest, hydration, shade) during overland forays and the former residential area may provide some limited nesting opportunities; however, movement opportunities for turtles to the property are limited by development (north and south) and roads (east).	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**Minimal.** Removal of a small amount (~0.2 ha) of low quality anthropogenic meadow marsh adjacent to Erbsville Road and Category 3 habitat (based on mapped wetland east of Erbsville Road). The property does not provide overwintering or suitable aquatic habitat. May provide some stopover habitat, but of low quality and impacted by urban development and major roads. No impact to known Category 1 or 2 habitat. Potential impacts to individuals can be mitigated with timing of removals, interim exclusion fencing during construction and awareness / encounter protocols.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Eastern Ribbonsnake (*Thamnophis sauritus*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	In Ontario, Eastern Ribbonsnake is semi-aquatic, and is rarely found far from shallow ponds, marshes, bogs, streams or swamps bordered by dense vegetation. They prefer sunny locations and bask in low shrub branches. Hibernation occurs in mammal burrows, rock fissures or even ant mounds (COSEWIC 2012).	A small amount of marginally suitable habitat is present (marsh), but there are no known records on the property.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**None.** Very limited amount of potentially suitable habitat, but no field observations and no known records on the property.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Midland Painted Turtle (*Chrysemys picta marginata*)	**Special Concern. Known to Occur**		NHIC mapping	In Ontario, Painted Turtles use waterbodies, such as ponds, marshes, lakes and slow-moving creeks, with a soft bottom and abundant basking sites and aquatic vegetation. This species hibernates on the bottom of waterbodies (Ontario Nature 2018).	**Minimal**. Although there are NHIC records of Midland Painted Turtle in the area, there is no suitable aquatic habitat on the property for turtles to carry out life processes. The meadow marsh habitat on the property is densely vegetated with Cattail and European Reed and has minimal standing water (0-3 cm) and does not provide open water areas for movement, basking, escape, foraging, breeding or overwintering. At best, the meadow marsh may provide a temporary stopover for turtles (i.e. rest, hydration, shade) during overland forays and the former residential area may provide some limited nesting opportunities; however, movement opportunities for turtles to the property are limited by development (north and south) and roads (east).	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**Minimal.** Removal of a small amount (~0.2 ha) of anthropogenic meadow marsh adjacent to Erbsville Road. Potential impacts to individuals can be mitigated with timing of removals, interim exclusion fencing during construction and awareness / encounter protocols.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Northern Map Turtle (*Graptemys geographica*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014)	In Ontario, Northern Map Turtle prefers large waterbodies with slow to moderate flows, soft substrates, and abundant basking sites, such as rocks and logs. Along Lakes Erie and Ontario, this species occurs in lakes, coastal marshes, and rivers . Hibernation takes place under water (COSEWIC 2012).	**None.** No suitable habitat and no known records on the Subject Property.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**None**. No suitable habitat, no field observations and no known records on the property.
Queensnake (*Regina septemvittata*)	**Endangered. Known to Occur**	Species and General Habitat Protection	MNRF Waterloo Region List (2014)	In Ontario, Queensnake requires permanent aquatic habitat with large flat rocks, either submerged or on the bank/shoreline. Individuals rarely leave the shoreline of permanent bodies of water with abundant shoreline cover and a healthy population of crayfish. They are fairly intolerant of silty substrates and most commonly are found in streams with bedrock and gravel substrates. The best sites have water temperatures that remain at or above 18◦C during the active season, have a swift to moderate current and woodland surroundings. Hibernacula may occur in the abutments of old bridges, in clay slopes above the high-water mark and in bedrock fissures (Gillingwater 2011).	**None**. No suitable habitat and no known records on the Subject Property.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**None**. No suitable habitat, no field observations and no known records on the property.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Snapping Turtle (*Chelydra serpentina*)	**Special Concern. Known to Occur**	N/A	MNRF Waterloo Region List (2014); NHIC mapping	In Ontario, Snapping Turtle uses a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place under water. Nesting sites consist of open areas with sand, gravel or organic soils in proximity to waterbodies (COSEWIC 2008).	**Minimal**. Although there are NHIC records of Snapping Turtle within 1 km, there is no suitable aquatic habitat on the property for turtles to carry out life processes. The meadow marsh habitat on the property is densely vegetated with Cattail and European Reed and has minimal standing water (0-3 cm) and does not provide open water areas for movement, basking, escape, foraging, breeding or overwintering. At best, the meadow marsh may provide a temporary stopover for turtles (i.e. rest, hydration, shade) during overland forays and the former residential area may provide some limited nesting opportunities; however, movement opportunities for turtles to the property are limited by development (north and south) and roads (east).	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**Minimal.** Removal of a small amount (~0.2 ha) of marginally suitable anthropogenic meadow marsh adjacent to Erbsville Road. No impact to known nesting or overwintering habitat. Potential impacts to individuals can be mitigated with timing of removals, interim exclusion fencing during construction and awareness / encounter protocols.

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used by Species	Reasonable Likelihood of Presence within or adjacent to the Subject Property	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Wood Turtle (*Glyptemys insculpta*)	**Endangered. Historically Known to Occur**	Species Protection and Habitat Regulation	MNRF Waterloo Region List (2014)	In Ontario, Wood Turtle spends spring and fall in or near waterbodies, including clear rivers and streams with sandy or gravel-sand substrates and slow to moderate flow. During the summer, this species is often found on land in habitats with moderate or patchy shrub and tree cover, often more than 500 m from water. Hibernation takes place under water. Nesting sites are found on sand or gravel-sand beaches and banks with patchy vegetation cover. Other sites less often used include roadsides, railways, utility corridors, farmland and pastures (Ontario Wood Turtle Recovery Team 2010).	No suitable aquatic habitat is present on the Subject Property.	3 season field surveys (BBS, MMP, Veg) / SAR Habitat Assessments on 29 dates from 2022 to 2025	Not recorded	**None**. No suitable habitat, no field observations and no known records on the property.

APPENDIX H

Sedge Transplant Strategy

515 Erbsville – *Carex laevivaginata* Transplant Proposal

BACKGROUND AND HABITAT REQUIREMENTS

- *Carex laevivaginata* is regionally rare in Waterloo Region
  - *Carex laevivaginiata* is a habitat specialist (at least in its northern range). See References 1 and 2.
  - Somewhat cryptic morphology, similar to common species in section Vulpinae.
- Abundant throughout seepage area classified as Mixed Forb Organic Meadow Marsh (MAM3-9; Figure 1 and representative photographs).
- Adjacent Columbia Forest including Activa-owned and City-owned lands were searched for suitable habitat on July 26, 2024 (Figure 2). Four locations were identified as moderate-high habitat suitability (S2-S4 in Figure 3).

Habitat:

- a wide range of habitats (wet meadows, swamps, marshes, edges of treed vernal pools, woodland swales, wet ravines, muddy banks of watercourses) were reported across various sources; however, the Minnesota DNR reports that *Carex laevivaginata* has a more restricted habitat in its northern range. See References 1, 2, 3 and 4.
- Northern range habitat: **Groundwater seeps** or calcareous seepage flows in **mature treed habitats** of hardwood, Hemlock, or Cedar, or in seepage-fed wet meadows, often with a **layer of organic matter in the soil**. It may also be found in habitats at the groundwater outflow downstream from larger seeps. See References 1, 2 and 3.

Threats:

- Disruption in ground water flows, even from far away can negatively impact the sedge.
- Gaps in the canopy which increase light and temperature may negatively impact the sedge. See References 1 and 2.

PRECENDENCE

- No transplanting precedence was found within the literature for *Carex laevivaginata* specifically.
- Closely related (but less groundwater dependant) *Carex stipata* is reported to have high transplanting success. See Reference 5.

- Unrelated but groundwater dependant *Carex flava* is reported to have high transplanting success. See Reference 5.
- Peer-reviewed study (Steed & DeWald 20023) reported transplant success of *Carex rostrata*, *Carex languinosa*, and *Carex nebrascensis* (all meadow marsh spp.). See Reference 6.
- Highest survival rates with wild transplants (64-88%, between the three species) were reported under the following conditions (See Reference 6):
  - Large transplanted material (7.6 cm diameter) was more likely to survive compared to small transplanted material (5 cm diameter).
  - Sedges transplanted during summer in a period of stress (either waterlogged or dry soils).
  - Sedges were transplanted into comparable ground water depths.

PROPOSED METHODS

Schedule:

- Sedges to be transplanted between late June/early July, when seed heads are readily visible.
- Transplanting should occur on cooler, overcast days ideally prior to heavy summer rains. See Reference 6.
- Excavation of wild transplant material:
- Transplanted material should be excavated to a depth of 15 cm, and a minimum of 8 cm diameter. See Reference 6.
- Sedge roots to be kept moist in plastic soil cores/pots and wrapped in plastic bags or similar material. See Reference 6.
- Sedges to be pruned to a height of 15 cm above ground to minimize water stress and transpiration. See Reference 6.

Transplanting:

- A qualified biologist will be on site to monitor the transplanting activities.
- All sedges (up to 100 clumps) will be transplanted from the source location.
- Transplant sedges within 3-16 hours of being removed from the ground (ideally immediately after excavation of wild transplant material). See Reference 6.

- Transplant sedges into Seeps S2, S3, S4, and S5 on adjacent City of Waterloo property, where groundwater is close to the surface of the soil.
- Excavate a hole approx. 15 cm deep (see Reference 6), twice as wide as sedge diameter, place the sedge in hole, making sure it's level with the soil's surface. Fill back with soil and water thoroughly, amend with compost or other rich organic matter, if needed. See References 7 and 8.
- Plant sedges a minimum of 15 cm away from adjacent transplants. See Reference 8.
- Numbered wire flags will be placed around the outer perimeter of all planted material in each transplant location (seeps S2, S3, S4, and S5).

Maintenance:

- Tend transplants as-required via manual removal of any encroaching vegetation within the transplant locations marked with numbered wire flags for a minimum period of two (2) years following transplant.

Monitoring:

- Transplanted material to be monitored during summer and fall vegetation monitoring for the duration of pre-construction – post-construction to assess survival of transplanted material.

REFERENCES

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Steed, J. and DeWald, L. 2003. Transplanting Sedges in Southwestern Riparian Meadows. Restoration Ecology: 11(2): 247-256.

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515 Erbsville Road
Natural Features and Biological Monitoring Locations

Legend

- Subject Property
- Ecological Land Classification
- Seepage Area
- Core Environmental Feature
- Plantation Retention Area
- 10 m Core Environmental Feature Offset for Plantation Removal

Biological Monitoring Locations

- Amphibian Calling Stations
- Breeding Bird Point Count Locations
- Vegetation Monitoring Plots

* Note that all boundaries and locations are approximate. The MAM3-9 Unit includes the seepage area and a 15 m setback.

0 25 50
Meters
1:2,000

Figure: 1
Project No.: 221-03541-00
Date Created: 04-April-2022
Date Modified: 22 May 2024
Coordinate System: NAD 1983 UTM Zone 17N
Source: ESRI Basemaps, WSP, LIO

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Photo 1: Facing east showing the 10 m long portion of the seepage area that is not vegetated.



Photo 2: Facing west showing the general character and dense vegetation throughout the seepage area. Note the lack of defined flow path.



Photo 3: Facing west showing the general character and dense vegetation throughout the seepage area. Note the lack of defined flow path.



Photo 4: Facing east showing the general character and dense vegetation through-out the seepage area. Note the lack of defined flow path.



Photo 5: Facing west showing the culvert at the downgradient end of the seepage area. Note the lack of channel definition.



Photo 6: Facing west looking upgradient from the laneway between the seepage area and MAS2-1 wetland.

wsp	515 Erbsville Road Seepage Area Assessment Representative Photographs	Date: September 2024 Project No: CA0026096 Representative Photos

Figure 2: Suitable habitat search area



Figure 3: Suitable habitat locations





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