



NATURAL ENVIRONMENT REPORT
Norwood Pit Extension Application
Township of Douro-Dummer
July 2026



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.



July 23, 2026
RS# 2024-043

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**SUBJECT: Natural Environment Technical Report
Norwood Pit Extension Aggregate Licence Application
Township of Douro-Dummer**

RiverStone Environmental Solutions Inc. is pleased to provide you with the attached report. A summary of the key results and recommendations are provided at the beginning of the report. Detailed descriptions of the work completed, and the findings are provided in the subsequent sections.

Please contact us if there are any questions regarding the report, or if further information is required.

Best regards,

RiverStone Environmental Solutions Inc.

A handwritten signature in black ink, appearing to read "Bev Wicks", is written over a horizontal line.

Bev Wicks, Ph.D.
Senior Ecologist / Principal

REPORT SUMMARY

Type of Study Natural Environment Technical Report	Date July 23, 2026
Legal Description Part of Lots 1 and 2, Concession 11 and Part of Lot 2 Concession 12, Geographic Township of Douro - Dummer, County of Peterborough.	Application -ARA Licence for a Class A, Pit above water table. - Zoning By-law Amendment (ZBA) Douro-Dummer and Official Plan Amendment Peterborough County
Approval Authorities Ministry of Natural Resources Township of Douro – Dummer County of Peterborough	Proponent Drain Bros. Excavating Limited
<u>Report Summary</u> This Natural Environment Report has been prepared to support an application under the <i>Aggregate Resources Act</i> (ARA) and an ARA Site Plan Amendment for Licence #624922 to integrate the site. The site is to be operated as an extension to the existing Norwood Pit to the west and will ship from the existing entrance/exit within Licence #3340. The site is legally described as Part of Lots 1 & 2, Concession 11 & 12, 145 Dummer 12th Line Road, 89 12th Line Road, 159 12th Line Road and 4818 Highway 7. The area to be licensed is 36.7 ha, of which 28.1 ha would be in the extraction area. This report details a comprehensive approach to confirming the presence and absence of key natural heritage features that are afforded protection under the applicable legislation and policies at the municipal, provincial, and federal levels. During site investigations and field surveys carried out in 2024 and 2025, it was determined that significant natural heritage features and species of conservation interest occurred on or adjacent to the licence area. Features located within the licence boundary and adjacent lands include 1) Non-Provincially significant wetlands, 2) habitat of endangered and threatened species, 3) significant wildlife habitat, and 4) fish habitat. Per the requirements of the ARA, the potential impacts of the proposed licence including operational activities permitted by the ARA application on the identified natural features and species of conservation interest were evaluated. Based on the findings herein, RiverStone has determined that the proposed ARA licence application addresses the applicable policies and legislation, provided that the recommendations contained in Section 5 are implemented in full. The requested local and regional planning approvals will allow for the proposed extractive land use without compromising the ecological values of the assessment area.	

CONSOLIDATED RECOMMENDATIONS FOR SITE PLANS

Wetlands Including Provincially Significant Wetlands, Fish Habitat, and Watercourse

- The limit of extraction and operational activities shall be setback a minimum of 30 m from the boundary of all wetlands features as shown on Figure 6 in the NER. The 30 m setback shall be permanently marked prior to the commencement of pit operations.

- The rehabilitation plan shall include pre-emptive naturalization of all setbacks outlined on Figure 10 with a combination of native trees and shrubs adjacent to wetlands, where the current use is agricultural field. For rehabilitation recommendation, please see Section 5.10.
- The 30 m wetland setbacks shall be undisturbed by pit operations and remain as natural self-sustaining vegetation.

Significant Woodlands

- Woodland feature removals and woodland thinning shall only occur between November 1 and March 15th to avoid active periods for birds and bats.
- The limit of extraction shall be setback a minimum of 30 m from the boundary of all woodland features not approved for extraction as shown on Figure 8 of the NER. The 30 m setback shall be permanently marked prior to the commencement of pit operations.
- To prevent damage to adjacent woodland habitat located within the licence boundary, tree protection measures (e.g., hoarding, temporary fencing at the dripline) shall be applied.
- The 30 m woodland setback shall be undisturbed by pit operations and remain as natural self-sustaining vegetation.

Endangered and Threatened Species

Black Ash

- The recommendations to protect the wetlands must be implemented in full to protect Black Ash and their habitat.

It is the proponent's responsibility to confirm any updated requirements for the protection of all endangered and threatened species including Black Ash. Black Ash is an endangered species and protection measures afforded by the Species Conservation Act apply within the County of Peterborough. Black Ash protection should be reviewed prior to vegetation clearing on lands adjacent to wetlands to ensure ongoing compliance with the SCA or future policy guidance related to the SCA.

Eastern Meadowlark

- For protection of habitat of Eastern Meadowlark, no additional recommendations specific to this species outside of general protections for all breeding birds is required. To maintain habitat availability for grassland birds, the rehabilitation plan has incorporated replacement grassland habitat.

Significant Wildlife Habitat

Snapping Turtle and Turtle Wintering Areas

- The recommendations offered herein to protect the wetlands (Section 5.2) shall be implemented in full as they will also serve to protect turtle wintering habitat within this feature

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- A Scientific Collectors Permit from MNR shall be obtained to remove any fish and wildlife species from the pond located at Station T1 to allow for removal of turtles, fish, and wildlife prior to decommissioning of pond. Any captures shall be relocated to other pond features on the subject property.
- Specialized barrier fencing for reptiles that include J hooks, shall be erected along the licence boundary adjacent to wetland features.
- A qualified person shall be retained to certify the adequacy of the specialized barrier fence. The fence shall be inspected to ensure necessary repairs occur on a routine basis (monthly from April through October).

Eastern Wood-pewee, Wood Thrush, and Grasshopper Sparrow

- Removal of natural vegetation (e.g., shrub clearing, fallow fields, etc.) shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).
- The progressive rehabilitation plan shall include the restoration of forest habitat that is continuous with the existing habitat for woodland species and shall include the creation of meadow habitat of sufficient size to provide useable habitat for grassland birds. For rehabilitation recommendations, please see Section 5.10 and for the location please see Figure 10 in the NER.

Barn Swallow

- Removal of structures shall occur outside the primary breeding bird window (i.e., between April 1 and August 31). If structures are to be removed during the primary breeding bird nesting window (i.e., between April 1 and August 31), a search of structures is to be completed by a qualified professional. If active nests are present, removal shall be delayed until young have fledged.

Monarch

- Removal of natural vegetation within the cultural meadow communities shall be completed outside of the primary Monarch breeding window (i.e., between Mid-May to October).
- Cultural meadow habitat, using a native wildflower mix that includes milkweed species, shall be included as part of the rehabilitation plan. Native seed mixes that include milkweed species should also be applied on the berms. For rehabilitation recommendations, please see Section 5.10 and for the location please see Figure 10 in the NER.

Rare Wildlife Species

- Rehabilitation areas outlined on Figure 10, and outlined in Section 5.10 will provide future habitat for bird species noted to be present on the subject property.
- All removal of natural vegetation (e.g., tree/shrub clearing, fallow fields, etc.) shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).

Other Natural Features and Functions

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- Removal of natural vegetation (e.g., tree/shrub clearing, fallow fields, etc.) within the extraction area shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).
- At pit closure, site rehabilitation will be required utilizing vegetation species native to the local area in the final rehabilitation plan. Areas adjacent forest communities are to utilize native species that blend with the adjoining vegetation communities. For rehabilitation recommendations, please see Section 5.10.

Rehabilitation Requirements

Pre-emptive Plantings Adjacent to Wetlands

The area identified for Pre-emptive Planting on the ARA operational and rehabilitation plan shall be planted within 5 years of the issuance of the ARA licence in the spring (i.e., May) or fall (i.e., mid - September to early-October) with a mixture of the following tree and shrub species:

Trees

- Red Maple – *Acer rubrum*
- Bigtooth Aspen (*Populus grandidentata*)
- Trembling Aspen (*Populus tremuloides*)
- White Birch (*Betula papyrifera*)
- American Basswood (*Tilia americana*),
- Balsam Fir, (*Abies balsamea*),
- Eastern Hemlock (*Tsuga canadensis*)
- Eastern White Pine (*Pinus Strobus*)

Shrubs / Groundcover

- Choke Cherry (*Prunus virginiana*)
- Red Osier-dogwood (*Conus sericea*)
- Staghorn Sumac (*Rhus typhina*)
- Smooth Serviceberry (*Amelanchier laevis*)
- Common Blackberry (*Rubus allegheniensis*)
- Northern Bracken Fern – *Pteridium aquilinum* var. *latiusculum*
- White Meadow-sweet – *Spiraea alba*

Within the Pre-emptive Planting Area, the following planting requirements shall be met:

- a) Trees shall be planted at a density of five (5) trees per 100 m².

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- b) All tree saplings shall be planted 5 m apart to increase rooting and provide stabilization.
- c) Trees shall be a minimum of 1.2 m (~4 ft) in height with a sufficiently developed root ball to sustain planting.
- d) Shrubs shall be planted at a shrub to tree ratio of 5:1.
- e) All shrubs shall be installed 1 m apart.
- f) All installed shrubs shall consist of potted material at least 30cm tall in 1-3 gallon pots.
- g) Any woody plant root defects (e.g., girdling) shall be corrected prior to installation.
- h) All woody plants shall be installed such that the root crown/trunk flare is exposed above the soil surface to ensure proper oxygenation of the rooting zone.
- i) All installed woody plants shall be watered (deep soaking) following installation.

Monarch Habitat Creation (Cultural Meadow)

The area identified for potential Monarch Habitat Cultural Meadow on the ARA rehabilitation page, shall be planted with a native mix of wildflowers and grasses to stabilize soils and provide appropriate habitat for Monarch Butterfly. These areas are to be maintained as a meadow with mowing and maintenance limited to periodic removal of trees and woody shrubs. The area shall be planted with an Early Succession Mix that includes the following:

- Black Eyed Susan (*Rubeckia hirta*),
- Blue Vervain (*Verbena hastata*),
- Canada Anemone (*Anemone canadensis*),
- Canada Blue-joint (*Calamagrostis canadensis*),
- Canada Goldenrod (*Solidago canadensis*),
- Little Bluestem (*Schizachyrium scoparium*),
- Common Milkweed (*Asclepias syriaca*),
- Fowl Bluegrass (*Poa palustris*),
- Meadow/Open Field Sedge (*Carex granularis*),
- New England Aster (*Symphyotrichum novae-angliae*),
- Path Rush (*Juncus tenuis*),
- Purple Stemmed Aster (*Symphyotrichum puniceum*),
- Virgins Bower (*Clematis virginiana*),
- Wild Bergamot (*Monarda fistulosa*).

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1 **BACKGROUND**

RiverStone Environmental Solutions Inc. (hereafter, “RiverStone”) was retained by Drain Bros. Excavating Limited (hereafter, “Client”) to prepare a Natural Environment Report (NER) for submission with an application under the *Aggregate Resources Act* (ARA) in the Township of Douro-Dummer (hereafter, “Township”). The assessment parcels are legally described as Part of Lots 1 & 2, Concession 11 & 12, 145 Dummer 12th Line Road, 89 12th Line Road, 159 12th Line Road and 4818 Highway 7 Township of Douro-Dummer, County of Peterborough (**Figure 1**).

The applications required to support the proposed pit include the following.

- Peterborough County Official Plan Amendment (1992 Official Plan)
- Township of Douro-Dummer Zoning By-law Amendment
- ARA Licence Application
- ARA Site Plan Amendment for Licence #624922 to integrate the site

The site is to be operated as an extension to the existing Norwood Pit located to the west. Aggregate will ship from the existing entrance/exit within Licence #3340 and portable plants will be used in the extension. The extension will have a combined tonnage limit with Licence No. 624922 of 227,000 tonnes per year, which is currently the approved tonnage for Licence No. 624922. On this basis, there will be no changes to existing processing and shipping levels.

The proposal is for a Class A, pit above the water table, with a licensed area of 36.7 ha of which 28.1 ha would be extracted. The site is bounded on the east by rural properties, on the south by Highway 7, on the west by 12th Line Road, and on the north by an adjacent farm property.

For the purposes of this NER, the following terminology is employed as shown on **Figure 1**

- **subject property** -parcels/properties in which the aggregate licence is situated
- **site** – proposed licence area.
- **adjacent lands** – areas within 120 meters of the site.
- **Assessment area** – areas that include the site, adjacent lands (120 m), additional lands, and the surrounding landscape to a distance considered necessary to appropriately situate the proposed areas of disturbance within a broader municipal and ecoregional context.

To provide clarity and consistency in the characterization and assessment of potential impacts to natural features on and adjacent to the site, the following terminology is employed and shown on **Figure 2**:

- **Northern Wetland (Wetland 2 – Tatham (2026))** – wetland consisting of marsh and thicket swamp communities located on the site in the north portion.
- **Central Wetlands (Wetland 1 and 3 Tatham (2026))**– wetland consisting of treed swamp and thicket swamp communities including area associated with hydro corridor. There is a drainage divide in this wetland feature.
- **South Wetland (Wetland 4 Tatham (2026))**– wetland consisting of treed swamp, marsh and thicket swamp communities extending from the central portion of the site to Highway 7.

- **Southeast Wetland (Wetland 4 Tatham (2026))** – wetland consisting of meadow marsh community located in the southeast portion of the property associated with current residence and adjacent Highway 7.
- **Central Pond** – constructed (i.e. dugout) pond located in the central portion of the site associated with field community. Confirmation that pond was constructed November 24 and 25, 2022.

1.1 **Study Purpose**

This NER has been prepared to address the requirements under the ARA and its associated regulation (O. Reg. 244/97) and policy standards. Per s. 7 of O. Reg. 244/97 pursuant to the ARA, licence applications must be made in accordance with the Provincial Standards (i.e., *Aggregate Resources of Ontario: Provincial Standards*). Per subs. 2.2.3 of the Provincial Standards for Class A licence applications, the application must be supported by an NER, following the *Aggregate Resources of Ontario Technical Reports and Information Standards* (August 2020).. Under the ARA, a “site” is defined as “the land or land under water to which a licence or permit or an application therefore relates”, which is the term used for this NER.

Per the Ministry of Natural Resources (MNR) Technical Report Standards, the purpose of a NER is to identify and describe the existing natural environment conditions on and within 120 m of the site, and to determine whether any of the following features are present:

- a) Significant wetlands
- b) Other coastal wetlands in Ecoregions 5E, 6E, and 7E
- c) Fish Habitat
- d) Significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Mary’s River)
- e) Habitat of endangered and threatened species
- f) Significant wildlife habitat
- g) Significant areas of natural and scientific interest (ANSIs)
- h) Within the area of one or more of the provincial plan(s) any key natural heritage features not included in a) through g)

When any of the above listed features are identified during NER an analysis is required to determine the potential for negative impacts on the identified feature(s) or areas of significance and their ecological function. If potential negative impacts are identified, then the assessment should provide recommendations for appropriate preventative, mitigative, and remedial measures. The NER is also required to identify if any of the features listed in a) through g) are located in a natural heritage system identified by the municipality in ecoregions 6E and 7E or by the province in a provincial plan.

In addition to satisfying the requirements for a NER assessments under the ARA, this report is intended to be submitted to the Township of Douro-Dummer and Peterborough County as part of a complete application package for a site specific ZBA and OPA to permit the proposed mineral aggregate operation on the lands. Pre -consultation with the Township of Douro-Dummer and Peterborough County was completed in October 2023 to confirm the application requirements. Therefore, this report includes an assessment, to the extent needed for a planning application, of

whether the activities proposed conform with relevant natural heritage policies contained in the Township's Official Plan (OP; consolidated), Peterborough County OP, and other applicable legislation and policies including the 2024 Provincial Planning Statement (PPS), federal *Fisheries Act*, and provincial Species Conservation Act (SCA) (see **Section 2.2**).

2 APPROACH AND METHODS

2.1 Personnel and Qualifications

The field investigation work conducted between 2024-2025 was completed by Craig Mann, H.BSc.F. (vegetation, fisheries, species at risk, breeding birds, wetlands), Al Shaw, M.Sc. (fisheries), Becca Howe, M.Sc. (wildlife, breeding birds, wetlands), Terin Robinson M.Sc. (fisheries), and Mike Frances M.Sc. (vegetation, species at risk, wetlands).

The curricula vitae for the report authors (Bev Wicks senior ecologist/president) and primary field investigators are provided in **Appendix 1**.

2.2 Applicable Environmental Legislation and Policy

As described in **Section 1.1**, the primary policies directing this assessment are the ARA, municipal OP's, and provincial policy. In accordance with the ARA, the application is considered a Class A above water licence, to allow for the extension to the existing Norwood Pit. To assess whether the application satisfies other relevant municipal, provincial, and federal requirements with respect to the natural environment, the following policies (e.g., statutes, regulations, plans, guidance documents, etc.) were considered applicable during both the field investigations and the impact analysis:

- County of Peterborough Official Plan (1994, Consolidated to June 2025) including the Township of Douro-Dummer Official Plan included in Sections 6 and 7 of the County of Peterborough Official Plan.
- Provincial *Aggregate Resources Act* (ARA), R.S.O. 1990, c. A.8, including:
 - o Ontario Regulation 244/97: General
 - o Aggregate Resources of Ontario Standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act
 - o Aggregate Resources of Ontario Technical Reports and Information Standards (2020)
- *Provincial Planning Statement*, 2024, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including:
 - o Significant Wildlife Habitat Technical Guide (OMNR 2000a)
 - o Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (OMNR 2010)
 - o Significant Wildlife Habitat Technical Guide (OMNR 2000b)
 - o Significant Wildlife Habitat Criteria Schedules for Ecoregion 6 (OMNRF 2015b)
 - o Significant Wildlife Habitat Mitigation Support Tool (OMNRF 2014).
- Provincial Species Conservation Act (SCA), S.O. 2025, c. 4, Sched. 10, including:
 - o O. Reg. 60/26: Protected Species in Ontario List
 - o O. Reg. 61/26: Excepted Activities - No Permit or Registration

- o O. Reg. 62/26: Transitional Matters
- o O. Reg. 74/26: Permit Activities
- o O. Reg. 75/26: Registerable Activities
- *Fish and Wildlife Conservation Act*, S.O. 1997, c. 41.
- *Federal Fisheries Act*, R.S.C. 1985, c. F-14, including:
 - o *Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations*, S.O.R/2013-191
 - o Fish and Fish Habitat Protection Policy Statement (DFO 2019)
- *Federal Species at Risk Act*, S.C. 2002, c. 29.
- *Federal Migratory Birds Convention Act*, S.C. 1994, c. 22, including:
 - o Migratory Birds Regulations, C.R.C., c. 1035

2.3 **Information Sources Used to Assess Site Conditions**

Information pertaining to the natural features and functions of the site and adjacent lands was obtained from the following sources:

- **Peterborough County Official Plan** (Consolidated to June 2025) for natural heritage feature mapping within and adjacent to the site, including:
 - o Section 4.1.3.3 – Mineral Aggregate and Non-Aggregate Mineral Resources
 - o Section 4.1.3.4 – Natural Heritage Features
 - o Section 6.0 Local Plan Policies – Land Use
 - o Section 7.0 Local Plan Policies – General Development
 - o Let Me Map 2.0 Peterborough County
- **Otonabee Conservation Authority (OCA) Interactive Mapping** to identify potential features of conservation interest within and adjacent to the site (accessed July 8, 2025, at <https://camaps.maps.arcgis.com/apps/webappviewer/index.html?id=403c466c459347cfb0c3887d8de85be3>)
- Land Information Ontario (LIO) accessed via MNRF’s “Make a Map” web-based platform (last accessed November, 2025).
- **Ontario GeoHub Aquatic Resource Area Survey Point** (last accessed September 2025)
- **MNRF Natural Areas Mapping and Natural Heritage Information Centre (NHIC) database** regarding information on occurrences of species at risk (SAR), provincially tracked species, and natural heritage features near the site (squares: 18TQ6320, 18TQ6420, 18TQ6321, 18TQ6421, 18TQ6521, 18TQ6422, 18TQ6423, 18TQ6523, 18TQ6621, 18TQ6622, 18TQ6522, 18TQ6622, 18TQ6523 and 18TQ6623; accessed November 1, 2025, at: <http://www.gisoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.htm>)
- **iNaturalist Mapping and Online Database** regarding citizen scientist observations documented in the vicinity of the subject lands accessed November, 2025 at: <https://inaturalist.ca/projects/nhic-rare-species-of-ontario>

- **Species at Risk range maps** (accessed at: <http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html>).
- **Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005** (Cadman et al. 2007) regarding birds that were documented to be breeding near the site between 2001–2005 (squares: 18TTQ62; accessed February 24, 2024 at: <http://www.birdsontario.org/atlas/squareinfo.jsp>).
- **Ontario Reptile and Amphibian Atlas** database regarding reptile and amphibian records near the site (squares: 18TQ62; accessed November 1, 2025, at: http://www.ontarioinsects.org/herpatlas/herp_online.html).
- **Ontario Butterfly Atlas** database regarding butterflies recorded near the site (square: 18TQ62; accessed November 1, 2025, at: http://www.ontarioinsects.org/atlas_online.htm).
- **Atlas of the Mammals of Ontario** (Dobbyn 1994) regarding mammals recorded near the site.
- **Aquatic Species at Risk Maps** mapping generated by Fisheries and Oceans Canada (accessed November 1, 2025, at: <http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm>).
- **Great Lakes Conservation Blueprint for Terrestrial Biodiversity, Volume 2** (Henson and Brodribb (2005) regarding terrestrial biodiversity within Ecodistrict 6E-5 (Mount Forest).
- **Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volume 2** (Phair et al. (2005) regarding aquatic biodiversity within tertiary watershed 2FE (Maitland).
- **Physiography of Southern Ontario** (Chapman and Putnam 2007) for information pertaining to the physiography and soils within and adjacent to the site.
- **Digital Ontario Base Maps** (OBMs; 1:10,000)
- **Historical and Current Aerial Photographs** of the site and Study Area.
- **Site investigations** by RiverStone staff (see **Section 2.4**)

In addition to the above information sources, RiverStone also reviewed the following technical reports and incorporated their results into this NER as appropriate:

- **Pre-consultation letter sent to Township of Douro-Dummer and Peterborough County October 31, 2023**
- **Norwood Pit Extension Level 1 and Level 2 Hydrogeological Assessment, (2026) Tatham Engineering.**
- **Site Plans** (MHBC, 2026)

2.4 Site Investigations

The background biophysical information gathered as outlined in **Section 2.3** helped direct field data collection activities and species-specific surveys associated with multiple site investigations carried out by Riverstone staff. **Table 1** below indicates the primary assessments/surveys performed during each site visit, weather conditions, and time on-site.

Table 1. Site Visits and Primary Tasks.

Date	Assessment/Survey	RiverStone Staff	Weather Conditions	Time of Onsite (hrs.)
April 25, 2024	Site recon, preliminary ELC, vegetation inventory, bat snag assessment, Snake habitat assessment, Snake visual survey, incidental observations	C. Mann, M. Francis	Air Temperature 9°C; Beaufort Wind 1-2; Cloud Cover 0%; Precipitation None	6.0 hrs.
April 26, 2024	Site recon, preliminary ELC, vegetation inventory, bat snag assessment, Snake visual survey, incidental observations	C. Mann	Air Temperature 10 - 14 °C; Beaufort Wind 0; Cloud Cover 0%; Precipitation None	4.0 hrs.
April 26, 2024	Anuran Calling Survey # 1 Part 1	C. Mann, T. Robinson	Air Temperature 5-10 C; Beaufort Wind 0-1; Cloud Cover 0%; Precipitation None	2.75 hrs.
May 1, 2024	Anuran Calling Survey # 1 Part 2	C. Mann, T. Robinson	Air Temperature 12-15 C; Beaufort Wind 1; Cloud Cover 50%; Precipitation None	1.5 hrs.
May 2, 2024	ELC, vegetation inventory, bat snag assessment, Snake visual survey, Turtle Survey #1	C. Mann	Air Temperature 13 - 19 °C; Beaufort Wind 1; Cloud Cover 5%; Precipitation None	6.0 hrs.
May 15, 2024	Anuran Calling Survey #2, EWPW Survey #1	C. Mann, T. Robinson	Air Temperature 12-14 C; Beaufort Wind 0-1; Cloud Cover 0 - 65 %; Precipitation None	3.0 hrs.
May 16, 2024	Turtle Survey #2, ELC refinement, spring vegetation, Snake visual survey, incidental observations	C. Mann	Air Temperature 21-23 C; Beaufort Wind 1; Cloud Cover 50%; Precipitation None	3.0 hrs.
May 23, 2024	EWPW survey #2	C. Mann, T. Robinson	Air Temperature 14-15 C; Beaufort Wind 1; Cloud Cover 0%; Precipitation None	4.5 hrs.
June 2, 2024	Turtle Survey #3, Snake visual survey, incidental observations	B. Howe	Air Temperature 17-21 C; Beaufort Wind 1-2; Cloud Cover 100%; Precipitation None	3.75 hrs.
June 3, 2024	Breeding Bird Survey #1 part 1, incidental observations	B. Howe	Air Temperature 12-18 C; Beaufort Wind 0-1; Cloud Cover 100%; Precipitation None	4.75 hrs.
June 4 2024	Breeding Bird Survey #1 part 2, Turtle Survey #4, Snake visual survey, incidental observations	B. Howe	Air Temperature 14-26 C; Beaufort Wind 0-1; Cloud Cover 30-80%; Precipitation None	6.5 hrs.
June 6 2024	Turtle Survey #5, Vegetation inventory; partial wetland delineation, snake visual survey, incidental observations	M. Francis	Air Temperature 21-24 C; Beaufort Wind 1-2; Cloud Cover 0-70%; Precipitation None (heavy downpour prior to start)	4.5 hrs.
June 12, 2024	Deploy Bat Monitors, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 22 C; Beaufort Wind 2; Cloud Cover 60%; Precipitation None	1.25 hrs.
June 19, 2024	Breeding Bird Survey #2, part 1, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 23-27 C; Beaufort Wind 0-1; Cloud Cover 75-100%; Precipitation None	3.75 hrs.
June 20, 2024	Breeding Bird Survey #2, part 2, deploy third bat monitor, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 23-26 C; Beaufort Wind 0-2; Cloud Cover 100-50%; Precipitation thunderstorm prior to site visit	3.25 hrs.

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June 20, 2024	Anuran Calling Survey #3, EWPW Survey #3, fish sampling	C. Mann, T. Robinson	Air Temperature 21 C; Beaufort Wind 0; Cloud Cover 50%; Precipitation none	4.25 hrs.
June 21, 2024	Fish sampling, incidental observations	C. Mann, T. Robinson	Air Temperature 18-24 C; Beaufort Wind 0-1; Cloud Cover 10%; Precipitation thunderstorm prior to site visit	1.5 hrs.
July 3, 2024	Wetland delineation, ELC refinement, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 19-21 C; Beaufort Wind 0-2; Cloud Cover 0-25%; Precipitation None	3.0 hrs.
July 4, 2024	Breeding Bird Survey #3, part 1, retrieve bat monitors, ELC refinement, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 18-25 C; Beaufort Wind 0-1; Cloud Cover 33-80%; Precipitation None, dense fog	4.5 hrs.
July 5, 2024	Breeding Bird Survey #3, part 2, wetland delineation, ELC refinement, vegetation inventory, incidental wildlife	B. Howe	Air Temperature 20-22 C; Beaufort Wind 0-1; Cloud Cover 0%; Precipitation None	4.5 hrs.
September 27, 2024	Wetland delineation, ELC refinement, vegetation inventory, watercourse assessment	C. Mann, T. Robinson	Air Temperature 12-15 C; Beaufort Wind 0-1; Cloud Cover 15 %; Precipitation None	9.25 hrs.
October 11, 2024	Wetland delineation, watercourse assessment, ELC refinement, vegetation inventory, fish sampling	C. Mann, A. Shaw	Air Temperature 8-10 C; Beaufort Wind 0-1; Cloud Cover 15 %; Precipitation None	4.0 hrs.
February 7, 2025	Raptor Roosting Survey #1, Winter conditions, incidental observations	C. Mann	Air Temperature -5 to -7 C; Beaufort Wind 1-2; Cloud Cover 0 to 50 %; Precipitation intermittent flurries	4.0 hrs.
March 13, 2025	Raptor Roosting Survey #2, Winter conditions, incidental observations	C. Mann	Air Temperature +6 to -4 C; Beaufort Wind 1; Cloud Cover 0 -50 %; Precipitation None	5.5 hrs.

Evidence for the presence of a species (or use of an area by a species) was determined from visual and/or auditory documentation (e.g., song, call) and/or observation of nests, tracks, burrows, browse, skins, and scats (where applicable). Natural heritage features (e.g., SAR habitat, wetlands, etc.) were digitized and delineated in the field with a high accuracy GPS. All land-use, physiographic, and ecological information described for adjacent lands was collected from either current aerial photographs or observations from inside the subject property and/or publicly accessible areas (e.g., rights-of-way, roadsides, etc.). Features of interest were photographed, and all information collected was catalogued for future reference. Representative photographs detailing on-site conditions are provided in **Appendix 2**.

Overall, the level of effort expended during the site investigations and field surveys was considered adequate to document the natural heritage features and functions with recognized conservation status occurring within and adjacent to the site given the location, extent of the proposed pit extraction activities and disturbances, keeping in mind the habitat-based approach described in **Section 2.4.3**.

2.4.1 Terrain, Drainage, and Soils

The geophysical setting of the site and adjacent lands was determined via a review of topographic mapping, soils mapping for the area (Chapman and Putnam 2007), surficial geological mapping, and aerial photographs. Where required soils were further investigated with a Dutch Auger during vegetation community characterization (see also **Section 2.4.4**). Drainage direction and the presence or absence of surface water features was determined based on a review of background information

sources (e.g., Ontario Base Maps, Agricultural Information Atlas, etc.), on-site observations, and review of the hydrogeologic assessment which includes surface catchment analysis (Tatham 2026).

2.4.2 Surface Water and Groundwater

Surface water and groundwater investigations were principally performed by Tatham Engineering and described in the **Level 1 and Level 2 Hydrogeological and Hydrological Assessment for the Norwood Pit Extension** (2026). The results of Tatham's analysis are incorporated where applicable herein.

2.4.3 Habitat-based Approach

RiverStone's primary approach to site assessment is habitat-based. This means that our field investigations first focus on evaluating the potential for features within an area of interest to function as habitat for species considered potentially present, rather than searching for live specimens. An area is considered potential habitat if it satisfies a number of criteria, usually specific to a species, but occasionally characteristic of a broader group (e.g., several turtles of conservation interest use sandy shorelines for nesting, numerous fish species use areas of aquatic vegetation for nursery habitat). Physical attributes of a site that can be used as indicators of its potential to function as habitat for a species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren, coldwater stream), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007), published and unpublished documents, and direct experience.

In instances where habitat features are such that either (i) a species presence cannot be easily determined through an assessment of habitat feature alone, or (ii) habitat features are such that they suggest a species may be present in an area where development is proposed and impacts are likely, RiverStone adds an additional level of rigor to our work by completing further species-specific assessments in accordance with applicable standard methods and protocols.

2.4.4 Vegetation

2.4.4.1 *Community Characterization according to Ecological Land Classification*

Vegetation communities occurring within the assessment area (i.e., site, adjacent lands, and additional lands) were delineated according to Ecological Land Classification (ELC) community tables (Lee et al. 1998). ELC defines ecological units or communities based on bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect), and corresponding vegetation. Use of the system permits biologists and other land managers to use a common language to describe vegetation communities, which in turn facilitates the identification of communities likely to support features or functions of conservation interest. The ELC system is an organizational framework that can be applied at different scales. The ecological units most useful for site-specific evaluations are ecosites and vegetation types (also known as eco-elements). Vegetation types are the finest level of resolution in the ELC system and are recurring patterns found in the plant species assemblages that are associated with a particular ecosite (Lee et al. 1998). Vegetation communities mapped on adjacent lands were delineated predominantly via aerial photograph interpretation.

The boundaries of wetland communities identified via ELC were delineated in the field in accordance with the “50% wetland vegetation rule” specified by the Ontario Wetland Evaluation System (OWES). The boundaries of all treed communities (i.e., forests, cultural woodlands) where they abut open areas (e.g., agricultural fields, etc.) were delineated in the field based on the dripline. Where a treed community is also a wetland (i.e., treed swamp), the greater of the dripline or OWES wetland boundary is used to define the feature extent.

2.4.4.2 *Vascular Plant Survey*

A vascular plant survey consisting of a comprehensive area search (“wandering transects”) was principally centred within areas of the site and adjacent lands (contingent upon access) with naturally occurring (i.e., non-planted) vegetation. Extra search effort was undertaken in areas with the greatest potential to support vascular plants that are designated species at risk, provincially rare, regionally significant species, and in areas with the greatest potential to be impacted based on the proposal. Nomenclature and common names for the recorded vascular plant species are generally consistent with the southern Ontario Vascular Plant Species List (Bradley 2013) except where a name change has more recently been adopted by NHIC.

2.4.5 Anuran Calling Surveys

Calling anuran surveys were conducted in accordance with the Marsh Monitoring Program for Surveying Amphibians (Bird Studies Canada 2009). This protocol involves the completion of three (3) surveys; once per month between April and June, from approximately 30 minutes after sunset until midnight. Appropriate weather conditions include no or very light precipitation and wind speed ≤ 3 on the Beaufort wind scale. As the site is located within the southern region, each of the three (3) surveys should occur during the second half of the month (i.e., April 15-30, May 15-31, and June 15-30). A total of twelve (12) anuran calling stations were established and situated systematically to cover potentially significant anuran breeding habitats, particularly those that could occur adjacent to proposed areas of extraction or disturbance (**Figure 2**). Each station was surveyed for a minimum duration of three (3) minutes. Anurans were also recorded incidentally during other field activities on-site.

2.4.6 Breeding Bird Surveys

Three (3) rounds of breeding bird surveys were conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001) and any species specific surveys as required under the *Species Conservation Act*. Surveys were conducted in the appropriate season (May 24–July 10), time of day (between dawn and 5 hours after dawn), and weather conditions (no rain, wind speed ≤ 3 on the Beaufort Wind Scale). A total of twenty-one (21) breeding bird stations were established and situated systematically to cover potentially significant bird habitats, particularly those that could occur adjacent to proposed areas of extraction or disturbance (**Figure 2**). Each station was surveyed for a minimum duration of 5 minutes. Birds were also recorded incidentally in transit between stations during the breeding bird survey, and incidentally during other field activities on-site.

The OBBA provides four breeding categories to accompany each observation:

Observed: Species observed during its breeding season (no evidence of breeding).

Possible Breeding: Includes any of the following observation types: 1) species observed in its breeding season in suitable nesting habitat, and 2) singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.

Probable Breeding: Includes any of the following observation types: 1) pair observed in their breeding season in suitable nesting habitat, 2) permanent territory presumed through registration of territorial song on at least 2 days, a week or more apart, at the same place, 3) courtship or display between a male and a female or 2 males, including courtship feeding or copulation, 4) visiting probable nest site, 5) agitated behaviour or anxiety calls of an adult, 6) brood patch on adult female or cloacal protuberance on adult male, and 7) nest-building or excavation of nest hole.

Confirmed Breeding: Includes any of the following observation types: 1) distraction display or injury feigning, 2) used nest or eggshell found (occupied or laid within the period of the study), 3) recently fledged young or downy young, including young incapable of sustained flight, 4) adults leaving or entering nest site in circumstances indicating occupied nest, 5) adult carrying faecal sac, 6) adult carrying food for young, 7) nest containing eggs, and 8) nest with young seen or heard.

2.4.7 Winter Roosting Raptor Surveys

RiverStone completed visual winter raptor surveys based a combination of methodologies reviewed through online sources. The Significant Wildlife Habitat Mitigation Support Tool, 2014 defines raptor wintering areas as a combination of fields and woodlands that contain roosting, foraging, and resting habitats. Habitat consists of a combination of fields and woodlands larger than 20 ha and/or field/meadow habitat larger than 15 ha with windswept and limited snow accumulation. The amount of potential habitat within the assessment area was limited. Based on the variability of terrain and limited amount of roadway adjacent potential habitats, a combination of survey points and transects were completed within the assessment area using the following parameters. Surveys were completed during winter months with snow on the ground, during periods of good visibility (no heavy snowfall), with a minimum of seven (7) days between surveys. Binoculars or a viewing scope were used to scan potential habitat for between 15-30 min, depending on length of transition area. Two (2) surveys were completed, and if raptors were observed additional surveys to confirm continued roosting were proposed. Location of winter roosting surveys are outlined on (Figure 2).

2.4.8 Snakes – Visual Encounter Surveys

An assessment was completed during the initial site reconnaissance review of the subject property to identify potential habitat for overwintering snakes including bedrock areas, stone piles and brush piles etc., that would provide access to hibernaculum below frost line. With the lack of potential hibernation habitat observed within or adjacent to the extraction area, general snake visual surveys were completed while walking transects through the study area to determine presence and absence of snakes in the spring of 2024. Surveys generally followed the Survey Protocol for Ontario's Species at Risk Snakes (OMNRF 2016) with surveys completed when air temperatures were between 8-25°C between 0900-1700h on days with less than 50% cloud cover and low winds (i.e., less than 24 kph) (OMNRF 2016). The goal of these surveys was to identify locations snakes may be using for overwintering (i.e., hibernacula). These surveys are designed to target snakes in the season when vegetative cover is minimal, and thermal conditions result in snakes heading to or congregating at overwintering sites. During this period, surveys focus on observations of snakes coming in and out of overwintering sites to bask and as well as looking for discarded snake sheds. Visual encounter surveys were conducted

primarily along transition areas that contained a variety of vegetation communities with good sun exposure.

2.4.9 Bat Maternal Roosting Habitat Surveys and Acoustic Monitoring

Targeted surveys for bats focused on identifying the presence of maternal roosts. Surveys followed the protocols outlined in OMNR (2011). Vegetation mapping using Ecological Land Classification (ELC) was used to identify appropriate ecosites and guide the completion of onsite surveys (Protocol Step 1). Snags/cavity tree surveys were conducted during leaf off conditions within appropriate forest communities using a fixed plot method of sampling. Plots were completed within conifer, deciduous, mixedwood and swamp communities. Location of plots were scoped based on vegetation mapping prepared through photo interpretation and provided on **Figure 2** and results in **Appendix 3** (Protocol Step 2). Acoustic surveys were then completed within the assessment area; however, as snag/cavity tree surveys did not yield any areas with significant numbers of snags, acoustic survey equipment was placed in areas where some snags were documented as well as in proximity to location of the proposed pit (Protocol Step 3) following a precautionary principle. Acoustic equipment was placed at three (3) locations (**Figure 2**). Timing of surveys was selected as it corresponded with the roosting period for maternal colonies as outlined in (COSEWIC 2013) and continued for a period of at least 10 days. Acoustic monitoring was completed between sunset and sunrise each day). Weather conditions were fair throughout the survey period (Protocol Step 4).

2.4.10 Turtle Visual Encounter Surveys

Visual encounter surveys for turtles were conducted in accordance with *Occurrence Survey Protocol for Blanding's Turtle (Emydoidea blandingii) in Ontario* (OMNR 2014). The protocol involves conducting five (5) separate surveys spread out over a minimum three (3) week period between ice-out (i.e., April) and June 15 under appropriate weather conditions (e.g., generally sunny conditions, no rain). All turtle visual encounter surveys were completed when air temperatures were at least 10°C since this is a requirement of the Blanding's Turtle survey protocol. Where possible, surveys were timed to target warm days following cool or inclement weather, which would increase the chances of encountering basking turtles. Vegetation communities and other features with a potential to function as habitat (i.e., overwintering, basking, feeding) for species at risk turtles were surveyed (**Figure 2**).

2.4.11 Eastern Whip-poor-will Calling Surveys

Whip-poor-will was identified in the background review and based on RiverStone's habitat-based assessment this species was identified as having the potential to be present in the open communities on the subject property. Surveys for Whip-poor-will were completed following a slightly modified MNR survey protocol (MNR 2015). The protocol requires that two site visits be completed, one each during the waxing period of the full moon cycle (i.e., > 50% illumination of the moon) in May and June. Surveys were completed on clear nights (i.e., little to no cloud cover), no precipitation, temperatures above 10°C, and calm winds (i.e., >12 km/h). Surveys involve the completion of a point counts that take place at least 30 minutes after sunset, but the moon is above the horizon – given that moon rise changes throughout the survey period, survey start times may be considerably later than sunset. Point count station must be within 500 m of potential habitat and not be within 400 m of adjacent stations. For stations that were closer than 400 m, point counts were directional as to not include previously counted calls. Point count times at each were a minimum of 3 minutes (protocol recommendation) with the length of time spent within the vicinity of potential habitat gathering incidental observation, being much longer. Seven (7) survey locations were established within open field habitat in the assessment area.

2.4.12 Fish and Aquatic Habitat

Fish habitat was assessed during the site investigations included direct fish habitat (spawning, rearing, feeding, and cover habitat), and indirect fish habitat, which includes intermittent watercourses and drainage features that contribute food, water, or nutrients for fish, but which fish do not use directly.

Fish and aquatic habitat conditions within all on-site surface water features were assessed in accordance with the Ontario Stream Assessment Protocol (OSAP) (Stanfield 2010). A modified version of the OSAP Section 4, Module 1 (Rapid Assessment Methodology for Channel Structure) was employed to collect the aquatic data. OSAP provides a standard assessment technique for characterizing watercourses and their associated fish and aquatic habitat conditions at specific locations (stations). Information collected includes bankfull and wetted widths, channel structure, evidence of erosion, instream cover, substrate type, stability, and aquatic and riparian vegetation, and other relevant characteristics.

An assessment of the fish community using minnow traps was completed within tributaries associated with wetland present on the subject property and adjacent lands. Electrofishing was not undertaken as the watercourses were not safely wadeable. The purpose of the assessment was to document the fish community present to assist in determining fish community structure and the thermal regime of the creek. A coldwater fish community (i.e., presence of Brook Trout) would suggest that groundwater is a component of the baseflow, placing additional emphasis on protecting coldwater inputs. The purpose of the sampling of the tributaries was to determine if these features were fish habitat.

2.5 Identification of Significant Natural Features

“Significant natural features” as described herein represent natural features and habitats that have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant natural features herein include those outlined in the compiled Aggregate Resources of Ontario Standards, namely:

- a) Significant wetlands;
- b) Other coastal wetlands in Ecoregions 5E, 6E and 7E;
- c) Fish habitat;
- d) Significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary’s River);
- e) Habitat of endangered species and threatened species;
- f) Significant wildlife habitat;
- g) Significant areas of natural and scientific interest; and
- h) Within the area of one or more provincial plan(s), any key natural heritage features not included in (a) through (g).

Criteria used to determine the presence or absence of the above significant natural features within the Study Area were considered from a variety of sources including the Natural Heritage Reference Manual (MNR 2010) and (for Significant Wildlife Habitat) the Ecoregion 6E Criteria Schedule (MNR 2015).

Like significant natural features, “significant species” represent individuals of wild species that have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant species are defined here to include:

- Species designated endangered, threatened, or special concern under the provincial *Species Conservation Act*, 2025, S.O. 2025, c. 4, Sched. 10, and species affording protection by this *Act* as listed on O. Reg. 60/26: Protected Species in Ontario List.
- Species designated Provincially Rare (i.e., S1, S2, or S3) by NHIC.

The appropriate process for identifying such features is outlined below.

2.5.1 Significant Wetlands

A significant wetland is an area identified as provincially significant by the MNR using evaluation procedures established by the province, as amended from time to time.

The presence or absence of significant wetlands within the site and adjacent lands was ascertained via the online Ontario Make a Map Natural Heritage website and by reviewing relevant background information sources (per **Section 2.1**). As described in **Section 2.4.4**, RiverStone delineated the boundaries of all wetlands identified within the site (whether Significant or not) in accordance with the “50% wetland vegetation rule” per OWES. No Provincially Significant Wetlands (PSW) are mapped on the subject property with the closest PSW (Ouse East River North Wetland) mapped approximately 125 m west of 12th Line Road in along the northwest corner of the subject property. An additional PSW (Plato Creek Headwater Complex Wetland) is located approximately 500 m east of the subject property (**Figure 1**).

2.5.2 Coastal and Significant Coastal Wetlands

Coastal wetlands are defined in the PPS. Significance is determined using evaluation criteria and procedures established by the province (MMAH 2024). The subject property is not located on one of the Great Lakes or their connecting channels (Lake St. Clair, St. Mary’s, St. Clair, Detroit, Niagara and St. Lawrence Rivers), nor is the subject property on a tributary to any of the above-specified water bodies and lies, wholly or partly, downstream of a line located 2 km upstream of the 1:100 year flood line (plus wave run-up) of the large water body to which the tributary is connected (MMAH 2024).

Therefore, coastal wetlands and significant coastal wetlands are considered absent from the subject lands and the surrounding, local landscape.

2.5.3 Significant Woodlands

Based on review of the County of Peterborough Official Plan, it was determined that no significant woodland features had been mapped in the assessment area, however the County of Peterborough online mapping shows areas of vegetation **Figure 3**. Since the OP does not provide detailed descriptions of significant woodland, RiverStone has relied on the Natural Heritage Reference Manual for assessment of significant woodland.

The Natural Heritage Reference Manual describes a woodland and significance as follows:

- Woodland means...
treed areas that provide environmental and economic benefits to both the private landowner and the general public such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland

products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels.

- Significant: means...
 - c) regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.

Section 3.7.4 and **Table 5.** Significant Woodland assessment based on criteria within the Natural Heritage Reference Manual, 2005. Determination of size thresholds is based on 42% forest cover in the Otonabee Region Watershed Report Card, 2023
below provides a detailed assessment for significant woodland within the assessment area.

2.5.4 Significant Valleylands

Valleylands are defined in the PPS. Significance is determined using criteria provided in provincial guidance, but municipal approaches that achieve or exceed the same objective may also be used (MMAH 2024). The assessment area does not contain valleys or other landform depressions with flowing or standing water. The Ouse River Tributary becomes a defined channel within a wetland in an area of flat topography proximate to HWY 7.

The presence or absence of significant valleylands was ascertained via assembly and review of relevant background information sources (per **Section 2.3**) and the results of targeted and habitat-based assessments on-site (per **Section 3**). No significant valleylands are located within the assessment area.

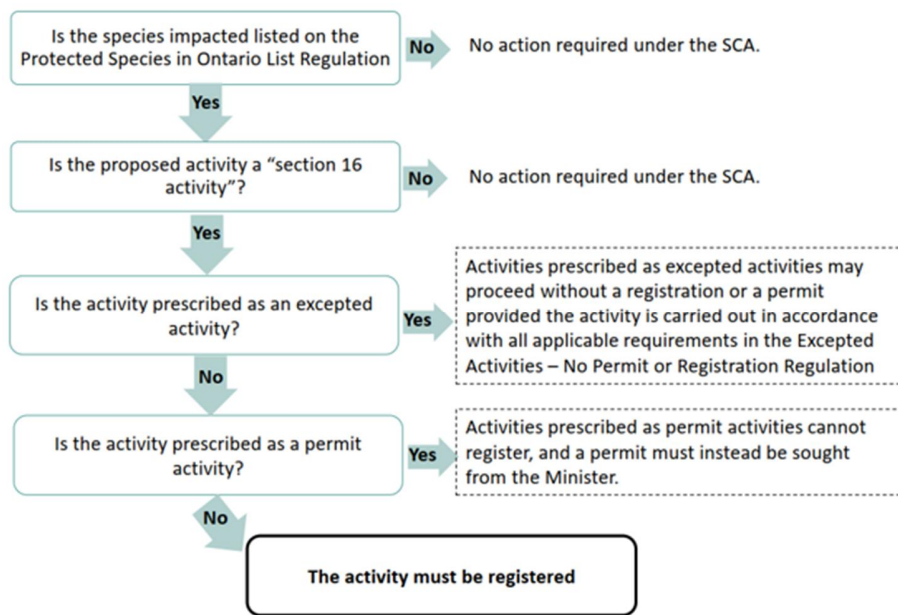
2.5.5 Habitat of Endangered and Threatened Species

Recently (June 5, 2025), through Bill 5, the *Endangered Species Act* (ESA) was amended to immediately bring into force several changes related to the protection endangered species. These changes included a new definition of “habitat”, the removal of harassment as a basis for protection, and the creation of new legislation called the *Species Conservation Act* (SCA). On March 30, 2026, the SCA came into force, and the ESA was fully repealed along with all regulations. Along with the SCA, five (5) regulations also came into force, as follows;

1. The Protected Species in Ontario List Regulation
2. Registerable Activities Regulation
3. Permit Activities Regulation
4. Excepted Activities – No Permit or Registration Regulation
5. Transitional Matters Regulation

Several key changes are found within the new SCA, including a registration-first approach, permit requirements for only a limited number of activities, and removal of protections for migratory birds and aquatic species at risk that are already protected under federal legislation (*Species at Risk Act*, *Migratory Birds Convention Act*).

According to this legislation and associated regulatory framework for species at risk, the process to assess a proposed development/activity for consideration through the SCA, is as follows.



- taken from “Ministry of the Environment, Conservation and Parks, *Species Conservation Act* Implementation, Information Session, April 2026”

The presence or absence of endangered and threatened species habitat on the site and adjacent lands was ascertained via assembly and review of relevant background information sources (per **Section 2.3**) and the results of targeted surveys and habitat-based assessments on-site (per **Section 3**).

2.5.6 Significant Areas of Natural and Scientific Interest (ANSIs)

Areas of natural and scientific interest (ANSI) are defined in the PPS. The significance is determined using evaluation criteria and procedures established by the province (MMAH 2024).

The presence or absence of Significant ANSI’s within the site and adjacent lands was ascertained via the online Ontario Make a Map Natural Heritage website, and by reviewing relevant background information sources (per **Section 2.1**). According to the provincial mapping database and the Peterborough County mapping (Let Me Map 2.0), a Regional ANSI (the Norwood Esker Complex Earth Science ANSI) extends through the central and north portion of the assessment area onto adjacent lands to the northeast. Additional areas of the ANSI are located to the southwest of the assessment area. The Norwood Esker Complex ANSI as a Regional ANSI is not provided protection as a significant provincial feature.

2.5.7 Significant Wildlife Habitat

Significant wildlife habitat (SWH) is defined in the PPS as features or areas that are ecologically important in terms of functions, representation or amount, and are contributing to the quality and diversity of an identifiable geographic area or NHS. Criteria for determining significance are provided in provincial guidance (MNRF 2015; MNR 2000), but municipal approaches that achieve or exceed the same objective may also be used. The County of Peterborough relies on the definition provided in the PPS for SWH; therefore, the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 2015) have been used to identify and assess candidate and confirmed SWH.

As outlined in the SWH Technical Guide (OMNR 2000a) and supporting Ecoregion Criteria Schedules (OMNRF 2015a, 2015b, 2015c), SWH is composed of four principal components:

1. Seasonal Concentration Areas of Animals;
2. Rare Vegetation Communities or Specialized Habitats;
3. Habitat of Species of Conservation Concern; and
4. Animal Movement Corridors.

The process for identifying SWH is outlined in s. 9.2.3 of the Natural Heritage Reference Manual (OMNR 2010). Step 1 considers the nature of the development application proposed and involves the assembly of background ecological information for the study area. If the application triggers a need to protect SWH (e.g., change in land-use that requires approval under the *Planning Act*, etc.), a more thorough investigation of potential SWH features within the study area must occur. Any confirmed SWH for the site and/or study area as identified in relevant planning documents or by the MNR should be noted at this stage.

Where a need to protect SWH is triggered, step 2 involves undertaking a more thorough analysis of features, functions, and habitats within the site and adjacent lands via Ecological Land Classification (see **Section 3.5.1**). The list of ELC codes generated for the site, adjacent lands, and additional lands is compared to those codes considered candidate SWH in the relevant Ecoregion Criterion Schedule (i.e., 5E, 6E, or 7E) in step 3. Where a positive match between an ELC Ecosite and candidate SWH exists, the area is considered candidate SWH.

Two options are available for candidate SWH: 1) the area may be protected without further study, or 2) the area may be evaluated to ascertain whether confirmed SWH is present based on the Ecoregion criteria. Evaluation may involve generating more detailed maps of vegetation cover or conducting surveys of the wildlife population within the candidate SWH including reproductive, feeding, and movement patterns. If the area is confirmed SWH, the final step in the process is the completion of an impact assessment to determine if negative impacts will occur to the confirmed SWH or its function. The impact assessment process and mitigation is assisted by SWH Mitigation Support Tool (OMNRF 2014).

RiverStone employed the approach as outlined above (i.e., steps 1-5) in assessing the potential for SWH to exist within the site and adjacent lands. Where targeted on-site assessments were required to evaluate SWH, survey methods are outlined in **Section 2.4**.

2.5.8 Fish Habitat

The definition of “Fish Habitat” was revised during amendments to the *Fisheries Act* in 2013. The current *Fisheries Act* defines “fish habitat” as

“spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.” Fish, as defined in S.2 of the *Fisheries Act*, c. F-14, includes “parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.”

The presence or absence of fish habitat was ascertained via assembly and review of relevant background information sources (per **Section 2.3**) and the results of fish sampling through minnow trapping and electro fishing and habitat-based assessments on-site (per **Section 3**).

3 BIOPHYSICAL FEATURES AND FUNCTIONS

3.1 Landscape Setting and Physiography

The site is situated within the Dummer Moraines physiographic region with esker and till moraine extending through the assessment area (Chapman and Putnam 2007). The site occurs within Ecodistrict 6E-9 (Lake Simcoe-Rideau), which generally follows the Drumlin Moraines extending from the east side of Lake Simcoe to Kingston. Ecodistrict 6E-9 contains several townships and rural communities including Belmont, Marmora, Modoc, Rawdon and Sheffield. Approximately 69 % of the ecodistrict remains in a natural state, consisting primarily of forest, with 19 % having been developed for agricultural purposes that includes row crop, pasture, or old fields no longer in production.

The landscape including and surrounding the assessment area is consistent with the overall character of surrounding land within Ecodistrict 6E-9, containing mostly agricultural land-uses punctuated by wetlands, deciduous, and coniferous forest. There is a history of aggregate extraction in the area with the existing portion of this pit extension located immediately to the west of the site. The nearest community to the assessment area is Norwood, that is located approximately 5.0 km southwest.

3.2 Bedrock and Surficial Geology

The bedrock underlying the site is characterized as upper silurian aged limestones, mostly from the Bobcaygeon and Gull River formations but also includes some overlying Lindsay and Verulam formations. The surficial geology of the site is mapped as ice-contact stratified drift deposits dominated by sand and gravel (Ontario Geological Survey 2010). Ice-contact materials are generally deposited on top of or within glacial ice by flowing meltwater; as the ice melts the drift slumps and becomes deposited (reworking or eliminating stratification that may have been present). Throughout the assessment area, these long linear ridges of gravel have formed into eskers. Within the assessment area, the esker formation runs through the central portion of the area with till moraine to the north and south.

3.3 Topography

The general topography (i.e., 2 m contours) of the site is shown on **Figure 4**. Overall, the site is generally flat within the south and north portions with wetland communities covering the lower elevation area. Through the central portion, topography is more rugged and hilly in areas associated with an esker formation. The topographic high is in the central portion of the assessment area at approximately 240 m above sea level (masl) while the areas bordering the assessment area being approximately 225 masl with the lowest areas estimated at between 225 and 220 masl.

3.4 Drainage, Hydrogeologic Conditions

The surface soils of the site are dominated by porous media including gravel and sands so surface drainage from the site is limited to snowmelt and infrequent storm events. There is no defined surface drainage features present on the site, which is in the Ouse River watershed. A tributary to the Ouse River is located to the southeast of the proposed licence boundary, with defined channels and flowing water only evident proximate to HWY 7.

The topographic features on the site consist of elongated eskers that run generally from southwest to northeast. There is a topographic drainage divide running through the site, that splits the surface drainage directing the north half to the Ouse River and the south half to the Ouse River Tributary that flow south under HWY 7 through a culvert.

Tatham (2026) conducted a detailed hydrogeologic analysis for the site. The extraction area is in a significant recharge area, with sheet flow only during snowmelt or infrequent storm events. The highly permeable soils allow for rapid flow of groundwater.

3.4.1 Surface Water

The assessment area is located in the Ouse River subwatershed, that originates in the treed swamps in the Township of Duro Dummer. The main branch of the Ouse River is located to the northwest of the site. During the collection of background information, Ontario base mapping provided on the Ontario government site – Make a map: Natural Heritage Areas was reviewed with a tributary to the Ouse River shown as connecting wetland features in the south portion of the assessment area. Where visible the channel location of this watercourse was walked during site assessments. Based on field surveys through 2024 it was determined that only a short reach of watercourse located proximate to HWY 7 was present. The remaining areas consist of braided wetland pockets or there was no visible watercourse feature present. There were no wetlands identified on the site, but numerous wetlands were located in the assessment areas and on adjacent lands. Where a watercourse channel was present it was assessed based on criteria outlined in The Stream Permanency Handbook (MNRF 2005) and the Ontario Stream Assessment Protocol (Stanfield 2010). Information collected during the assessments are outline in **Table 2** below.

Table 2. Channel Morphology and Aquatic Characteristics of the Ouse River Tributary

Ouse River Trib#1 (Permanent)	Channel Morphology and Aquatic Habitat Characteristics
Station #1	Bankfull Width: 1.55 m Wetted Width: 1.55 m Average Water Depth: 30.0 cm Flow: yes Bank Stability: well established banks, well vegetated banks, limited signs of erosion. Substrates: muck with hard bottom Observed Aquatic Species: none Instream Cover: some leaf and fine wood material Aquatic Vegetation: Duckweed Species Riparian Vegetation: Reed Canary grass, Narrowleaf Cattail, willow shrub

Ouse River Trib#1 (Permanent)	Channel Morphology and Aquatic Habitat Characteristics
Station #2	Bankfull Width: 1.95 m Wetted Width: 1.50 m Average Water Depth: 30.0 cm Flow: yes Bank Stability: well established banks, well vegetated banks, limited signs of erosion. Substrates: muck with hard bottom Observed Aquatic Species: none Instream Cover: some leaf and fine wood material, overhanging shrub Aquatic Vegetation: Duckweed Species Riparian Vegetation: Reed Canary grass, Narrowleaf Cattail, willow shrub
Station #3	Bankfull Width: 1.70 m Wetted Width: 1.40 m Average Water Depth: 30 cm Flow: yes Bank Stability: well vegetated banks, minimal erosion present. Substrates: sand, silt, some cobble Observed Aquatic Species: invertebrates present Instream Cover: some leaf and wood debris Aquatic Vegetation: Duckweed Species Riparian Vegetation: Reed Canary grass, Narrowleaf Cattail, willow shrub
Station #4	Bankfull Width: 0.80 m Wetted Width: 0.55 m Average Water Depth: 12.0 cm Flow: flow Bank Stability: good, no erosion present. Substrates: Muck with hard bottom Observed Aquatic Species: none Instream Cover: some leaf and wood debris Aquatic Vegetation: none Riparian Vegetation: Reed Canary grass

3.5 Vegetation

3.5.1 Vegetation Communities and Dominant Flora

Natural vegetation communities within the site, were characterized during several field visits in 2024 using ELC and winter 2025. These communities were delineated in mapping contained herein through a combination of aerial photograph interpretation and detailed field investigations. Vegetation community mapping is provided on **Figure 5**, with a total species list in **Appendix 4**. A general summary of the vegetation communities present within the site, adjacent lands, and additional lands is provided below.

The assessment area is made up of several properties that have historically been used for agricultural and residential purpose. A large portion of the site consists of agricultural fields that are currently or have been used for pasture, hay or crops with the remaining areas consisting of upland forest, wetland, and anthropogenic areas associated with residences. The following vegetation communities were delineated in the assessment area.

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

This vegetation community is located the central portion of the site and consists of a narrow strip occupying the slopes and top portion of a berm that extends from 12th Line Road towards the central eastern part of the property. This community also occurs in a level area in the east portion of the site, north of the hydro corridor along the east property boundary and is associated with a sugar shack and forest trails. A pocket of Balsam Fir is located in this community. Species observed include Sugar Maple (*Acer saccharum*), White Ash (*Fraxinus americana*), Bigtooth Aspen (*Populus grandidentata*), American Basswood (*Tilia americana*), Ironwood (*Ostrya virginiana*), Northern Red Oak (*Quercus rubra*), Balsam Fir (*Abies balsamea*), Eastern White Cedar (*Thuja occidentalis*), White Trillium (*Trillium grandiflorum*), Yellow Trout Lily (*Erythronium americanum*), Zigzag Goldenrod (*Solidago flexicaulis*), Bearded Shorthusk (*Brachyelytrum erectum*), Marginal Wood Fern (*Dryopteris marginalis*), Early Meadow-rue (*Thalictrum dioicum*), Large-leaf Wood Aster (*Eurybia macrophylla*), White Baneberry (*Actaea pachypoda*), Wild Leek (*Allium tricoccum*), Blue Cohosh (*Caulophyllum thalictroides*), Bloodroot (*Sanguinaria canadensis*), Dutchman's Breeches (*Dicentra cucullaria*), Hickory, and Christmas Fern (*Polystichum acrostichoides*).

Anthropogenic – ANTH

Cultivated vegetation (i.e., planted trees, lawn and garden) is present adjacent to the farmhouses and buildings within the assessment area (**Figure 5**). With four (4) residences within the client owned lands and additional residences within the overall assessment area, there is a sizeable area of residentially influenced lands. Associated with these anthropogenic areas are dug ponds, mown yards, agricultural storage areas, barns, storage structures, access roadways, and infilled areas.

Mineral Cultural Meadow - CUM1

The assessment area contains an abundance of agricultural lands, that also includes cultural meadow communities. Cultural meadow is generally associated with three (3) of the residences owned by the client and three (3) residences that are located outside the client owned lands. While a portion of agricultural land was planted in row crop during site visits, cultural meadow best characterises lands that have historically or are currently maintained for hay, pasture, forage crop or has been left to naturalize. These communities occur on well-drained high sand and gravel content soil and in most cases transition to other anthropogenic areas, wetland or woodland features. Species present in this community include Orchard Grass (*Dactylis glomerata*), Common Mullein (*Verbascum thapsus*), Fringed Brome (*Bromus ciliates*), Alfalfa (*Medicago sativa*), Burdock Species (*Arctium* sp.), Red Clover (*Trifolium pratense*), Common Milkweed (*Asclepias syriaca*), Bull Thistle (*Cirsium vulgare*), Canada Goldenrod (*Solidago canadensis*), New England Aster (*Symphyotrichum novae-angliae*), Common Echium (*Echium vulgare*), Wild Carrot (*Daucus carota*), Buckhorn Plantain (*Plantago lanceolata*), and Annual Ragweed (*Ambrosia artemisiifolia* var. *elatior*).

Ash Mineral Deciduous Swamp - SWD2

This vegetation community is found in small, isolated locations in the north portion of the study area. There is also a large community in the central portion of the study area and as a transitional community in the south portion where deciduous trees have declined. Based on the presence of Ash species, Maple species and other deciduous and coniferous species associated with wetland communities, the community is best characterised as SWD2. While topography throughout these communities is generally level, hummocks were noted that provided for pockets of standing water throughout the central and north communities. The south community is associated with the Ouse River Tributary that becomes a defined channel in the south where Highway 7 has created an impoundment, restricting water flows. Within the central community water depths in the wetland did not exceed 60 cm in depth, while water depths in the north communities were up to 80 cm at the edges of the community. Due to the proximity of these communities to adjacent farmland, these communities have been impacted by infilling that has occurred. Based on the community structure it is assumed these communities have been cleared in the past. Vegetation species present in this community include Green Ash, Black Ash, Silver Maple, Red Maple, American Elm, Trembling Aspen, White Birch, Eastern White Cedar, Balsam Fir, Larch, Spotted Jewelweed, Red Osier Dogwood, Ostrich Fern, Canada Bluejoint, Sensitive Fern, Dwarf Raspberry, Nodding Bedders Ticks, Naked Bishops Cap, Northern Bugleweed, Marsh Fern, Hop Sedge, Climbing Nightshade, Interrupted Fern, Water Hemlock, Prickly Gooseberry, Labrador Tea, Goldthread, Royal Fern. Along the transition areas of this community, Balsam Fir and Eastern White Cedar are common with the greatest abundance found in the south wetland.

Dry-Fresh White Cedar – Poplar Mixed Forest Type - FOM4-2

This community is located on lands that have been historically cleared and are naturally regenerating within the north and central portions of the assessed area. Species present in this community include Trembling Aspen, White Birch, Green Ash, Eastern White Cedar, White Spruce, Scots Pine, Balsam Fir, European Buckthorn, Northern Prickly Ash (*Zanthoxylum americanum*), Bracken Fern (*Pteridium aquilinum*), Northern Starflower (*Lysimachia borealis*), Wild Lily-of-the-valley (*Maianthemum canadense*), Black Swallowwort (*Vincetoxicum nigrum*),

Dry to Fresh White Cedar Coniferous Forest Type – FOC2-2

This community is primarily located adjacent to wetland features and cultural meadow communities. Based on the lack of stumps, level ground and presence of fence, it is assumed based on the location of this community that it has been historically cleared. Tree species observed in the community were predominately by Eastern White Cedar with occasional Green Ash, Trembling Aspen, White Birch, and Red Cedar along the edge. Shrub and ground cover within this community is very minimal with Eastern White Cedar leaf litter dominating the ground. A minimal amount of shrub and ground cover is present due to the dense canopy.

Mineral Cultural Savannah Ecosite - CUS1

Located generally along a ridge with a slope connection to the active cultural meadow being used for forage crop, this community is in the northwest portion of the assessment area and has been historically cleared and left to naturalized. The south portion of this community is a high point with forage crop fields to the east and west. The species observed in this community include Red Pine, Red Cedar, Common Milkweed, Chicory, Common Brome, Staghorn Sumac (*Rhus typhina*), Wild Carrot, Prickly Ash, New England Aster, White Heath Aster, Timothy, Orchard Grass, Birds foot Trefoil, Reed Canary Grass, Tatarian Honeysuckle, and Eastern White Cedar

Agricultural Field – AG

This community is in the southwest portion of the study area adjacent to Highway 7 and consist of agricultural fields that had been plowed and planted with corn during 2024 site assessments. It is anticipated that a rotation of row crops will continue to be planted on these fields.

Reed-Canary Shallow Marsh – MAM2-2

This community is in one (1) location within the assessment area and is found in the northwest portion of the property. It consists of a small pond associated with a residence adjacent to 12th Line and the residence driveway. This feature had sufficient water depths to support basking turtles during spring conditions. Species present within this community include Reed Canarygrass (*Phalaris arundinacea*), Purple Loosestrife (*Lythrum salicaria*), Swamp Milkweed (*Asclepias incarnata*), Spotted Joe Pye Weed (*Eutrochium maculatum*), Climbing Nightshade (*Solanum dulcamara*) Dark-green Bulrush (*Scirpus atrovirens*), and Spotted Jewelweed (*Impatiens capensis*).

Cattail Mineral Shallow Marsh – MAS2-1

This community occurs in a small pocket of marsh in the southeast portion of the assessment area that is associated with a residence and is assumed to have originated as a dug feature. A second area with this community is also present in the south wetland area, extending from Highway 7 to the north. The community is associated with a reach of the Ouse River Tributary that drains to the south and has abundant dead trees present. Historic construction of Highway 7 has is assumed to have influenced the movement of water to the south and ongoing beaver activity has influenced the present vegetation transition. Vegetation identified within this community include Narrow-Leafed Cattail (*Typha angustifolia*) and Broad-Leaved Cattail (*Typha latifolia*), Reed Canary grass, Climbing Nightshade, Swamp Milkweed, Sensitive Fern (*Onoclea sensibilis*), Speckled Alder (*Alnus incana*), Heart Leaf Willow, Mountain Holly (*Ilex mucronatus*), Red Osier Dogwood, and Sedge species (*Carex* sp.).

Willow Mineral Thicket Swamp – SWT2-1

This community occupies lowland area in two (2) locations in the assessment area. In the north portion of the assessment area the community extends from the northeast property boundary to agriculture field along 12th Line Road. In the central portion of the property the community occupies the area under the hydro corridor and has a border to the west of agricultural community and a border to the east of anthropogenic fill. In the central area this community has been highly disturbed through construction and maintenance of the hydro corridor and has seen extensive vegetation clearing. It is assumed that the community was historically a continuation of treed swamp communities located to the north and south prior to clearing. Recent vegetation maintenance has removed a lot of shrubs within portions of this community and there is now abundant cattail present. It is anticipated that this community will revert to shrub thicket in future years. Both communities transition into other wetland communities to north and south. Species present within these communities include Heart-leaved Willow (*Salix cordata*), Reed Canary Grass (*Phalaris arundinacea*), Narrowleaf Cattail (*Typha angustifolia*), Sensitive Fern (*Onoclea sensibilis*), Spotted Jewelweed (*Impatiens capensis*), Bittersweet Nightshade (*Solanum dulcamara*), Eastern White Cedar, Trembling Aspen (*Populus tremuloides*), Rice Cut Grass (*Leersia oryzoides*), Green Ash (*Fraxinus pennsylvanica*), Spotted Joepyeweed (*Eutrochium maculatum*), Canada Bluejoint (*Calamagrostis canadensis*), Red-osier Dogwood (*Cornus sericea*), Eastern Marsh Fern (*Thelypteris palustris* var *pubescens*), Purple

Loosestrife (*Lythrum salicaria*), Northern Bugleweed (*Lycopus uniflorus*), and European Common Reed (*Phragmites australis* spp. *australis*).

3.5.2 Vascular Plants

A total of two-hundred and seventy-eight (278) vascular plant species were recorded during the fieldwork. Vascular plants recorded were restricted to areas where permission to enter had been granted except for adjacent lands that would be observed from roadside. Given the abundance of agricultural and cultural meadow communities in the assessment area, field effort was directed towards the portion of the assessment area where extraction is proposed and those lands directly adjacent to the extraction area (given the higher likelihood of impact/disturbance associated with the proposed pit extraction activities). A list of vascular plant species documented by RiverStone is provided in **Appendix 4**.

No vascular plants designated as species at risk (either provincially or federally), or provincially rare species (i.e., S1, S2, S3), were recorded.

3.6 Wildlife

Appendix 5 contains a list of the wildlife species documented by RiverStone within the subject property and adjacent lands during either targeted survey (e.g., breeding bird surveys, etc.) and/or incidentally in 2024 and 2025. A total of seven (7) amphibian species, fifty-three (53) bird species (including migrants), six (6) mammal species, two (2) reptile species, and two (2) invertebrate species were recorded. The results of RiverStone's targeted wildlife surveys are provided below.

3.6.1 Anurans

RiverStone completed anuran calling surveys on April 29, May 1, May 15, and June 21, 2024. The established anuran calling survey stations are shown on **Figure 2**. The full results of RiverStone's anuran calling surveys are found in **Appendix 6**. A general summary of the identified anuran communities is provided below.

A total of six (6) anuran species were recorded during anuran calling surveys. Calling locations in the north and central portions of the assessment area that included A1, A2, A11 contained two (2) or more species of calling anurans species to meet the SWH criteria discussed in **Section 3.7.6**, however, the number of calling individuals was not sufficient at any location to be confirmed as SWH. Spring Peeper (*Pseudacris crucifer*), Green Frog (*Lithobates clamitans*), Western Chorus Frog (*Pseudacris triseriata*), Northern Leopard Frog (*Lithobates pipiens*), Gray Tree Frog (*Hyla versicolor*) and Wood Frog (*Lithobates sylvaticus*), were all heard within the Northern Ponds. Spring Peepers, Western Chorus Frog, Northern Leopard Frog and Wood Frog were all heard in the large and small wetland features in the north portion of the study area. Spring Peepers, Western Chorus Frog, and Northern Leopard Frogs were heard in the Central wetland. Within the ponds along 12th Line Road Spring Peeper and Western Chorus Frog were heard. The south pond where station A10 is located dries up during late spring. The marsh community in the southeast portion of the study area had Spring Peeper calling during the April and May survey window. This area primarily dries up during late spring.

3.6.2 Winter Roosting Raptor Surveys

Winter roosting raptor surveys were completed by RiverStone on February 7 and March 13, 2024, utilising transects, and survey points as outlined in **Section 2.4.7**. The transition areas between

woodland and open communities were walked with point surveys completed where good a view of transitions from open area to woodlands could be made (**Figure 2**). No raptors were observed during the survey and therefore no additional surveys were completed.

3.6.3 Snakes – Visual Encounter Surveys

As outlined in **Section 2.4.8**, an assessment for snakes was completed by RiverStone on April 25 and 26, May 2, 16, and June 2 and 4, 2024. During these surveys, habitat was scanned for the presence of snakes with two (2) species being observed; Northern Watersnake (*Nerodia sipedon*) and Eastern Gartersnake (*Thamnophis sirtalis*) on June 4, 2024. Northern Watersnake were observed in the pond at Turtle Survey Stations #1 and #3 and the Eastern Gartersnake was observed between Turtle Survey Station #8 and #10.

3.6.4 Bats

As outlined in **Section 2.4.9**, targeted surveys for bats focused on identifying the presence of maternal roosts. Surveys followed the protocols outlined in MNRF (2011) and MNRF (2017). Vegetation mapping using Ecological Land Classification (ELC) was used to guide the completion of onsite surveys with snags/cavity tree surveys being conducted during leaf off conditions within forest communities using a fixed plot method of sampling. Location of plots were scoped based on vegetation mapping prepared through photo interpretation with locations provided on **Figure 2** and results provided in **Appendix 3**, ten (10) plots within conifer communities, twelve (12) plots within mixedwood communities, eleven (11) plots within deciduous communities and ten (10) plots within swamp communities. The results of the snag assessment showed that non of the four (4) communities had sufficient snag densities to meet the >10 ha to be SWH (**Appendix 3**).

Even through wooded communities did not meet the requirement for SWH, acoustic monitoring surveys was deployed at three (3) locations. within the assessment area between June 12 and June 24, 2025. This timeframe was used to ensure that that the survey contained ten (10) nights of suitable conditions to detect bats. The acoustic detectors were deployed in areas that had the potential to capture bat activity within forested areas on the property that were determined to be suitable location for roosting habitat based on snag and cavity tree noted during a snag assessment. Locations for the equipment deployed is provided on **Figure 2**. Timing of surveys was selected as it corresponded with the roosting period for maternal colonies as outlined in (COSEWIC 2013).

The equipment deployed is from Wildlife Acoustics and is known as the Song Meter SM4BAT FS Ultrasonic Recorder. The unit is programmed to record from sunset to sunrise with an internal clock set for accuracy. A minimum trigger frequency of 14 kHz was chosen to include the full range of all species of bats found in Ontario. When the ultrasonic recorder is triggered by a sound with the appropriate frequency and duration, a recording is saved. Each recording is a series of pulses which represent a bat echolocating while feeding. The pulse series is called a bat pass. The bat passes provide valuable information with respect to which species are present, and the relative abundance present. Acoustic detections of “bat passes” are often used as a measure of relative abundance of bats (Miller 2001).

The recordings were analyzed with Wildlife Acoustics Kaleidoscope Pro software. Results of the data collection determined that the overall abundance of bats using the subject property were found to be lower that expected based on the amount of foraging habitat available

Four (4) species of bat were detected during the survey period with three (3) species of bats being designated endangered. The most abundant being Big Brown 11 passes during a three (3) day period between Jun 18 and June 20, 2024, but only at the monitor Bat2 location. Hoary Bat was recorded at monitors 1 and 2 with singular passes on June 12, 15, 22, and 23, 2024 at monitor 1 and June 12, 13, 15, and 19, 2024 at monitor 2. Silver-haired Bat was recoded at monitor 1 with a singular pass on June 18, 2024, and two (2) passes on June 24, 2024. Eastern Red Bat was detected as a singular pass on June 19, 2024, at monitor 1.

Three (3) species of endangered bats occurring with only a minimal number of passes, over the period of monitoring is indicative of foraging and transient behaviour but not roosting. With the small number of bat recordings and the snag assessment indicating a lack of high-quality habitat, it is RiverStone’s opinion that the woodland habitat within the assessment area lacks habitat for species at risk bats. Results of acoustic monitoring is summarized in **Table 3** below with endangered species identified in **bold** text.

Table 3. Results of acoustic surveys for bats in 2024.

Survey Station	Start Date	End Date	Species Detection (# passes)
Bat 1	June 12 (PM)	June 24 (AM)	Eastern Red Bat (1)
			Hoary Bat (5)
			Silver-haired Bat (3)
Bat 2	June 12 (PM)	June 24 (AM)	<i>Big Brown Bat (11)</i>
			Hoary Bat (4)
Bat 3	June 12 (PM)	Jun 24 (AM)	No bats detected

3.6.5 Breeding Birds

Breeding bird surveys based on the OBBA were undertaken on multiple occasions between June 3 and July 5, 2025. The full results of these surveys are provided in **Appendix 7**. In addition to the bird species recorded during the breeding surveys, Appendix 7 provides a list of all bird species recorded within the site, adjacent lands, and additional lands (i.e., including incidental observations and observations of migrants) in 2024 and 2025.

A total of sixty-seven (67) bird species were recorded during the breeding bird surveys and incidental observations. The assemblage and abundance of birds recorded during the OBBA surveys generally reflects the prevailing structure and composition of on-site vegetation communities (per **Figure 5**). Bird species that breed and forage in deciduous forests and treed swamps were commonly encountered at stations situated within these habitats, including Black-and-white Warbler (*Mniotilta varia*), Eastern Wood-Pewee (*Contopus virens*), Red-eyed Vireo (*Vireo olivaceus*), Veery (*Catharus fuscescens*), American Robin (*Turdus migratorius*), Black-capped Chickadee (*Parus atricapillus*), Blue Jay (*Cyanocitta cristata*), and Ovenbird (*Seiurus aurocapilla*). Wetland communities including thicket swamp, deciduous swamp and meadow marsh communities and transition areas contained species such as Red-winged Blackbird (*Agelaius phoeniceus*), Great Crested Flycatcher (*Myiarchus crinitus*), Red, Alder Flycatcher (*Empidonax alnorum*), American Goldfinch (*Spinus tristis*), Common Yellowthroat (*Geothlypis trichas*), and Song Sparrow (*Melospiza melodia*). Open vegetation communities that include agricultural, anthropogenic and cultural meadow communities provide for a diverse population of bird species that include Savannah Sparrow (*Passerculus sandwichensis*), Song Sparrow (*Melospiza melodia*), Grasshopper Sparrow (*Ammodramus savannarum*), and Eastern Meadowlark (*Sturnella magna*).

Several significant bird species were recorded during the OBBA surveys and incidental observation including: two (2) threatened birds, four (4) special concern birds, and sixteen (16) ecoregion 6E Area Sensitive Birds. These species and their habitat preferences are discussed further below, with an assessment of potential impacts to their habitat during implementation of the proposed pit extraction activities provided in **Section 5**.

3.6.6 Turtles

Visual encounter surveys targeting basking turtles were completed on five (5) separate dates in 2024: April 26, May 1, May 16, June 2, June 4, and June 6. During initial site surveys in the study area, wetlands were assessed for water and muck depth to determine turtle overwintering potential. The visual encounter surveys targeted pond features and portions of wetland communities with water/muck depths greater than 1.0 m that would support turtle hibernation and basking and foraging potential later in the survey window (**Figure 2**). Incidental observations and review of potential nesting areas were also made (i.e., during other field surveys) during most site investigations both before and after the targeted visual encounter surveys. The full results of RiverStone's visual encounter surveys for turtles are found in **Appendix 8**. A general summary is provided below.

Only one (1) turtle species was observed during the visual encounter surveys. Midland Painted Turtle (*Chrysemys picta*) were observed within wetland and pond features during basking surveys. During site visit travel Snapping Turtle (*Chelydra serpentina*) was observed as roadkill along north shoulder of Highway 7 in the proximity of turtle station 7 (T7). Midland Painted Turtles were observed basking and feeding in the pond feature adjacent Highway 7 (T3) during the first four (4) surveys, in an open water portion of the large wetland in the north portion of the property (T10) during the first three (3) surveys, and in the pond's adjacent 12th Line Road (T8 and T9) during the first two (2) surveys. Additional single turtle observations were made in the south portion of the north wetland (T6) and in the dug pond in the central portion of the study area (T1).

Based on the number of observations of Painted Turtle, the wetland and pond features are believed to represent general basking, feeding, and overwintering for turtles.

3.6.7 Eastern-whip-poor-will

Three (3) surveys for Whip-poor-will were completed in the study area in May and June 2024. Seven (7) locations were surveyed within the open habitat conditions in the assessment area (**Figure 2**). Conditions during all three (3) surveys were within the optimal weather parameters outlined in **Section 2.4.11**. No Whip-poor-will were heard calling during the three (3) targeted surveys for this species.

3.6.8 Fish and Fish Habitat

The potential locations of fish habitat within the assessment area consists of the watercourse extending from Highway 12 to the north into the south wetland feature along with the dug pond in the southeast portion of the property associated with the residence and anthropogenic lands. Additional ponds are present within the assessment area, with two (2) dug ponds located on either side of the driveway into the west portion of the property, a recently dug pond in the northeast portion of the property, and a small dug pond in along the edge of the south wetland in the central portion of the assessment area. None of these ponds are on-line with a watercourse and no fish sampling was completed. The dug pond in the southwest portion was sampled based on the background review showing the pond being connected through a watercourse to the main watercourse. During site assessment it was determined that this pond does not have an outlet, and there is no connection between this pond to the main watercourse.

Through background information collection it was determined that fish sampling had been completed in November 2011 by an organisation other than RiverStone for an MTO project. Fish data collect at the culvert included records of Brook Stickleback (*Culaea inconstans*), Central Mudminnow (*Umbra limi*), Creek Chub (*Semotilus atromaculatus*), Finescale Dace (*Chrosomus neogaeus*), and Northern Redbelly Dace (*Chrosomus eos*). Sampling was completed in the southeast pond on June 21, 2024, with two minnow traps used for a period of six hours. The minnow trapping only resulted in the collection of Brook Stickleback.

3.7 Significant Natural Features

Based on the biophysical information collected during background information gathering (per **Section 2.3**) and the multiple site investigations completed by RiverStone in 2024 and 2025 (per **Section 2.4**), **Table 4** below summarizes the status of natural features of conservation interest within the site, adjacent lands, and additional lands:

Table 4. Assessment of the Significant Natural Heritage Features within the Site and Adjacent Lands.

Significant Natural Feature	Status of Feature within the Site	Status of Feature on Adjacent lands
Significant Wetlands	<i>Absent.</i> See Section 3.7.1.	<i>Present.</i> See Section 3.7.1.
Habitat of Endangered and Threatened Species	<i>Present.</i> See Section 3.7.2.	<i>Present.</i> See Section 3.7.2.
Significant Areas of Natural and Scientific Interest (ANSI)	<i>Absent.</i> See Section 3.7.3.	<i>Absent.</i> See Section 3.7.3
Significant Woodlands	<i>Present.</i> See Section 3.7.4.	<i>Present.</i> See Section 3.7.4.
Significant Valleylands	<i>Absent.</i> See Section 3.7.5.	<i>Absent.</i> See Section 3.7.5.
Significant Wildlife Habitat	<i>Present.</i> See Section 3.7.6.	<i>Present.</i> See Section 3.7.6.

Significant Natural Feature	Status of Feature within the Site	Status of Feature on Adjacent lands
Fish Habitat	Present. See Section 3.7.7.	Present. See Section 3.7.7.

¹ - Shaded rows denote significant natural features which negative impacts stemming from implementation of the proposed development plan are possible.

3.7.1 Significant Wetlands

Based on mapping reviewed on the Ontario Government Make a Map: Natural Heritage Areas (MAMNH), there are no Provincially Significant Wetlands (PSWs) mapped within the assessment area. MAMNH mapping does show features as unevaluated wetland within the north, central and south portions of the assessment area that generally match up with wetlands mapped by RiverStone and outlined on **Figure 1**. Based on MAMNH mapping, the closest PSW's to the assessment area include the Ouse (east) River North Wetland PSW located approximately 250 m west of the north property boundary and the Plato Creek Headwater Complex PSW located approximately 750 km east of the subject property.

All documented wetland communities within the assessment area are located entirely outside of the proposed extraction area as shown on **Figure 6**. Current wetland boundary delineation of the wetlands adjacent to the extraction area were delineated by RiverStone using the “50% wetland vegetation rule” as stipulated by OWES. Wetland evaluations were not completed for the wetlands identified in the assessment area; however, these features were considered for protection and are located outside of the extraction area.

3.7.2 Endangered and Threatened Species

Provincially threatened and endangered species listed on the Protected Species in Ontario List (PSO) – O. Reg. 60/26 are legally protected under the provincial *Species Conservation Act*, (SCA, 2025) from harm or harassment, and their habitats are legally protected from damage or destruction. Protected species that are listed on O. Reg 230/08, *Species at Risk in Ontario List* that are not included on the PSO are protected by either the federal Species at Risk Act (SARA) or the federal Fisheries Act.

The results of RiverStone's desktop, habitat-based, and targeted assessments for endangered and threatened species and their habitat are provided in **Appendix 9**. A preliminary screening of background and biophysical information for the assessment area resulted in the identification several species with a potential to be present within the site or study area based on existing records and/or range maps. This initial list of endangered and threatened species was refined to those species that have the potential to occur within the assessment area or were confirmed to be present based on the on-site assessments and targeted field surveys.

Per the results of **Appendix 9**, a total of five (5) endangered and threatened species has the potential to be present or were detected to be within the assessment area (**Figure 7**). One (1) species Black Ash (*Fraxinus nigra*) was observed in the deciduous swamp wetland in the central portion of the property and is protected by the SCA. As outlined in **Section 2.4.9** very small numbers of Eastern Red Bat (*Lasiurus borealis*), Hoary Bat (*Lasiurus cinereus*) and Silver-haired Bat (*Lasionycteris noctivagans*) were detected within woodland habitat located at bat monitor 1 and 2. The small number of detections suggests that endangered bats protected under the SCA are not using the woodland habitat for roosting but rather passing through for foraging. With the small number of detections, along with the lack of quality roosting habitat as determined through the snag survey, it is RiverStone's opinion that the

woodland features are not providing roosting habitat for endangered bats. Two (2) pairs of Eastern Meadowlark (*Sturnella magna*) were observed within the cultural meadow community in the west portion of the assessment area. Eastern Meadowlark is protected by federal legislation including SARA and the Migratory Bird Convention Act.

Further discussion about species with the potential to be impacted is provided in following sections.

3.7.3 Significant Areas of Natural and Scientific Interest (ANSI)

Based on mapping reviewed on the Ontario Government Make a Map: Natural Heritage Areas (MAMNH), the Norwood Esker Complex Earth Science ANSI (Regional ANSI) extends through the central and north portion of the assessment area, extending onto adjacent lands to the northeast. Additional areas of the ANSI are located to the southwest of the assessment area (**Figure 3**). This esker extends over 25 km from just northeast of Norwood Ontario in a northwest direction to the northwest of Havelock Ontario. The esker consists of singular and multiple ridges with a mix of steep and moderate sloped sides. Material in this feature consists of sand and gravel mix (Dixon 1978). The Norwood Esker Complex is a Regional ANSI and is not classified as a Significant ANSI.

3.7.4 Significant Woodlands

Based on review of the County of Peterborough Official Plan, it was determined that no significant woodland features had been mapped in the study area. Since the OP does not provide detailed description of significant woodland, to determine whether forest communities on the subject property should be considered significant woodlands, RiverStone has relied on the MNR Natural Heritage Reference Manual for assessment of significant woodland. RiverStone's significant woodland assessment is provided below in **Table 5**. Significant Woodland assessment based on criteria within the Natural Heritage Reference Manual, 2005. Determination of size thresholds is based on 42% forest cover in the Otonabee Region Watershed Report Card, 2023

and shown on **Figure 8**. Based on this assessment, some wooded areas on the subject property meet relevant significant woodland criteria per the PPS and the Natural Heritage Reference Manual. Further assessment provided below.

Table 5. Significant Woodland assessment based on criteria within the Natural Heritage Reference Manual, 2005. Determination of size thresholds is based on 42% forest cover in the Otonabee Region Watershed Report Card, 2023

Woodland ID	Size (ha)	Meets Size Threshold (> 50 ha)	Meets Interior Habitat Threshold (> 8 ha)	Proximity to other SNHFs or Fish Habitat (≤ 30 m)	Linkage between SNHFs	Water Protection	Woodland Diversity	Uncommon Characteristics Present	Economic and Social Value	Significant (yes/no)
A	2.88	No	No	No	Yes (Within a natural heritage system)	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	Yes (Black Ash present)	No	Yes

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B	48.29	No	No	No	Yes (Within a natural heritage system)	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	Yes (Black Ash present)	No	Yes
C	2.16	No	No	No	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	No	No	No
D	7.1	No	No	No (Within 30 m of Fish Habitat but does not meet size threshold)	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	Yes (Black Ash present)	No	Yes
E	0.24	No	No	No	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	No	No	No
F	0.17	No	No	No	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	No	No	No
G	0.19	No	No	No	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	No	No	No
H	0.24	No	No	No	No	No (Within a Highly Vulnerable Aquifer but does not meet size threshold)	No	No	No	No

3.7.5 Significant Valleylands

Significant valleylands represent valleys or other landform depressions with recognized significant attributes, such as supporting natural vegetation cover with associated ecological linkages and corridors. Valleylands are typically associated with a watercourse feature. Designation of significant valleylands is ultimately the responsibility of the relevant planning authority; however, site-specific

designation of these features can be undertaken using standardized criteria endorsed by the province and/or the planning authority.

In this case, applicable OP documents or other resources do not designate lands within the assessment area as significant valleylands. RiverStone's on-site investigation identified no landform features that may be representative of significant valleylands. No further assessment undertaken.

3.7.6 Significant Wildlife Habitat

The results of RiverStone's desktop, habitat-based, and targeted assessments of potential features and communities that could function as significant wildlife habitat (SWH) is provided in **Appendix 10** with locations depicted (**Figure 9**). Based on the results of these assessments, a total of sixteen (16) communities or features with the potential to be designated SWH were identified; these are outlined below.

- 1) Seasonal Concentration Areas of Wildlife Species
 - o Turtle Wintering Areas
- 2) Habitat of Species of Conservation Concern
 - o Special Concern and Rare Wildlife Species

A total of six (6) special concern species has the potential to be impacted by the proposed extraction activities within the site:

- 1) Snapping Turtle (*Chelydra serpentina*),
- 2) Monarch (*Danaus plexippus*)
- 3) Barn Swallow (*Hirundo rustica*)
- 4) Eastern Wood Pewee (*Contopus virens*)
- 5) Grasshopper Sparrow (*Ammodramus savannarum*)
- 6) Wood Thrush (*Hylocichla mustelina*)

An impact assessment is provided for each identified SWH feature and special concern species in **Section 5.7**.

3.7.7 Fish Habitat

As described in **Section 3.6.8**, fish habitat as defined by the *Fisheries Act* is present within the watercourse in the south portion of the assessment area (**Figure 6**). Potential impacts to fish and fish habitat are discussed further in **Section 5**.

3.8 Summary of Natural Heritage Feature Assessment

Natural features and areas were initially identified through a desktop review and air photo interpretation. A site reconnaissance visit was then completed to verify the initial site conditions, and a comprehensive field program was completed throughout 2024 and 2025 to identify, delineate and survey the existing natural heritage features and areas within the study area. The field data was then summarized and used to determine significance of features using definitions and criteria provided by the County of Peterborough official plan and / or the PPS (2024)

The following natural features and areas meet relevant definitions of significance and occur within the proposed limit of extraction, within the proposed licensed area, or within the 120 m adjacent lands (**Figure 10**)

- Significant wetlands (provincial) – located within the 120 m adjacent lands. Outside the proposed limit of extraction.
- Significant woodlands – located within the assessment area and within 120 m adjacent lands. Significant woodlands within the proposed limit of extraction.
- Significant wildlife habitat
 - o Special concern and rare wildlife species – located within the assessment area and within the 120 m adjacent lands. Habitat within the proposed limit of extraction.
- Grasshopper Sparrow - located within the assessment area and within 120 m adjacent lands. Habitat within the proposed limit of extraction.
- Eastern Wood-pewee - located within the assessment area and the 120 m adjacent lands. Habitat within the proposed limit of extraction.
- Fish habitat – direct and indirect habitat located within assessment area and within 120 m adjacent lands and outside the proposed limit of extraction
- Habitat of endangered and threatened species
 - o Black Ash (SCA) – Located within the assessment area outside the proposed limit of extraction.
 - o Meadowlark (SARA) – Located with the assessment area and in the proposed limit of extraction.
- Other Natural Features – Norwood Esker Complex Earth Science ANSI (Regional ANSI)

The proposed application and its potential for negative impacts to these natural features and areas are discussed in the following sections of this NER.

4 PHASING AND OPERATIONS PLANS

Drain Bros is applying for a Class A, pit above the water table to be licensed on 36.7 ha, 28.1 ha of which would be in the extraction area as depicted in the Site Plans prepared by MHBC (2026). The pit floor elevation will be maintained at least 1.5 m above the water table as established by Tatham (2026), at elevations of approximately 220 to 240 m asl. Operations have been divided into two phases of extraction. Phase 1 will be comprised 17.6 ha of extraction area located immediately east of Asphodel 12th Line and the existing licenced area #624922. Phase 2 will be the remaining 10.5 ha of extraction area located to the east Phase 1. Extraction will be initiated in Phase 1 and will continue through to Phase 2. The proposed pit extension will be incorporated into the existing Norwood Pit licenced area #642922 and will have a combined maximum extraction limit of 227,000 tonnes per year.

No onsite pumping is required. The on-site drainage of undisturbed areas will continue as per the existing drainage patterns while drainage within the extracted areas will be contained within the proposed extraction limits to ultimately infiltrate through the pit floor.

Site access will be from South Dummer 11th Line Road utilizing the entrance/exit at the existing Norwood Pit. Aggregate materials will be processed on-site.

An accompanying submission by MHBC contains rehabilitation plans developed with ecological input from RiverStone (**Appendix 11**). This plan incorporates reforestation and cultural meadow restoration

that will provide naturalized corridors connecting significant features northwest of the extraction area to the southwest of the extraction area.

5 IMPACT ASSESSMENT AND RECOMMENDATIONS

The purpose of this NER is to present a biophysical characterization of the study area to identify the potential for negative impacts on the natural environment and natural heritage features as a result of the proposed pit extraction activities. Several significant natural features and species were documented or have the potential to occur within the site as determined through the assessment details found in Section 4. The assessment is required to determine the potential for impacts to these features and provide avoidance, mitigation, and enhancement measures, and to provide input to the rehabilitation plan.

The following assessment provides an evaluation of the potential for the proposed pit operations to result in negative impacts to significant features and offers recommendations to mitigate impacts where warranted. Some recommendations provided apply to several natural features and/or species simultaneously; as such, all recommendations should be read and considered in their entirety. The baseline or existing conditions against which the application is assessed are treated as the state of the site at the time of the site assessments. The following sections provide an assessment of potential impacts to identified significant natural features and the natural environment overall. Significant natural features with recommended setbacks are shown in **Figure 10**.

5.1 Impact Assessment Approach

The potential ecological impacts of an application can be understood as zones that project outwards from the project footprint and areas of site alteration (grading, etc.). The greatest potential for impact occurs within areas directly subject to disturbance, however, adjacent areas may also be impacted indirectly. Indirect impacts can include light or noise pollution or degradation of water quality within a downstream receptor resulting from sediment runoff during extraction or changes to groundwater quality.

To carry out the assessment of potential impacts associated with the proposed above water pit extraction activities within the site of significant natural features, RiverStone has employed the following approach:

1. *Predict* direct and indirect impacts to significant natural features and species of conservation interest based on the proposed pit extraction plan, including both direct and indirect impacts over all project life stages (i.e., operation to post-rehabilitation).
2. *Evaluate the significance* of the predicted impacts to natural features and species of conservation interest based on their spatial extent, magnitude, timing, frequency (how often), and duration (how long).
3. *Assess the probability or likelihood* that the predicted impacts will occur at the level of significance expected (e.g., high, medium, low probability).
4. Where the potential for negative impacts exists, ecologically meaningful *mitigation measures* are offered to avoid such impacts first, and where impacts cannot be fully avoided to minimize and/or compensate such impacts as appropriate.

Direct impacts are those in which there is a direct cause-effect relationship between a proposed activity within the pit extraction area on a natural feature or species. In the context of the ARA application considered herein, direct impacts largely pertain to the necessary removal of vegetation and habitats within the pit extraction area. Indirect impacts may include disturbance impacts on wildlife communities on lands adjacent to the extraction area or decrease of water abundance or water quality within a downstream receptor (e.g., wetland or watercourse). The major project phases for which impacts must be assessed include the operational phase and a post-rehabilitation phase. The operational phase involves above water pit extraction. The post-rehabilitation phase occurs when all rehabilitation activities are complete.

RiverStone works iteratively with the project team to identify extraction options that avoid negative impacts first. In general, avoidance measures that have already been incorporated into the application or project design are not duplicated as technical recommendations herein. The Site Plans (phasing, operations, and rehabilitation) are described in Section 4 while the impact assessment and recommended mitigation measures are provided in Section 5.

Our determination of whether the risk of potential impacts on a specific feature is acceptable relies upon the relevant policies and legislation considered in **Section 2.2**, as well as our assessment of the significance or quality of the feature.

The significant features identified during this study that occur within or in proximity to the site are listed in **Table 4** in **Section 3.7**, and include 1) non-provincially significant wetlands and other wetlands, 2) habitat of endangered and threatened species, 3) Regional ANSI, 4) significant woodland, 5) significant wildlife habitat, and 6) fish habitat. As outlined in the impact assessments for each feature that follows, ecologically appropriate setbacks from these significant natural features have been incorporated into the site plan as the primary mitigation tool to avoid impacts. It is noted that the lands north of the site within Lots 81 and 82 will remain in their natural state, including the extensive forest/swamp complex (containing both Northern Wetlands and Significant Woodland), Western Wetland, Eastern Wetland.

The following assessment evaluates the potential for negative impacts resulting from the activities proposed as part of the ARA applications, as well as mitigation measures to address the potential for negative impacts.

5.2 Wetlands Including Provincially Significant Wetlands

Wetland communities have been mapped throughout the assessment area as outlined on **Figure 2**. While no PSW's are located within the assessment area, the Ouse (east) River North Wetland PSW is located approximately 250 m west of the north property boundary and over 300 m from the edge of the proposed extraction area. Wetlands in the assessment area generally drain in a northeast to southwest direction through the assessment area and under Highway 7 via a culvert and associated watercourse.

The following potential pathways of effects from the proposed pit on wetlands within the assessment area and the PSW on adjacent lands were assessed for potential impacts:

- Direct loss of wetland area in locations that conflict with the proposed areas of pit extraction within the site.
- Alteration of the water balance as related to surface water and/or groundwater contributions to wetlands that may result from above water extraction operations, from increased coverage of

pervious surfaces, modifications to existing topography or drainage, or from localized water table alterations related to the post-rehabilitation features.

- Increased sediment and nutrient loadings that reach the wetland via runoff from the pit extraction area. This may adversely affect wetland water quality via increased turbidity, nutrient enrichment, contamination, changes in pH, etc.
- Thermal loadings to the groundwater where it is exposed within the pit extraction area, adversely affecting wetland communities which receive groundwater contributions.
- Noise and light pollution that may affect the ability of wetland wildlife to successfully carry out their life processes (e.g., feeding/foraging, nesting, etc.); and
- Potential disruption of wildlife movement or dispersal corridors.

The greatest potential for impact to the wetlands within the assessment area would be associated with direct loss of these features due to access and pit extraction activities. To account for this, the proposed extraction area has been situated outside the boundaries of all identified wetlands and a minimum 30 m buffer recommended. Therefore, no direct loss of wetland habitat is anticipated from the proposed extraction area.

Potential water balance implications of the proposal relate to changes in surface water and groundwater flow impacts during active extraction operations, post-rehabilitation changes in localized water table elevations, and changes in surface catchment areas and water balance across the site in the long term. The physical impacts to the wetlands were assessed in detail in the *Hydrogeological Assessment* (Tatham 2026). The adjacent wetlands and associated hydroperiods are seasonally supported by groundwater, with surface water contributions important when the groundwater levels drop. The extraction footprint has been adjusted to take into consideration the water balance in the adjacent wetlands.

The proposed operation is to be a minimum of 1.5 m above the local groundwater table with no dewatering of ground or surface water. The site is a recharge area since most precipitation and snowmelt can infiltrate into the ground (Tatham 2026). Water quality conditions are not expected to be impacted by the quarry operations.

The proposed pit will intercept surface water discharge due to topographic changes that occur with extraction. With surface runoff primarily originating from major storms and snowmelt when the ground is frozen, such runoff from the proposed pit will be intercepted as the pit floor is lowered. This interception will result in an increase in infiltration on the site. According to the hydrogeologic assessment, any reductions in surface runoff are predicted to be more than replaced by increased groundwater flow and discharge to receiving features.

A monthly feature-based water budget was provided by Tatham (2026) to determine if there are impacts to the hydroperiods in the wetlands due to changes in surface water run-off. The results of Tatham's assessment indicate that the wetlands are seasonally supported by groundwater, that the wetlands will have a minor reduction in storage volume due to the reduction in catchment areas and surface water input, however with the increased infiltration of groundwater to the wetlands there is not changes expected to the hydroperiods of the wetlands.

With the final site plan, pit extraction will result in the loss of some of the surface water catchment area to the wetlands, however the increased infiltration and groundwater inputs will offset this change.

There are no predicted changes to the water balance or hydroperiods to the wetlands found on adjacent lands.

Extraction near wetland communities also has a potential to disrupt the ability of wetland wildlife to carry out their life processes, and could result in impacts from dust, noise, excessive light, and other accidents. Such impacts can largely be addressed by designating an ecologically appropriate setback, restrictions on noise and lighting sources and via a comprehensive system of erosion and sediment control as outlined in the ESC Plan, combined with other measures, such as a Spill Management Plan, contained in the site plan.

To protect the wetland features during implementation of the proposed pit extraction activities, in addition to the proactive adjustment of extraction limits in the final site plans to reflect feature boundaries and setbacks, RiverStone recommends the following measures be included on the Site Plans:

- **The limit of extraction and operational activities shall be setback a minimum of 30 m from the boundary of all wetlands features as shown on Figure 6. The 30 m setback is to be permanently marked prior to the commencement of pit operations.**
- **The rehabilitation plan shall include pre-emptive naturalization of all setbacks outlined on Figure 10 with a combination of native trees and shrubs adjacent to wetlands, where the current use is agricultural field. For rehabilitation recommendation, please see Section 5.10**
- **The 30 m wetland setback area must be undisturbed by pit operations and remain as natural self-sustaining vegetation.**

5.3 Significant Woodlands

Significant woodlands have been identified per the methodology in the Natural Heritage Reference Manual. Significant woodlands have been identified in the assessment area and within the proposed limit of extraction. Impacts on woodlands can be either direct (i.e., removal of features in the limit of extraction) or indirect (i.e., dust, soil compaction, edge effects). Potential direct and indirect impacts of the proposed extraction, operation and rehabilitation phases are assessed as follows.

There numerous woodlands and three significant woodlands (**Figure 8**) located in the assessment area (A, B, and D). Woodland B is a larger woodland (48.3 ha) that extends outside of the assessment area to the north. There will be approximately 6.0 ha of significant woodland habitat removed from Woodland B during extraction. Wooded features C, E, F, and G do not meet the criteria for significant woodlands and are located outside of the licence boundary. Woodland A, and D are located well outside of the extraction limits and are not expected to be impacted by the proposal. Areas of woodland that require removal will be replaced with 15.7 ha of new forest in locations that enhance and contribute to the overall form, function and resiliency of the County Natural Heritage Areas. The proposed rehabilitation Plan (MHBC) will result in a net gain of approximately 9.7 ha of woodland features and functions within the local landscape, ensuring no negative impact.

To mitigate impacts to woodlands the following recommendations should be included on the Site Plans.

- **Woodland feature removals and woodland thinning shall only occur between November 1 and March 15th to avoid the active periods for birds and bats. The limit of extraction shall be setback a minimum of 30 m from the boundary of all woodland features as shown on Figure 8. The 30 m setback is to be permanently marked prior to the commencement of pit operations.**
- **To prevent damage to adjacent woodland habitat located within the licence boundary, tree protection measures (e.g., hoarding, temporary fencing at the dripline) shall be applied.**
- **The 30 m woodland setback shall be undisturbed by pit operations and remain as natural self-sustaining vegetation.**

5.4 Endangered and Threatened Species

As per Section 15 of the SCA, no person shall engage in an activity that results or is likely to result in a species no longer living in the wild in Ontario. Additionally, Section 16 of the SCA protects individuals of endangered and threatened species, prohibiting individuals from being killed, harmed, captured, or taken and damage or destruction of their habitat without an appropriate registration or permit. In many (but not all) cases, mitigation planning is sufficient to ensure that development can occur in a manner that is consistent with the above provisions.

Under the SCA, the activities proposed by a development are assessed against whether the activities are exempted (no registration or permit required), permitted (requires a permit), or registerable.

Appendix 2 presents our assessment of potential impacts on species and ecological communities of conservation interest. As summarized in **Section 2.5.5**, the only species to have potential habitat or was observed on the subject property that is listed on the OPS list is Black Ash. The following section outlined recommended protections for this species.

5.4.1 Black Ash

Black Ash were identified within wetland features throughout the central and south portions of the assessment area (**Figure 7**). There is currently protection for Black Ash within the County of Peterborough under the SCA, therefore proponents need to seek appropriate approvals for activities impacting Black Ash or their habitat. To avoid impacts to wetland habitat containing Black Ash, the extraction limit has been located outside of these communities, the water balance in the wetlands has been protected, and a minimum 30 m buffer has been recommended for wetlands. All Black Ash trees have been avoided and with the implementation of mitigation measures to protect wetlands, there is no anticipated impacts to Black Ash or their habitat.

- **The recommendations offered herein to protect the wetlands must be implemented in full as they will also serve to protect Black Ash and their habitat.**
- **It is the proponent's responsibility to confirm any updated requirements for the protection of all endangered and threatened species including Black Ash. Black Ash is an endangered species and protection measures afforded by the Species Conservation Act apply within the County of Peterborough. Black Ash protection should be reviewed prior to vegetation clearing on lands adjacent to wetlands to ensure ongoing compliance with the SCA or future policy guidance related to the SCA.**

5.5 **Federal Species at Risk Act (SARA)**

The federal Species at Risk Act (SARA; 2002) provides regulatory protection to species designated as endangered or threatened under the Act through prohibition of killing, harm, or harassment of individual listed species and or their residence. A species' residence is defined under SARA as "a dwelling-place, such as a den, nest or similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their lifecycles, including breeding, rearing, staging, wintering, feeding or hibernating." As outlined in Section 34 of SARA, the Act generally only applies to listed species on federal lands (except in the case of an order by the Minister), except for aquatic species and migratory bird species listed under the federal MBCA. With the Ontario SCA deferring to SARA for species not listed on the PSO list, one (1) species Eastern Meadowlark, was observed on the subject property that has protections under SARA. The following section along with recommendations to protect special concern species and migratory birds will also ensure this species is protected according to SARA.

5.5.1 **Eastern Meadowlark (SARA)**

Two (2) breeding pair of Eastern Meadowlark were identified during breeding bird surveys in the central west portion of the assessment area as outlined on **Figure 7**. This area is currently being used as pastureland and will require removal as part of the extraction area. This area is within the license boundary and impacts due to habitat loss or direct impacts to nesting birds and young during clearing are anticipated. With this species now falling under SARA the following is recommended.

- **For protection of habitat of Eastern Meadowlark, no additional recommendations specific to this species outside of general protections for all breeding birds is required. To maintain habitat availability for grassland birds, the rehabilitation plan has incorporated replacement grassland habitat.**

5.6 **ANSI**

As outlined in **Section 3.7.3** and shown on **Figure 4**, the Norwood Esker Complex Earth Science Regional ANSI is mapped through the central and north portion of the assessment area and extending onto adjacent lands to the northeast. The purpose for establishing the pit in the proposed location is due to the material contained in the esker. The portion of this feature within the extraction area will be removed. There will be removal of 2.7 ha of this Regional ANSI or 5% percent of the total area, and this removal will not result in a negative impact to the regional context of this ANSI.

5.7 **Significant Wildlife Habitat**

RiverStone completed an assessment of SWH feature within the assessment area in accordance with the Ecoregion 6E Criterial Schedules (OMNRF 2015a) with a screening provided in **Appendix 10** and locations depicted on **Figure 9**. Significant Wildlife Habitat. The assessment used a combination of habitat-based approach and targeted surveys. The following sections contain the results of the impact assessment and recommendations for avoidance and minimization of potential impacts to the ecological form and function of SWHs identified during RiverStone's SWH assessment. The following SWH were identified within the assessment area and are further discussed below.

- Turtle Wintering Area.
- Special Concern and Rare Wildlife Species

5.7.1.1 Seasonal Concentration Areas of Animals

Turtle Wintering Areas

Turtles overwinter in waterbodies that do not freeze to the bottom during winter, particularly those that exhibit low temperatures and high dissolved oxygen conditions. Land clearing, changes to water levels, water quality, and alterations to the thermal regime can negatively impact the potential for a site to provide overwintering habitat for turtles. Additionally, maintaining access to overwintering areas by turtles (which often make seasonal, overland movements) is important to preserve their function.

Based on the results of the targeted turtle visual encounter surveys, and other incidental turtle observations outside of the formal survey period, the pond associated with turtle basking station T9 has potential to function as significant turtle wintering area. Only this pond is considered significant turtle wintering areas given the large Painted Turtle population during early spring basking surveys to provided significance (**Figure 9**). However, during the late summer this pond was dry suggesting that sufficient water may not be present to establish hibernation habitat. With above seasonal temperatures prior to the turtle basking survey timing window, these turtles may have moved into the pond after hibernation in wetland in the vicinity. Turtle populations within the remaining survey locations were low based on the results of the targeted turtle visual encounter surveys.

With this pond feature being outside the proposed extraction area, there is no expectation that the water balance of this feature will be negatively affected by pit activities, which is important for the function of this feature if it is turtle wintering habitat.

To protect significant turtle wintering habitat within the pond associated with turtle basking station T9 from the implementation of the proposed pit extraction activities, RiverStone recommends the following measures with inclusion on the Site Plans:

- **The recommendations offered herein to protect the wetlands (Section 5.2) shall be implemented in full as they will also serve to protect turtle wintering habitat within this feature.**
- **A Scientific Collectors Permit from MNR shall be obtained to remove any fish and wildlife species from the pond located at Station T1 to allow for removal of turtles, fish and wildlife prior to decommissioning of pond. Any captures shall be relocated to other pond features on the subject property.**
- **Specialized reptile barrier fencing with J- hooks shall be erected at the northern edge of the extraction limits to guide turtles away from the active pit areas.**
- **A qualified person shall confirm the adequacy of the reptile barrier fence. The fence shall be inspected to ensure any necessary repairs are made on a routine basis (monthly from April through October).**

5.7.1.2 Habitat of Species of Conservation Concern -Special Concern and Rare Wildlife Species

Snapping Turtle

While Snapping Turtle was not observed during targeted basking surveys, a roadkill of this species was observed along the shoulder of Highway 7 in the vicinity of basking station T7. This species is likely to occur periodically within the ponds and wetlands. The proposed licence boundary is located outside

of identified wetlands within the assessment area and impacts to potential turtle habitat is not anticipated. Recommendations outlined in **Section 5.2** that protect the wetland will also protect potential Snapping Turtle habitat. There is also potential for the disturbed areas of the pit to attract Snapping Turtle (and Painted Turtles) for nesting. To protect Snapping Turtle and turtles in general from nesting in the pit area, RiverStone recommends the following measures:

- **The recommendations offered herein to protect wetland communities in Section 5.2 and turtle wintering habitat (Section 5.7.1.1), must be implemented in full as they will also serve to protect potential Snapping Turtle habitat.**
- **Specialized barrier fencing for reptiles that include J hooks, must be erected along the southwest licence boundary.**
- **A qualified person should be retained to certify the adequacy of the specialized barrier fence. The fence should be inspected by operator to ensure necessary repairs on a routine basis (monthly from April through October).**

Eastern Wood-pewee and Wood Thrush

Singular Eastern Wood-pewee were documented on several occasions during all breeding bird surveys within upland and lowland deciduous, mixedwood and coniferous forests through the central portion of the assessment area (**Figure 9**). Wood Thrush was documented in similar habitat through the central portion of the assessment area in less abundance with no confirmation of breeding. These species were also recorded within 120 m on adjacent lands. These species prefer the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. The area of SWH for this habitat type and species is the area of the habitat to the finest ELC scale that protects the habitat form and function. Habitat for these species is not limited within the assessment area nor on the greater landscape; it is present in the surrounding woodland and wetland habitats.

The proposed extraction area requires the removal of 5.5 ha of upland deciduous habitat through the central portion of the site. This habitat would be removed outside the breeding season. While some habitat will be removed, there is abundant similar habitat in the assessment areas that will remain, and the rehabilitation plan provides for enhancement and restoration of these habitat types. To protect Eastern Wood-pewee during implementation of the proposed pit extraction activities, and following rehabilitation RiverStone recommends the following measures:

- **Removal of natural vegetation (e.g., shrub clearing, fallow fields, etc.) shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).**
- **The progressive rehabilitation plan must include the restoration of forest habitat that is continuous with the existing habitat. For rehabilitation recommendations, please see Section 5.10.**
- **The recommendations offered herein to protect Migratory Birds (Section 5.6) must be implemented in full as they will also serve to protect Eastern Wood-pewee and Wood Thrush.**

Barn Swallow

Barn Swallow were documented foraging over cultural meadow communities in the southwest and east portions of the assessment area along with of the south wetland. With a number of anthropogenic areas with structures within the assessment area, it is assumed that nesting is occurring in an outbuilding in

one of the anthropogenic areas. With all anthropogenic areas outside the proposed extraction area, there is no anticipated direct impacts to nesting for this species. However, RiverStone recommends the following if future plans require the removal of structures within anthropogenic areas.

- **Removal of structures must occur outside the breeding bird window.**

Grasshopper Sparrow

Grasshopper Sparrow was documented within the cultural meadow community in the west portion of the assessment area (**Figure 9**) Observations of one (1) breeding pair of this species was recorded during the June 18, 2025, survey and a singular Grasshopper Sparrow was observed during the July 3, 2024, survey. This community is partially located within the proposed extraction area, and 3.7 ha will require removal. The following are recommended for inclusion on the Site Plan.

- **Removal of natural vegetation (e.g., shrub clearing, fallow fields, etc.) shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).**
- **The rehabilitation plan must include the creation of meadow habitat of sufficient size to provide useable habitat for protected grassland birds. For rehabilitation recommendations, please see Section 5.10.**

Monarch

Monarch was documented in cultural meadow and anthropogenic areas in the west, southwest and east portions of the assessment area and based on the vegetation composition of cultural meadow habitat with Common Milkweed, the presence of this species is not unexpected. General habitat of nectar rich plants utilized by Monarch (*Asclepias syriaca*) and other insect species is associated with the meadow habitats on the site.

The extraction area will require removal of some meadow habitat; however, the local landscape supports an abundance of such suitable habitat. There is no expectation that pit would negatively impact the availability or function of local habitat for this species. To ensure that potential habitat is maintained and appropriate species present, RiverStone recommends the following.

- **Removal of natural vegetation within the culture meadow community shall be completed outside of the primary Monarch breeding window (i.e., between Mid-May to October).**
- **Cultural meadow habitat, using a native wildflower mix that includes milkweed species, shall be included as part of the rehabilitation plan. Native seed mixes that include milkweed species should be applied on the any berms. For rehabilitation recommendation, please see Section 5.10**

Rare Wildlife Species

Sixteen (16) rare bird species other than endangered, threatened and special concern species outlined above were recorded during the breeding bird surveys and incidental observations. All species are identified in the Ecoregion 6E Area Sensitive Birds list. These species include Black-and-white Warbler, Black-throated Green Warbler, Grasshopper Sparrow, Hermit Thrush, Magnolia Warbler, Ovenbird, Pileated Woodpecker, Pine Warbler, Red-breasted Nuthatch, Savannah Sparrow, Scarlet Tanager, Veery, Whip-poor-will (incidental call), and White-breasted Nuthatch These species and their habitat are associated with features on or adjacent to the extraction area. With the required removal of

cultural meadow and forest habitat to develop the pit there is potential for direct impacts to habitat for area sensitive birds. To protect rare bird species during implementation of the proposed pit extraction activities, RiverStone recommends the following measure:

- **Rehabilitation areas outlined on Figure 10, and outlined in Section 5.10 will provide future habitat for bird species noted to be present on the subject property.**
- **All removal of natural vegetation (e.g., tree/shrub clearing, fallow fields, etc.) shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).**

5.8 Fish Habitat and Watercourse

In general, development and/or site alteration activities that occur in proximity to fish habitat and watercourses have the potential to cause negative impacts via the following pathways:

- Alterations of surface water and/or groundwater contributions that may result during pit activities (e.g., dewatering, etc.), and/or modifications to existing topography or drainage;
- Increased sediment and/or nutrient loadings to features via runoff exiting the development area from construction to post-completion of the project. This may adversely affect water quality via increased turbidity, nutrient enrichment, contamination by toxic substances, changes in pH, etc.;
- Direct loss of habitat for fish during the development and continued operation of the pit; and,
- Increased human activity/encroachment, that may result in dumping, or other disturbances.

As outline above in Sections 3.4.1 and 3.6.8 as short reach of the Ouse River Tributary is located in the south portion of the assessment area that is associated with wetland communities. This watercourse outlets via culvert under Highway 7 onto adjacent lands. During site assessments it was confirmed that the watercourse and a dug pond associated with a residence in the southeast portion of the property provide fish habitat. Additional dug ponds are located in the central and north portions of the assessment area and were determined to be offline ponds.

The extraction limits have been modified so that there is no encroachment into wetlands and the hydrogeological assessment (Tatham, 2026) has confirmed that the water balance to the wetlands will be maintained. There are no predicted direct impacts to fish, fish habitat or the watercourse. Additional ponds within the south and north portion of the assessment area have also been omitted from the extraction area. One (1) pond located in the central east portion of the assessment area has been included in the extraction area. This pond is a dug pond that was established by the previous farm owner as a cattle watering pond and was recently re-established in November 2022. It is assumed that other ponds within the assessment area were also established cattle or watering ponds. These features are not protected under the *Fisheries Act*.

With the proximity of the watercourse and fish habitat to the proposed extraction area and association to wetland features. There is potential for alterations of surface water and groundwater contribution along with and increase in sediment and nutrient loads, and potential human encroachment.

Mitigation measures outline in **Section 5.2** for the protection of wetland features that includes a 30 m buffer, retaining or enhancing vegetation within the buffer strip, in concert with proper sediment and

erosion control measures, will protect fish, fish habitat and watercourses within the assessment area. RiverStone recommends.

- **The recommendations offered herein to protect the wetlands (Section 5.2) must be implemented in full as they will also serve to protect fish, fish habitat and watercourse feature.**

5.9 Other Natural Features and Functions

Although a portion of the proposed extraction area is occupied by cultural meadow and cultivated agricultural fields, that will be the requirement to remove deciduous forest and cultural savanna communities that contain natural vegetation (i.e., mature and young trees and shrub, etc.). As such, the ecological function of these areas will be negatively impacted during site preparation and during the life of the pit until rehabilitation. To mitigate some of the ecological impacts associated with the loss of vegetation cover, and to provide broad recommendations to guide rehabilitation, RiverStone recommends the following measures:

- **Removal of natural vegetation (e.g., tree/shrub clearing, fallow fields, etc.) within the extraction area shall be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31).**
- **At pit closure, site rehabilitation will be required utilizing vegetation species native to the local area in the final rehabilitation plan. Areas adjacent forest communities are to utilize native species that blend with the adjoining vegetation communities. For rehabilitation recommendations, please see Section 5.10.**

5.10 Rehabilitation Requirements

The following recommendations are provided as mitigative measures to protect species and habitat both during extraction and in the long-term. Restoration plantings and areas in the rehabilitation plan will ensure long-term connectivity of the natural heritage system and habitat availability to species identified in the NER.

5.10.1.1 Pre-emptive Plantings Adjacent to Wetlands

The area identified for Pre-emptive Planting on the ARA operational and rehabilitation plan shall be planted within 5 years of the issuance of the ARA licence in the spring (i.e., May) or fall (i.e., mid - September to early-October) with a mixture of the following tree and shrub species:

Trees

- Red Maple – *Acer rubrum*
- Bigtooth Aspen (*Populus grandidentata*)
- Trembling Aspen (*Populus tremuloides*)
- White Birch (*Betula papyrifera*)
- American Basswood (*Tilia americana*),
- Balsam Fir, (*Abies balsmea*),
- Eastern Hemlock (*Tsuga canadensis*)
- Eastern White Pine (*Pinus Strobus*)

Shrubs / Groundcover

- Choke Cherry (*Prunus virginiana*)
- Red Osier-dogwood (*Conus sericea*)
- Staghorn Sumac (*Rhus typhina*)
- Smooth Serviceberry (*Amelanchier laevis*)
- Common Blackberry (*Rubus allegheniensis*)
- Northern Bracken Fern – *Pteridium aquilinum* var. *latiusculum*
- White Meadow-sweet – *Spiraea alba*

Within the Pre-emptive Planting Area, the following planting requirements shall be met:

- a) Trees shall be planted at a density of five (5) trees per 100 m².
- b) All tree saplings shall be planted 5 m apart to increase rooting and provide stabilization.
- c) Trees shall be a minimum of 1.2 m (~4 ft) in height with a sufficiently developed root ball to sustain planting.
- d) Shrubs shall be planted at a shrub to tree ratio of 5:1.
- e) All shrubs shall be installed 1 m apart.
- f) All installed shrubs shall consist of potted material at least 30cm tall in 1-3 gallon pots.
- g) Any woody plant root defects (e.g., girdling) shall be corrected prior to installation.
- h) All woody plants shall be installed such that the root crown/trunk flare is exposed above the soil surface to ensure proper oxygenation of the rooting zone.
- i) All installed woody plants shall be watered (deep soaking) following installation.

5.10.1.2 Woodland Rehabilitation

The area identified as woodland on the ARA rehabilitation page shall be planted in the spring (i.e., May) or fall (i.e., mid -September to early-October) with a minimum of six (6) of the following tree species:

- Sugar Maple (*Acer saccharum*)
- Northern Red Oak (*Quercus rubra*)
- Eastern White Pine (*Pinus Strobus*)
- Eastern Hemlock (*Tsuga canadensis*)
- Red Maple (*Acer rubrum*)
- Bigtooth Aspen (*Populus grandidentata*)
- Trembling Aspen (*Populus tremuloides*)
- White Birch (*Betula papyrifera*)
- American Basswood (*Tilia americana*),
- Balsam Fir (*Abies balsmea*)

The location and diversity of the tree species within the woodland area shall be field fitted based on the soil conditions, and topography.

A minimum of 15 % of each selected tree species shall be planted overall within the woodland area. Trees shall be a minimum height of 0.45m (1.5 feet) tall when planted and shall be planted at a 2 m spacing to a minimum density of 1800-2000 seedlings / ha.

Prior to planting, the woodland planting area shall be amended with topsoil/organic soil to be at minimum 0.3 m deep.

Competing vegetation shall be removed yearly until the planted trees have reached 2 m in height.

Monitoring shall occur annually for three (3) years to verify a survival rate of greater than 75% in the woodland plantings. If survival is noted to be less than 75% during the annual monitoring, replacements will be planted in order to ensure a minimum density of 1200 trees / ha.

5.10.1.3 Grassland Habitat Naturalization

The area identified for grassland on the ARA rehabilitation page, shall be planted with a mix of short and mid height native bunchgrass and diverse wildflowers composed of roughly 20% native grass and 80% forbs to provide appropriate habitat for grassland bird species. The grassland area shall be planted with the following species:

- Panic Grass Switch Grass (*Panicum virgatum*),
- Little Bluestem (*Schizachyrium scoparium*)
- Orchard Grass (*Dactylis glomerata*) Not Native
- Indian Grass (*Sorghastrum nutans*),
- Dropseeds (*Sporobolus* sp).
- Sideoats Grama (*Bouteloua curtipendula*).
- Purple Coneflower (*Echinacea purpurea*). Not Native
- Black-eyed Susan (*Rudbeckia hirta*).
- Wild Bergamot (*Monarda fistulosa*).
- Gray Goldenrod (*Solidago nemoralis*).
- Milkweed species (*Asclepias* spp.).
- Bebb's Sedge (*Carex bebbii*).

5.10.1.4 Monarch Habitat Creation (Cultural Meadow)

The area identified for potential Monarch Habitat Cultural Meadow on the ARA rehabilitation page, shall be planted with a native mix of wildflowers and grasses to stabilize soils and provide appropriate habitat for Monarch Butterfly. These areas are to be maintained as a meadow with mowing and maintenance limited to periodic removal of trees and woody shrubs. The area shall be planted with an Early Succession Mix that includes the following:

- Black Eyed Susan (*Rudbeckia hirta*),

- Blue Vervain (*Verbena hastata*),
- Canada Anemone (*Anemone canadensis*),
- Canada Blue-joint (*Calamagrostis canadensis*),
- Canada Goldenrod (*Solidago canadensis*),
- Little Bluestem (*Schizachyrium scoparium*),
- Common Milkweed (*Asclepias syriaca*),
- Fowl Bluegrass (*Poa palustris*),
- Meadow/Open Field Sedge (*Carex granularis*),
- New England Aster (*Symphyotrichum novae-angliae*),
- Path Rush (*Juncus tenuis*),
- Purple Stemmed Aster (*Symphyotrichum puniceum*),
- Virgins Bower (*Clematis virginiana*),
- Wild Bergamot (*Monarda fistulosa*).

6 APPLICABLE ENVIRONMENTAL LEGISLATION AND POLICIES

The following commentary summarizes the various federal, provincial, and municipal environmental legislation and policies that are applicable to the proposed ARA applications considered herein and describes how the recommendations provided in this report will address these policies. Interpretation of the County of Peterborough Official Plan and Township of Douro-Dummer.

6.1 County of Peterborough Official Plan (1994 with Consolidation to June 2025)

The County's of Peterborough outlines goals, objectives, and policies pertaining to land use within the planning jurisdiction of the County. As outlined in Section 1.1 of the OP, the County of Peterborough OP also serves as the OP for the Township of Douro-Dummer. Local municipal plans for have been incorporated into Sections 6 and 7 along with associated schedules.

Section 2.2 of the OP states:

When submitting an application to amend the County Official Plan, the applicant shall provide supporting documentation to the satisfaction of County Council which adequately addresses the following:

- the impact of the proposal on the natural environment of the watershed within which it is located
- the degree to which the proposal conforms to the various Provincial policies and guidelines including but not limited to the Provincial Policy Statement, Minimum Distance Separation I and II as prescribed by the Ministry of Agriculture and Food, and the Oak Ridges Moraine Conservation Plan.

Section 2.6 DEVELOPMENT APPLICATIONS

General Policies

In accordance with Regulations made under The Planning Act for the purpose of deeming a “complete application”, the County and/or the Townships may request additional information that it considers it may need when considering development proposals or

Planning Act applications. Such information may include, but is not limited to, any of the following:

- Environmental Impact Analysis (see Section 4.1.3.1)

The requirements for Environmental Impact Analysis are found in section 4.1.3.1. This NER report is submitted to address this requirement has been prepared by professional ecologists and includes identification of natural features on the site and within the required adjacent lands distance.

Section 4.1 Natural Environment

The County recognizes the important contribution that natural systems, natural heritage features and natural resources make to the social, economic, and environmental health of local municipalities. In this regard, the County has identified the following areas to ensure that the appropriate land use and resource management protection policies are applied to them.

Natural Heritage Features include wetlands, flood plains, endangered and threatened species habitat, fish habitat, wildlife habitat, woodlands valleylands, areas of natural and scientific interest, and the Oak Ridges Moraine

This NER has identified and characterized the natural heritage features identified in the County's OP.

The County recognizes the important contribution that natural system, natural heritage features and natural resources play in the community.

Section 4.1.3.1 - General (Policies)

Development and site alterations within provincially significant wetlands and in significant portions of the habitat of endangered and threatened species is not permitted. However, with the exception of the Oak Ridges Moraine Policy, development or site alteration such as filling, grading and excavating may be permitted within or adjacent to the remaining natural heritage features listed in Section 4.1 of this Plan, provided that it has been demonstrated by an Environmental impact assessment that there will be no negative impacts on the natural features or ecological functions for which the area is identified.

The requirements for the Environmental Impact Assessment are included in this OP section

As per discussion provided herein, the proposed extraction area includes the removal of confirmed habitat for endangered and threatened species (Eastern Meadowlark,), along with portions of the Norwood Esker Complex Earth Science Regional ANSI, and SWH (habitat of special concern species).

Section 4.1.3.3 Mineral Aggregate and Non-Aggregate Mineral Resources

This section of the OP specifically addresses aggregate resources in the County. The following points are relevant to the natural heritage features.

All extraction and processing operations should be located and operated in such a manner as to minimize the impact on the natural, social and built environments. In particular, water resources including both surface and ground, shall be protected from adverse

impacts of extraction. Appropriate separation distances for proposed and existing aggregate operations are usually determined on a site specific basis. However, the Ministry of Environment considers the area of influence to be 500 metres for a quarry, 300 metres for a pit below the groundwater table and 150 metres for a pit above the groundwater table. This area is considered to have the greatest impact on sensitive land uses from the pit or quarry operation. Environmental studies should be required to assess the impact if development occurs within this influence area. This influence area should be applied reciprocally to new sensitive land uses encroaching upon an existing extraction operation or lands committed for future extraction.

Pit and quarry operators will be required to undertake progressive and final rehabilitation to accommodate subsequent land uses, and to promote land use compatibility, and to recognize the interim nature of extraction. Final rehabilitation will take surrounding land use and approved land use designations into consideration.

Water resources including ground and surface water have been addressed in the Hydrogeological Assessment (Tatham, 2026). RiverStone has considered natural heritage features, including wetlands and the Ouse River Tributary herein. The licence boundary has been adjusted to avoid significant features and wetlands have been buffered by a minimum of 30 m, more if required to maintain water balance in the feature.

The progressive and final rehabilitation plan has considered the adjacent natural heritage features, land uses, and linkages on the landscape. The rehabilitation plan provides increased woodland and grassland habitat and improves connectivity of the natural heritage system

Section 4.1.3.4 - Natural Heritage Features

This section specifically addresses natural heritage features and states the following:

The diversity of natural features in an area, and the natural connections between them, and the long-term ecological function and biodiversity of natural heritage systems should be maintained, restored or, where possible, improved, recognizing the linkages between and among natural heritage features and areas, surface water features, and ground water features.

The Natural Heritage System Area for the County of Peterborough proximate to the assessment area is depicted in **Figure 3**.

Within the Natural Heritage System Area the OP states:

Local plans shall prohibit development and site alterations within the following types of significant natural heritage features: significant wetlands; significant portions of the habitat of endangered and threatened species but may permit development and site alteration in significant woodlands south and east of the Canadian Shield; significant valleylands south and east of the Canadian Shield; significant wildlife habitat; and; significant areas of natural and scientific interest.

Development and site alteration will not be permitted in fish habitat except in accordance with provincial and federal requirements.

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas listed above unless the ecological function of the adjacent lands has been evaluated in accordance with an environmental impact assessment as described in Section 4.1.3.1 and it has been determined that there will be no new negative impacts on the natural features or on their ecological functions.

The proposed pit is located partly within the one of the areas identified as part of the Natural Heritage System. The extent of the proposed licence boundary contained in the Natural Heritage area does not contain significant wetlands or significant portions of habitat of endangered and threatened species. There were no valleys lands identified within the licence boundary or on adjacent lands. In terms of SWH 5.1 ha of SWH (Eastern Wood Pewee) and 3.7 ha of SWH (Grasshopper Sparrow) will be removed. An area of approximately 6.0 ha of significant woodland will be removed, and 15.7 ha will be reforested as part of the rehabilitation plan. The Norwood Esker an Earth Science is approximately 5.5 km² of which 0.27 km² of the regional ANSI will need to be removed for the proposal.

This report has been prepared to provide an assessment of the proposed pit impact on natural heritage features, satisfying the requirements of the County's OP. Natural heritage features identified within the assessment areas that will be impacted by the proposed pit include habitat for meadowlark and the removal of 5% of the esker regional ANSI (Norwood Esker), mitigation measures have been discussed and recommended herein to support demonstration of no negative/net negative impacts to natural heritage features. With respect to the ASNI – this feature has been identified as a regional ANSI and as an identified aggregate resource by the province. It is not a provincially significant feature and is not afforded the same protections.

6.2 Provincial Aggregate Resources Act, R.S.O. 1990, c. A.8

The information and recommendations provided in this report satisfy the requirements restated below for Natural Environment

Environmental report as outlined in the Aggregate Resources of Ontario: Technical Reports and Information Standards (August 2020) for a Class A licence:

The report must identify any of the following natural heritage features and areas that exist on the site and within 120 metres of the site:

- a) significant wetlands
- b) other coastal wetlands in Ecoregions 5E, 6E and 7E,
- c) fish habitat,
- d) significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River)
- e) habitat of endangered species and threatened species,
- f) significant wildlife habitat,
- g) significant areas of natural and scientific interest,
- h) Within the area of one or more provincial plan(s), any key natural heritage features not included in (a) through (g)

Where any of the above features or areas have been identified, the report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report

must also identify if the site or any of the features, included in (a) through (g), are located within a natural heritage system that has been identified by a municipality in ecoregions 6E and 7E or by the province as part of a provincial plan. For the purposes of this section, “provincial plan” means any one of the following plans:

- Oak Ridges Moraine Conservation Plan
- Greenbelt Plan
- A Place to Grow: Growth Plan for the Greater Golden Horseshoe • Niagara Escarpment Plan
- Lake Simcoe Protection

The following natural heritage features per ARA policies were identified within the site and/or Study Area: 1) significant wetlands and other wetlands 2) habitat of endangered and threatened species, 3) significant wildlife habitat, and 4) fish habitat. Recommendations and mitigation measures to ensure the above features are protected and/or potential impacts are appropriately mitigated are provided in **Section 5**.

6.3 Provincial Planning Statement (2024), pursuant to the Planning Act, R.S.O. 1990, c. P. 13

The 2024 Provincial Policy Study (PPS) is promulgated under the *Planning Act, 1990* and provides direction to municipalities on matters of provincial interest related to land-use planning. Municipal OP’s must be consistent with the PPS. The PPS instructs (s. 4.1.1) that *natural features and areas shall be protected for the long term* and that (s. 4.1.2):

The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

The PPS prohibits development and site alteration within the following natural heritage features in Ecoregion 6E (s. 4.1.4):

- Significant Wetlands
- Significant Coastal Wetlands

The PPS also prohibits development and site alteration within the following natural heritage features in Ecoregion 6E (s. 4.1.5) *unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*:

- Significant Woodlands
- Significant Valleylands
- Significant Wildlife Habitat
- Significant Areas of Natural and Scientific Interest
- Non-Significant Coastal Wetlands

The PPS does not permit development and site alteration in fish habitat (s. 4.1.6) or the habitat of endangered and threatened species (s. 4.1.7) except in accordance with federal and provincial requirements, respectively. Finally, with respect to lands adjacent to significant natural heritage features, the PPS requires that (s. 4.1.8):

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

In considering the aforementioned PPS policies, RiverStone has determined that the proposed extraction activities have addressed the natural heritage provisions of the 2024 PPS for the following reasons:

- RiverStone does not anticipate any negative impacts to fish habitat within the assessment area or adjacent lands.
- Per **Section 5.2** of this report, no Provincially Significant wetlands are present within the 120 m assessment area and RiverStone does not anticipate any negative impacts to the Provincially Significant Wetlands located beyond the assessment area on adjacent lands to the east and west of the proposed extraction area, provided that the recommended mitigation measures are implemented in full.
- Per **Section 5.3** of this report there will be 7.0 ha of significant woodlands that require removal. Mitigation measures have been recommended including timing windows for vegetation removals and habitat enhancement and replacement through the progressive and final rehabilitation plan to ensure there are no negative impacts to significant woodlands.
- Per **Section 5.4** and **Section 5.5** of this report, RiverStone notes that habitat for both Eastern Meadowlark and candidate habitat for Woodland Bats are required to be removed within the extraction area. Mitigation measures have been recommended to limit negative impacts on these species and their habitat. Consultation and approvals from MECP will confirm that the application is compliant Species Conservation Act moving forward.
- Per **Appendix 11** and **Section 5.7** of this report, RiverStone anticipates the removal of small areas of habitat related to special concern and area sensitive bird species considered SWH. Mitigation measures have been recommended including timing windows for vegetation removals and habitat enhancement and replacement through the progressive and final rehabilitation plan to ensure no negative impacts occur on these species and their habitat.

6.4 Provincial Species Conservation Act, 2025

The SCA (2025) and its regulations, is intended to provide for the “protection and conservation of species at risk in Ontario, while taking into account social and economic considerations, including the need for sustainable economic growth in Ontario”. The SCA follows a “registration first” approach, to characterise activities that are exempted, registerable, or permitted.

In our assessment of the subject properties and the proposal, impact to habitats and individual endangered and threatened species on the property are being purposefully avoided and therefore the project does not require registration under the SCA. This is contingent on the diligent application of the mitigation measures presented in **Section 5**.

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6.5 **Federal Species at Risk Act, S.C. 2002, c. 29**

The federal *Species at Risk Act* (SARA) was promulgated in 2002 to protect indigenous species from disappearing, and to recover those identified as extirpated, endangered, or threatened on federal lands. The official list of species at risk under SARA is contained in Schedule 1 of the Act.

The key requirements of SARA – including prohibitions on killing/harming a listed Extirpated, Endangered, or Threatened species (s. 32), destroying its “residence” (s. 32), and destroying its “critical habitat (s. 58) – are largely restricted to federal lands except as it relates to migratory birds and aquatic species. With recent implementation of the Ontario SCA, protection for some endangered and threatened species in Ontario are afforded protection under SARA. With Eastern Meadowlark being present on the subject property, these provisions are not applicable to the proposed pit applications considered herein. Notwithstanding the above, endangered and threatened species listed on Schedule 1 that are either fish or migratory birds are afforded protection from killing/harming and from having their “residence “damaged or destroyed. For birds, a “residence” includes a nest.

While one (1) bird species (Eastern Whip-poor-will) listed extirpated, endangered, or threatened on Schedule 1 of SARA were documented on the site. Eastern Whip-poor-will was noted incidentally on one occurrence during anuran calling surveys in the central portion of the assessment area. However, this species was not heard during three (3) rounds of targeted surveys. Based on the timing of the encounter in early spring prior to typical matting and not calls during targeted surveys, it is assumed this bird was passing through and nesting habitat is not present within the assessment area. With mitigation measure recommended to project nesting birds and watercourses on the subject property outside the extraction area, RiverStone has determined that the proposed licence is consistent with the requirements of SARA (also see RiverStone’s recommendations related to protection of migratory bird nests in **Section 5.9**).

One (1) watercourse and a pond feature in the south portion of the assessment area are known to provide fish habitat. With these features being well outside the extraction area, RiverStone has determined that the proposed extraction activities are consistent with the requirements of SARA (also see RiverStone’s recommendations related to protection of migratory bird nests in **Section 5.9**).

6.6 **Federal Fisheries Act, R.S.C. 1985, c. F-14 (amended on 2019-08-28)**

The *Fisheries Act* includes protections for fish and fish habitat in the form of standards, codes of practice, and guidelines for projects near water. The *Fisheries Act* provides protection against the “death of fish, other than by fishing”, (Section 34.4(1)) and the “harmful alteration, disruption or destruction of fish habitat”, (Section 35(1)), otherwise known as HADD. HADD is defined by DFO to include “any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat’s capacity to support one or more life processes of fish”.

In cases where impacts to fish and fish habitat cannot be avoided, and the project does not fall within waterbodies where Fisheries and Oceans Canada (DFO) review is not required, proponents are asked to submit a request for review to their Fish and Fish Habitat Protection Program regional office to determine approval requirements. All projects are encouraged to avoid causing the death of fish and a HADD of fish habitat, using measures to protect fish and fish habitat that include standards and codes of practice for common works, undertakings and activities

Consistent with the assessment carried out in **Section 5.2**, one (1) watercourse was determined to provide fish habitat (as defined within the *Fisheries Act*). This feature is located outside of the extraction area. Any features located on adjacent lands that may contain fish habitat are not anticipated to be impacted.

6.7 Federal Migratory Birds Convention Act, S.C. 1994, c. 22

Section 6 of the Migratory Birds Regulations under the *Migratory Birds Convention Act, 1994* (MBCA) prohibits the disturbance or destruction of nests, eggs, or nest shelters of a migratory bird. The provincial *Fish and Wildlife Conservation Act, 1997* (FWCA) extends the protection of bird nests and eggs to species that are not listed under the Migratory Birds Regulations (e.g., Corvids).

As recommended in **Section 5.9**, all clearing of vegetation required to implement the proposed development plan shall be restricted to times outside of the period April 1 to August 31 inclusive.

7 CONCLUSIONS

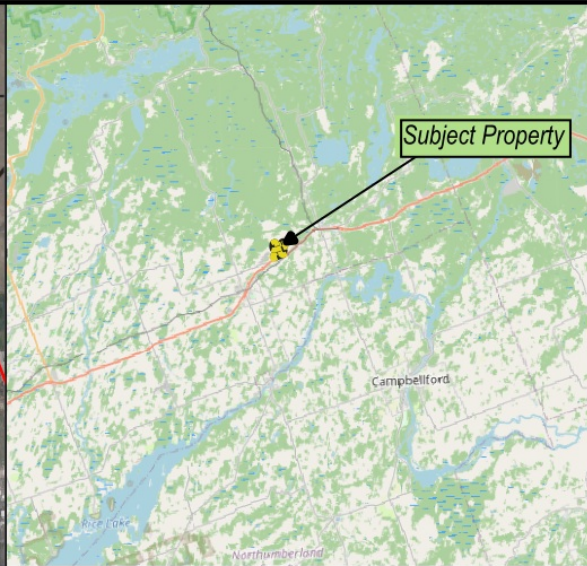
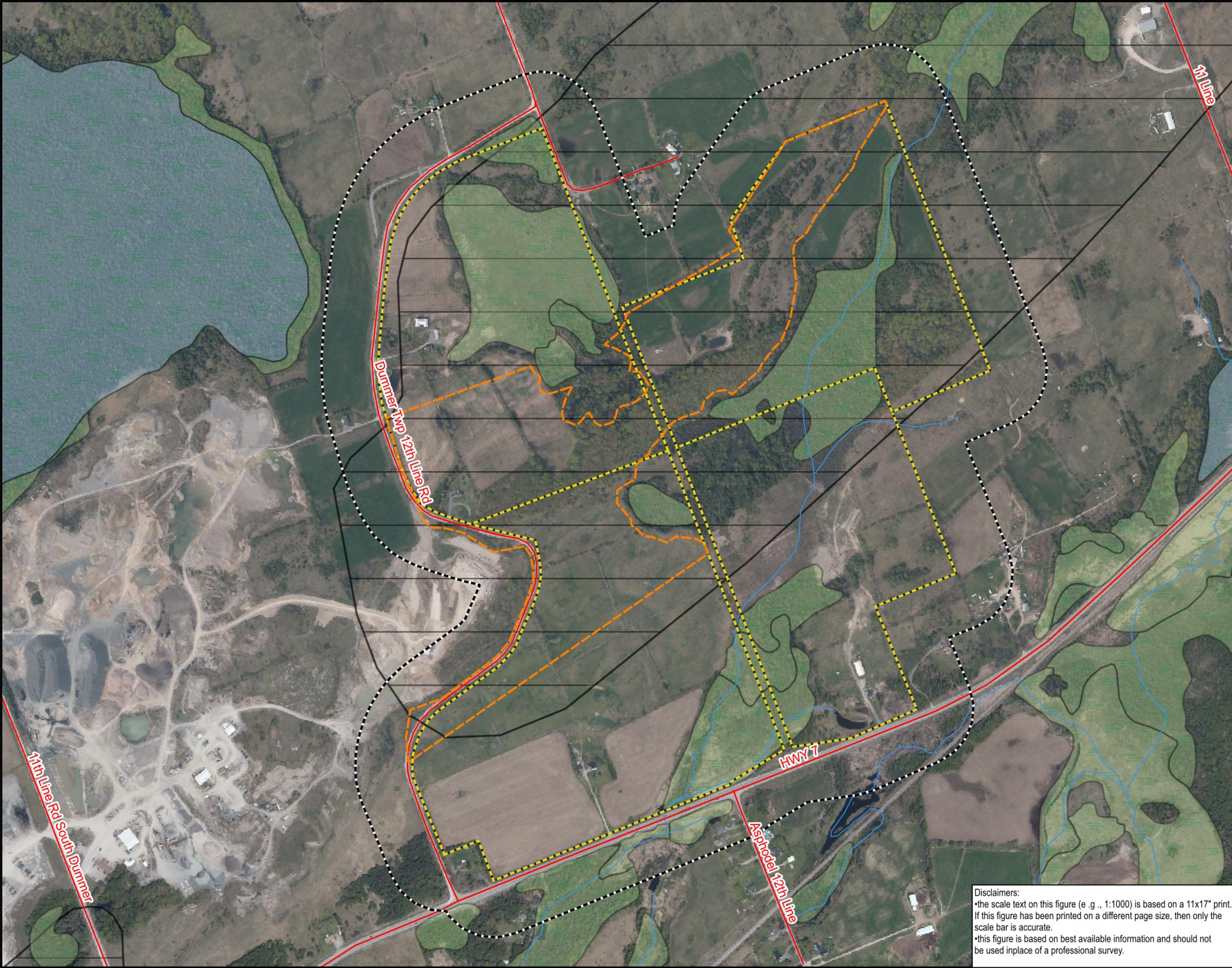
In accordance with *Aggregate Resources Act* policies, the preceding Natural Environment Report provides a detailed characterization of the natural environment occurring within and adjacent to proposed pit licence extension on part of Lot 1 and 2 Concession 11 and Part of Lot 2, Concession 12, in the Geographic Township of Douro-Dummer, County of Peterborough. This report details a comprehensive approach to confirming the presence and absence of significant natural heritage features that are afforded protection under the ARA and applicable legislation and policies at the municipal, provincial and federal levels. Potential negative impacts were assessed with recommendations for preventive, and mitigative measures where appropriate.

Based on the findings herein, RiverStone has determined that the proposed ARA licence application addresses the applicable policies and legislation, provided that the recommendations contained in **Section 5** are implemented in full. The requested local and regional planning approvals will allow for the proposed extractive land use without compromising the ecological values of the assessment area.

8 REFERENCES

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Legend

Planning Boundaries

- Subject Property
- Assessment Area
- Site - Licence Boundary

Land Information Ontario (Ontario Geohub)

- Roads

Natural Heritage Features - Identified by Province (Geohub)

- Watercourses
- Earth Science ANSI - Norwood Esker

Wetlands

- Evaluated-Provincial
- Unevaluated

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	May 25, 2026	By: ET
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Scale 1:7,500

Figure 1. Location of Subject Property
Highway 7 & Dummer 12th Line Road, Township of Duoro-Dummer
Prepared for: Drain Bros. Excavating Limited
Inset: Generalized Location of Subject Property

Disclaimers:
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•this figure is based on best available information and should not be used in place of a professional survey.

- Planning Boundaries
- Subject Property
- Assessment Area
- Natural Heritage Features - Identified by RiverStone
- Wetlands
- Ouse River Tributary
- Survey Stations
- Watercourse (WC)
- Winter Raptor Survey Transects
- Acoustic Monitors (AM)
- Anuran Calling (A)
- Breeding Bird (B)
- Eastern Whip-poor-will Calling (EW)
- Turtle Basking (T)
- Winter Raptor (WR)
- Roosting Bats
- SWT Bat Snag (S)
- FOC Bat Snag (C)
- FOM Bat Snag (M)
- FOD Bat Snag (D)

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	Oct 31, 2025	By: ET
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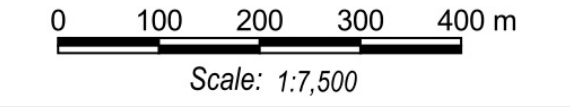
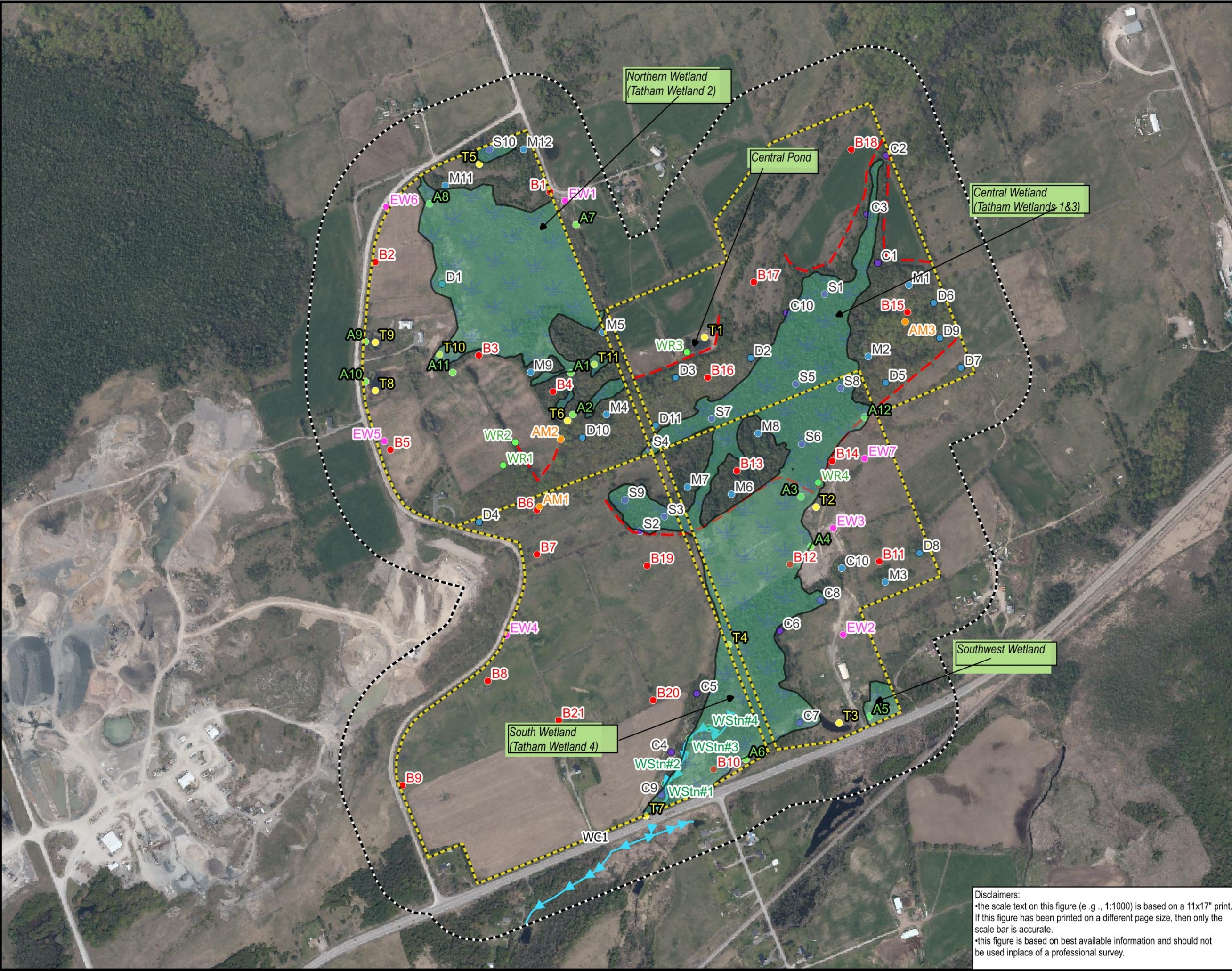


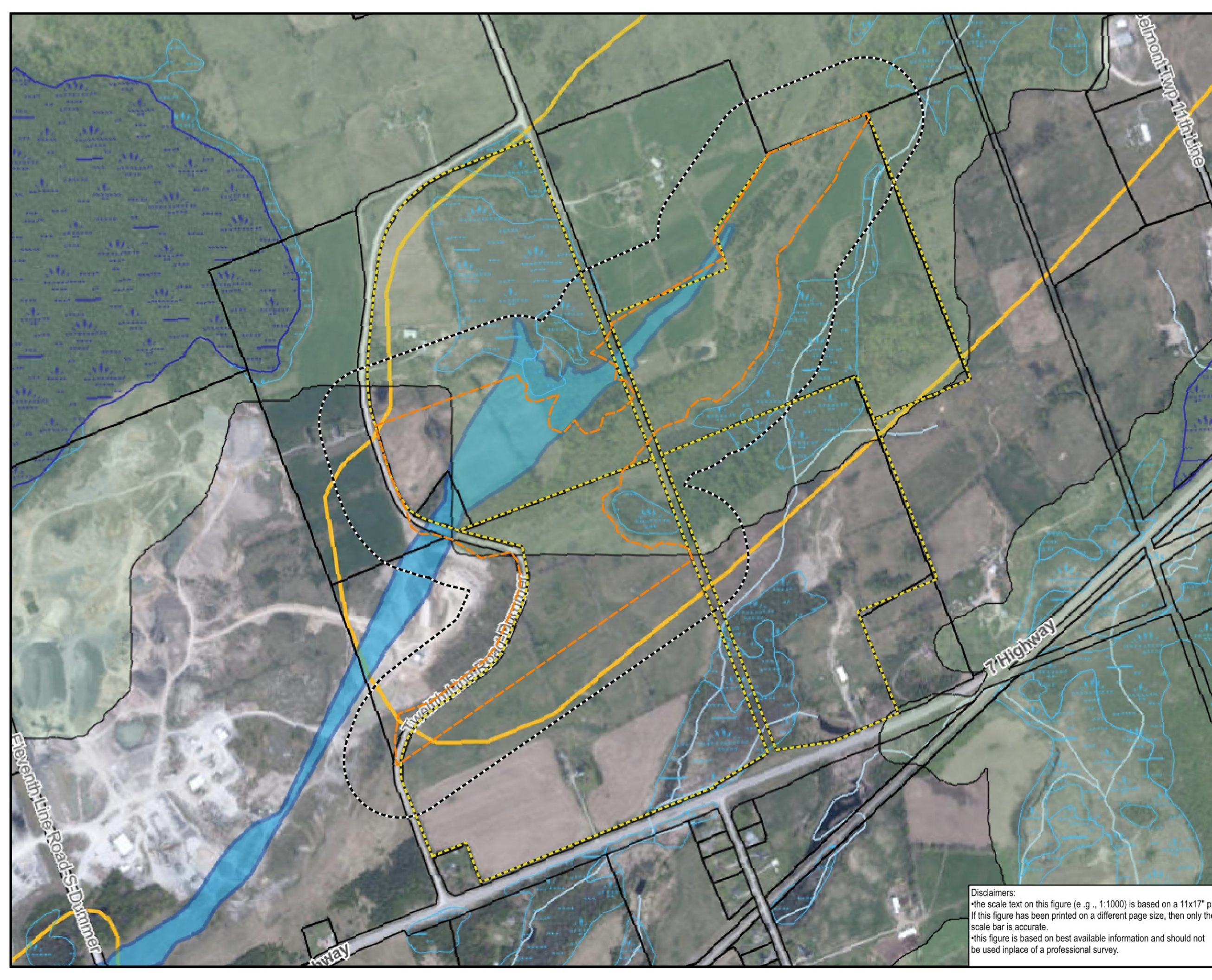
Figure 2. Survey Locations

Highway 7 & Dummer 12th Line Road, Township of Douro-Dummer

Prepared for: Drain Bros. Excavating Limited

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Legend

Planning Boundaries

-  Study Area (120m)
-  Subject Property
-  Site - Licence Boundary

Peterborough County Mapping Portal

-  ORCA High Water Level
-  Vegetation
-  Non-Evaluated Wetlands
-  Evaluated-Provincial Wetlands
-  Areas of Natural and Scientific Interest (ANSI) - Regional
-  Natural Heritage System Area

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	June 8, 2026	By: ET
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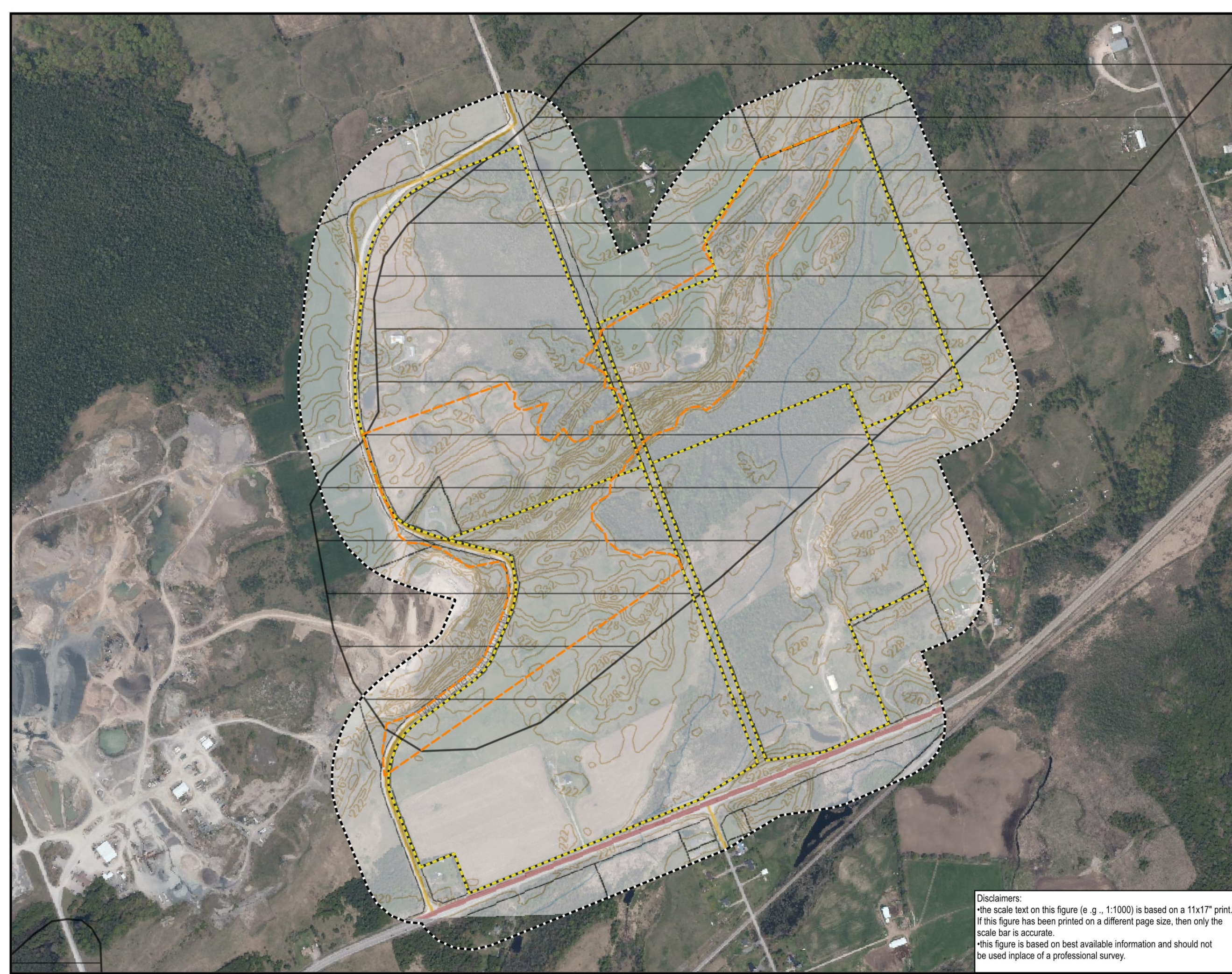
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Figure 3. Peterborough County Features Mapping
Highway 7 & Dummer 12th Line Road, Township of Douro-Dummer
Prepared for: Drain Bros. Excavating Limited

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- Planning Boundaries**
-  Subject Property
 -  Assessment Area
 -  Site - Licence Boundary
- Natural Heritage Features - Identified by Province (Geohub)**
-  Earth Science ANSI - Norwood Esker - Regional

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	June 8, 2026	By: ET
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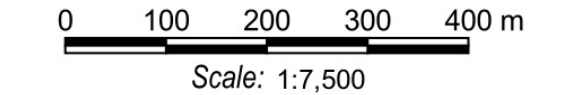


Figure 4. Surficial Geology and Topography

Highway 7 & Dummer 12th Line Road, Township of Duoro-Dummer

Prepared for: Drain Bros. Excavating Limited

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- Planning Boundaries**
- Subject Property

Assessment Area

Site - Licence Boundary
- Natural Heritage Features - Identified by RiverStone**
- Ouse River Tributary
- Ecological Land Classification (ELC)**
- AG - Agricultural

ANTH - Anthropogenic

CUM1 - Mineral Cultural Meadow

CUS1 - Mineral Cultural Savannah ECosite

FOC2-2 - Dry to Fresh White Cedar Coniferous Forest

FOD5-1 - Dry Fresh Sugar Maple Deciduous Forest ECosite

FOM4-2 - Dry to Fresh White Cedar-Poplar Mixed Forest
- Wetlands**
- SWT2-1 - Willow Mineral Thicket Swamp

SWD2 - Ash Mineral Deciduous Swamp

MAM2-2 - Reed Canary Shallow Marsh

MAS2-1 - Cattail Mineral Shallow Marsh

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	May 25, 2026	By: ET
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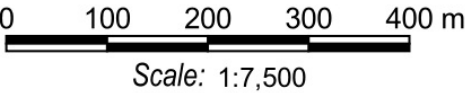


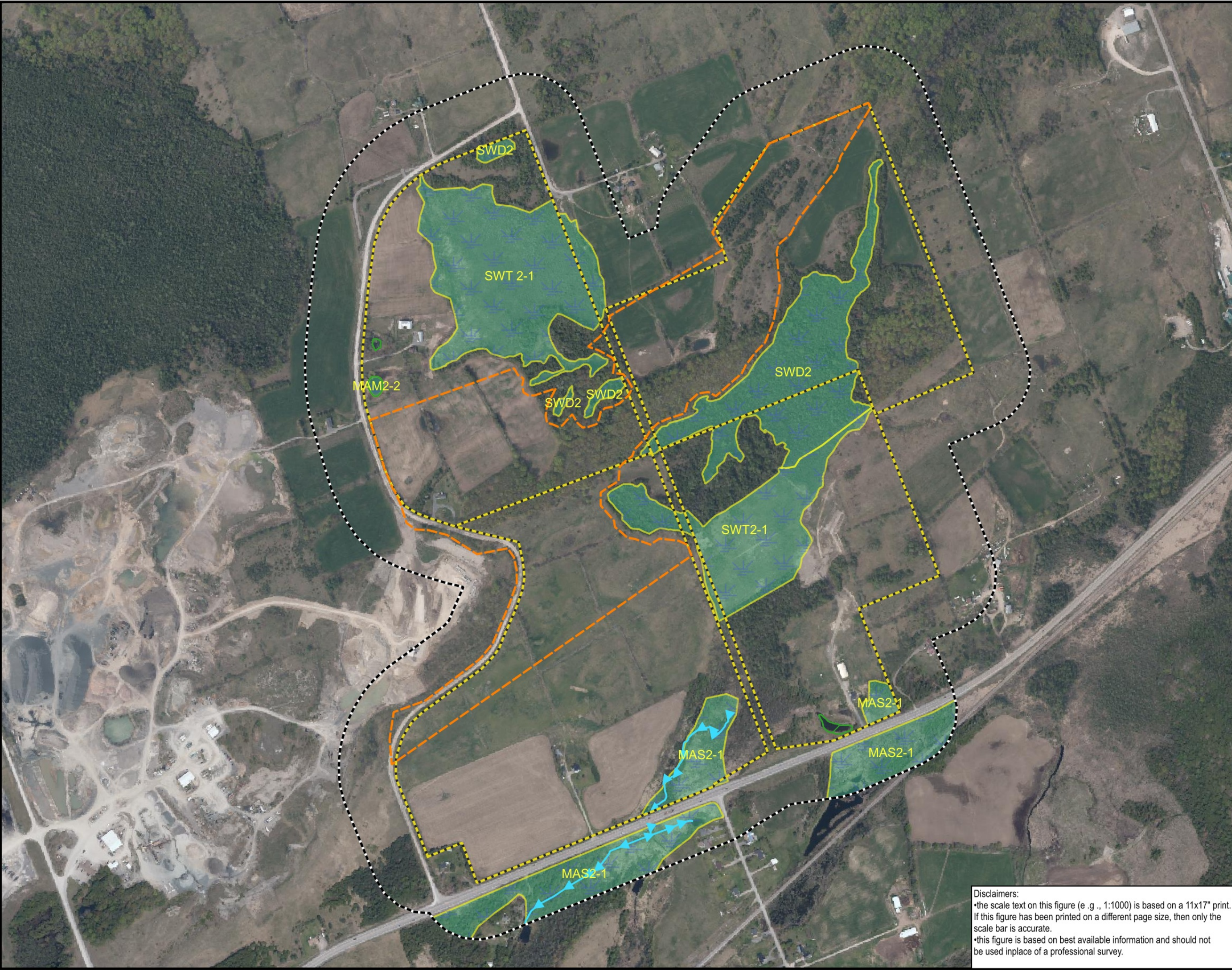
Figure 5. Vegetation Communities

Highway 7 & Dummer 12th Line Road, Township of Duoro-Dummer

Prepared for: Drain Bros. Excavating Limited

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Legend

Planning Boundaries

- Subject Property
- Assessment Area
- Site - Licence Boundary

Natural Heritage Features - Identified by RiverStone

- Ouse River Tributary
- Ponds

Ecological Land Classification (ELC)

Wetlands

- SWT2-1 - Willow Mineral Thicket Swamp
- SWD2 - Ash Mineral Deciduous Swamp
- MAM2-2 - Reed Canary Shallow Marsh
- MAS2-1 - Cattail Mineral Shallow Marsh

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	May 25, 2026	By: ET
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Figure 6. Aquatic Features

Highway 7 & Dummer 12th Line Road, Township of Douro-Dummer

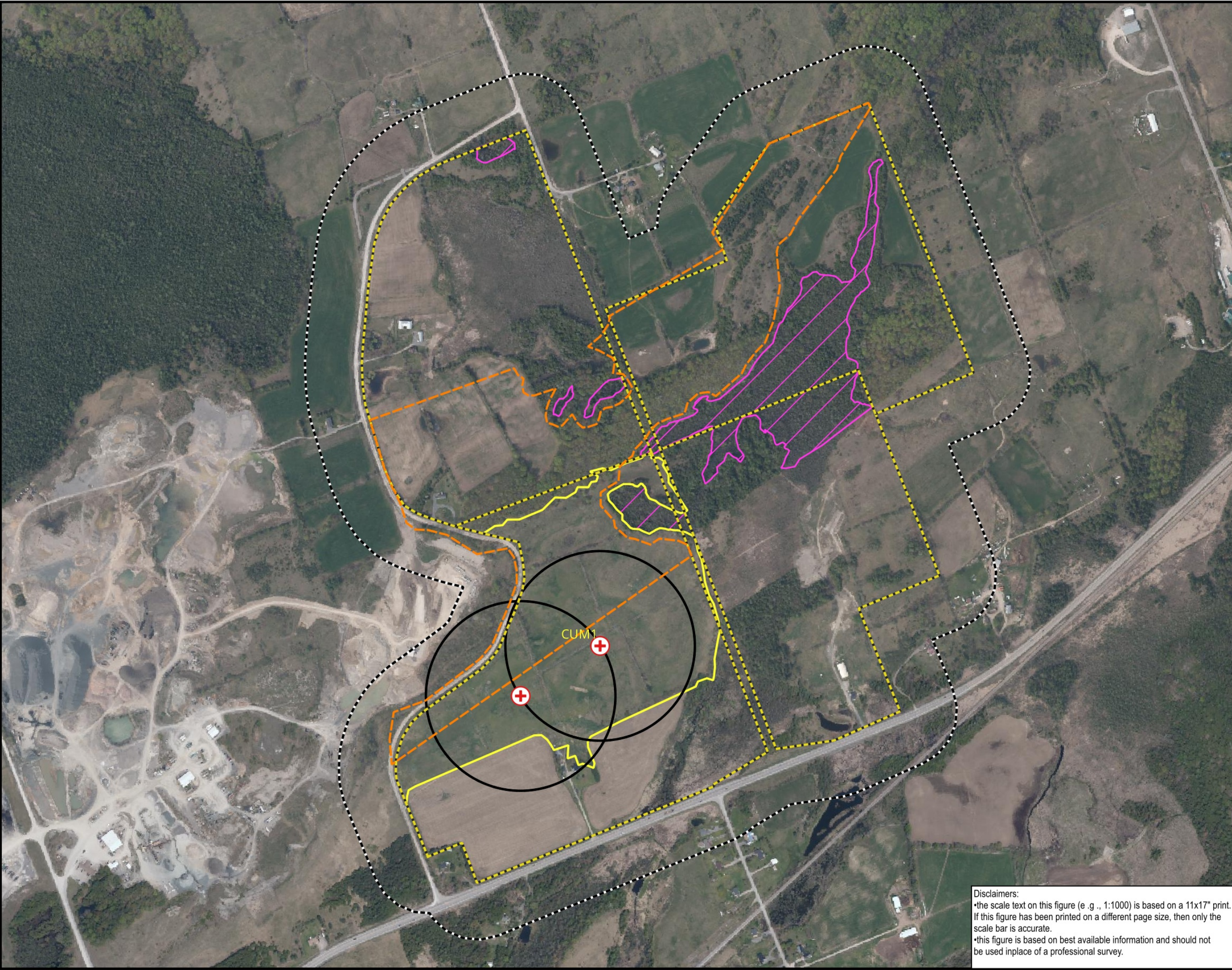
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RIVERSTONE

ENVIRONMENTAL SOLUTIONS INC.

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Legend

Planning Boundaries

- Subject Property
- Assessment Area
- Site - Licence Boundary

Natural Heritage Features - Identified by RiverStone

Ecological Land Classification (ELC)

- CUM1 - Mineral Cultural Meadow

Habitat of Endangered and Threatened Species

- Eastern Meadowlark Nest
- Eastern Meadowlark Habitat (200m radius)
- Black Ash

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043	June 8, 2026	By: ET
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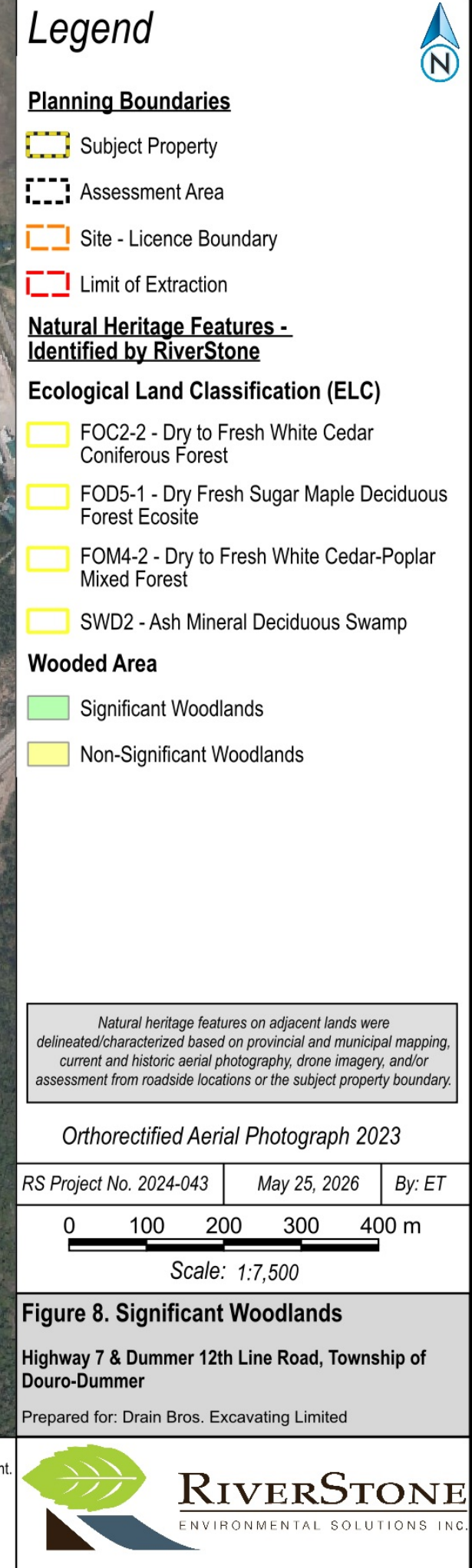
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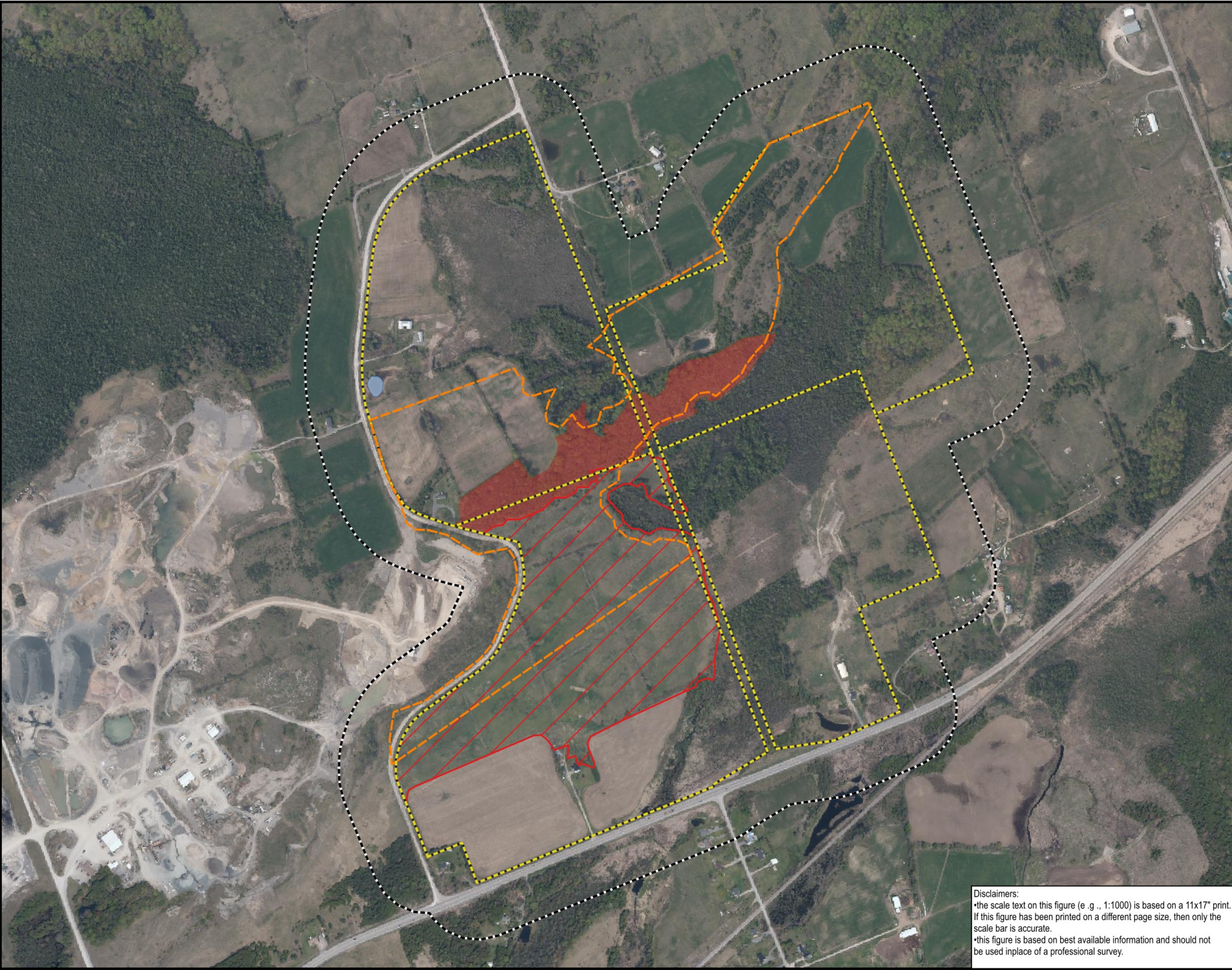
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Figure 7. Habitat of Endangered and Threatened Species
Highway 7 & Dummer 12th Line Road, Township of Douro-Dummer
Prepared for: Drain Bros. Excavating Limited

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Legend

Subject Property

Assessment Area

Site - Licence Boundary

Grasshopper Sparrow

Eastern Wood-pewee

SWH - Turtle Wintering Area

N

Natural heritage features on adjacent lands were delineated/characterized based on provincial and municipal mapping, current and historic aerial photography, drone imagery, and/or assessment from roadside locations or the subject property boundary.

Orthorectified Aerial Photograph 2023

RS Project No. 2024-043

June 6, 2026

By: ET

0

100

200

300

400 m

Scale: 1:7,500

Figure 9. Significant Wildlife Habitat

Highway 7 & Dummer 12th Line Road, Township of Douro-Dummer

Prepared for: Drain Bros. Excavating Limited

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Appendix 1. Curricula Vitae.





RIVERSTONE

ENVIRONMENTAL SOLUTIONS INC.

Beverley J. Wicks, Ph.D.
Senior Ecologist, Principal

CAREER AND ACADEMIC HISTORY

2008 – Present	Senior Ecologist, Principal; RiverStone Environmental Solutions Inc.
2002 – 2008	Aquatic Biologist; Michalski Nielsen Associates Limited
2001	Research Assistant; Simon Fraser University, Burnaby, BC
1998 – 2001	Ph.D., University of British Columbia, Aquatic/Fisheries Toxicology
1998 – 2001	Research Assistant; University of British Columbia, Vancouver, BC
1997	Fisheries Biologist; Department of Environment, Lands and Parks, Vancouver, BC
1994 – 1996	M.Sc., University of Guelph, Guelph, ON
1993	Fisheries Technician; Trout Unlimited/Ontario Ministry of Natural Resources
1990 – 1992	Fisheries Technician; Ontario Ministry of Natural Resources, Muskoka Lakes Fisheries Assessment Unit
1989 – 1994	Honours B.Sc. (Agr.) University of Guelph, Guelph, ON

Professional Experience

Bev is a senior ecologist and project manager specializing in the characterization and management of fish and aquatic habitat. With 20 years of experience, she has managed many projects involving both terrestrial and aquatic systems including: completing species at risk assessment, fish habitat surveys and mapping, habitat rehabilitation and impact assessment for development and infrastructure, and water quality impact assessment. Bev manages and reviews both terrestrial and aquatic aspects of natural heritage planning exercises with results intended for incorporation into municipal and provincial policy.

The following is a partial list of consulting-based project experience for 2008–2022.

Ecological Site Assessments & Environmental Impact Studies/Statements

- Existing Ecological Conditions Assessment in the **Region of Peel**; *for the Regional Municipality of Peel*; **Key Tasks:** As part of a Municipal Class EA, project management, fish habitat assessment, impact analysis, assessment of policy compliance, and development of mitigation plan, and reporting in support of the rehabilitation of multiple bridge and culverts along Highway 50.
- Existing Ecological Conditions Assessment for three structures in the **Town of Caledon**; *for the Town of Caledon*; **Key Tasks:** As part of three separate Municipal Class EAs, project management, fish habitat assessment, impact analysis, assessment of policy compliance, and development of mitigation plan, and reporting in support of the rehabilitation of multiple structures along municipal roadways.
- Natural Environment Addendum in the **Town of Caledon/City of Brampton**; *for the Regional Municipality of Peel*; **Key Tasks:** project management, fish habitat assessment, impact analysis, assessment of policy compliance, and development of mitigation plan, and reporting in support of the expansion of Mayfield Road.

- Natural Environment Level 1 and Level 2 Technical Report in the **City of the Kawartha Lakes**; *for private client*; **Key Tasks**: project management, fish habitat assessment, impact analysis, assessment of policy compliance, and development of mitigation plan to facilitate licensing of quarry under *Aggregate Resources Act* and obtaining a permit under *Endangered Species Act*, 2007
- Natural Environment Level 1 and Level 2 Technical Report in the **Township of Lake of Bays**; *for private client*; **Key Tasks**: project management, fish habitat assessment, impact analysis, assessment of policy compliance, development of mitigation plan to facilitate licensing of quarry under *Aggregate Resources Act* and avoidance of habitat protected under *Endangered Species Act*, 2007
- Natural Environment Level 1 and Level 2 Technical Report in the **Town of Bracebridge**; *for private client*; **Key Tasks**: project management, fish habitat and SAR assessment, impact analysis, assessment of policy compliance, development of mitigation plan to facilitate licensing of quarry under *Aggregate Resources Act*, *Fisheries Act* review, and avoidance of habitat protected under *Endangered Species Act*, 2007
- Natural Environment Level 1 and Level 2 Technical Report in the **Township of Ramara**; *for private client*; **Key Tasks**: project management, fish habitat and species at risk assessment, impact analysis, assessment of policy compliance, development of mitigation plan to facilitate licensing of quarry under *Aggregate Resources Act* and avoidance of habitat protected under *Endangered Species Act*, 2007
- Fisheries and Species at Risk for Natural Environment Level 1 and Level 2 Technical Report in the **Township of Faraday**; *for private client*; **Key Tasks**: project management, fish habitat assessment, impact analysis, assessment of policy compliance, development of mitigation plan to facilitate licensing of quarry under *Aggregate Resources Act*, *Fisheries Act* review, overall benefit permitting work and avoidance of habitat protected under *Endangered Species Act*, 2007
- Fish Habitat Impact Assessment and Water Quality Monitoring in the **Township of Muskoka Lakes**; *for private client*; **Key Tasks**: fish and aquatic habitat and impact assessment, development of water quality monitoring program to establish baseline conditions, and reporting as part of a Level ½ Natural Environment Report in support of a proposed quarry.
- Species at Risk and Fisheries Assessment in the **Township of Guelph/Eramosa**; *for River Valley Developments Inc.*; **Key Tasks**: project management, fisheries assessment, obtaining of permitting and approvals for the renewal of active extraction at an existing licensed quarry.
- Natural Environment Addendum in the **Town of Caledon/City of Brampton**; *for the Regional Municipality of Peel*; **Key Tasks**: project management, agency liaison, fish and aquatic habitat surveys, identification and assessment of significant natural heritage features, mitigation opportunities, reporting, permitting and approvals for the widening and reconstruction of ~7 Km of Mayfield Road (Phases 1 and 2).
- Environmental Impact Statement Addendum in the **Township of Southgate**; *Flato Developments Inc.*; **Key Tasks**: ELC, species at risk habitat assessment, wetland delineation, fisheries and aquatic habitat assessment, botanical inventory in support of a two phase plan of subdivision.
- Environmental Impact Assessment in the **Town of Uxbridge-Durham Region**; *for private client*; **Key Tasks**: project management, impact assessment, environmental conditions report, and analysis of impacts and mitigation measures, tree preservation and edge management plan, and TRCA permits for a 35-lot estate subdivision development.
- Environmental Impact Assessment in the **Town of Mt Albert-York Region**; *for private client*; **Key Tasks**: project management, existing site conditions, opportunities and constraint analysis, report completion, analysis of impacts and mitigation measures and permitting for a 602-lot estate subdivision development.
- Natural Heritage Evaluation in **King Township-York Region**; *for private client*; **Key Tasks**: project management, policy review, mapping of ecological constraints and report preparation for development of an equestrian centre.

- Environmental Impact Study for island property in the **Township of The Georgian Bay**; *for private client*; **Key Tasks:** project management, identification of fish habitat and significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed multiple lot severance.
- Ecological Site and Impact Assessment on Kyle Island in the **Township of The Archipelago**; *for private client*; **Key Tasks:** project management, identification of fish habitat and significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed single-lot severance.
- Site Evaluation Report for property on Drag Lake in the **Township of Dysart et al**; *for private client*; **Key Tasks:** project management, identification of SAR and fish habitat and significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed multi-lot severance.
- Site Evaluation Report for property on Taylor Island in the **Town of Gravenhurst**; *for private client*; **Key Tasks:** project management, identification of fish habitat and significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed rezoning.
- Environmental Screening and Site Plan in the **Township of Seguin**; *for private client*; **Key Tasks:** project management, identification of significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed land use as a result of re-zoning.
- Site Evaluation Report for property on Kawagama Lake in the **Township of Havelock**; *for private client*; **Key Tasks:** project management, identification of fish habitat and significant natural heritage features, aquatic impact assessment, assessment of policy compliance, analysis of impacts potentially resulting from proposed single-lot severance.
- Significant Natural Heritage Feature Assessment for the **Town of Bracebridge** Official Plan Review; *for Town of Bracebridge*; **Key Tasks:** project management, review existing significant natural heritage feature information in urban and near urban area for Town of Bracebridge.

Environmental Policy and Assessment

- Significant Natural Heritage Feature Assessment for the **Town of Bracebridge** Official Plan Review; *for Town of Bracebridge*; **Key Tasks:** project management, review existing significant natural heritage feature information in urban and near urban area for Town of Bracebridge.
- Large Natural Area Review and Policy Recommendations for the **District Municipality of Muskoka**; **Key Tasks:** scientific literature review, identification of data gaps and present recommendations to establish defensible planning benchmarks for the District of Muskoka.
- Background Research and Literature Review for the **Ontario Ministry of Natural Resources**; Impacts of cottage and shoreline development and associated activities on ecosystem features and functions for the purpose of policy development in Provincial Parks; scientific literature review, identification of data gaps and summary of potential and documented impact.
- Class Environmental Assessment Screening Report on the Severn River in the **Township of Severn** ; *for private client*; **Key Tasks:** project management, fish habitat assessment, impact analysis of application to dredge, and assessment of compliance with federal policy to facilitate dredging of marina.

Aquatic Habitat and Fisheries Assessments

- Fish Habitat Impact Assessment and Creek Channel Design Lakeshore Drive and Centennial Park Improvements in the **City of Barrie**; *for IBI Group*; **Key Tasks:** project management, permitting and agency liaison, contract tendering, construction monitoring, stream assessment, identification of fish habitat, data

management, and analysis of impacts and mitigation measures for road reconstruction and park improvements project.

- Fish Habitat and Species at Risk Level 1 Assessment on Cole Lake in the **Township of Carling**; *for private client*; **Key Tasks**: project management, identification of fish habitat and significant natural heritage features, assessment of policy compliance, analysis of impacts potentially resulting from proposed single-lot severance.
- Fish Habitat Assessment on Georgian Bay, in the **Township of Georgian Bay**; *for private client*; **Key Tasks**: project management, fish habitat assessment, assessment of policy compliance.
- Environmental Evaluation Report in the **Town of East Gwillimbury**; *for private client*; **Key Tasks**: identification of fish habitat and significant natural heritage features, assessment of policy compliance, and analysis of impacts potentially resulting from subdivision development.

Fisheries Mitigation and Compensation/ DFO/MNR/CA Permit Applications

- Barrie Essa Road Reconstruction; for **City of Barrie**; **Key Tasks**: project management, fish habitat assessment, natural channel design and permitting, and construction mitigation measures development and monitoring protocol
- Fisheries Assessment for Highway 101 **Foleyete** for **Ministry of Transportation**; **Key Tasks**: project management, stream and fish habitat assessment, analysis of impacts and mitigation measures, agency approvals, construction monitoring.
- Muskoka Wharf Shoreline Assessment/Compensation Project at the Muskoka Wharf on Lake Muskoka in the **Town of Gravenhurst**; *for The Town of Gravenhurst*; **Key Tasks**: project management, fish habitat assessment, design of rehabilitated shoreline, and construction mitigation measures development and monitoring protocol.
- Fish Habitat Compensation, on the Mill Pond in the **Town of Parry Sound**; *for Crofter's Food Ltd*; **Key Tasks**: project management, fish habitat assessment, obtain permits and develop compensation plan.
- Kearney – Un-named Creek Rehabilitation, in the **Township of Perry**; *for private client*; **Key tasks**: project management, fish habitat assessment, obtain permits and develop restoration and compensation plan.
- Culvert Replacement, Mitigation and Compensation, in the **Town Parry Sound**; *for private client*; **Key Tasks**: project management, fish habitat assessment, obtain permits and develop restoration and compensation plan.
- Fisheries permitting and compensation for new Coaster in the **City of Vaughn**; *for Canada's Wonderland*; **Key Tasks**: project management, fish habitat assessment, permitting, compensation plan, construction mitigation measures and monitoring protocol.
- County Road 28 Reconstruction near Minesing Swamp in the **County of Simcoe**; *for R.J. Burnside and Associates*; **Key Tasks**: project management, fish habitat assessment, permitting, compensation plan, construction mitigation and monitoring.

Limnology, Water Quality/Sediment Quality Investigations

- Muskoka Lakes Association Water Quality Initiative Program in various townships of the **District of Muskoka**; *for the Muskoka Lakes Association* **Key Tasks**: project management, science and technical advisor, directed analysis of yearly water quality program and making scientific recommendations, and educational support.

- Aquatic Study in Lake Couchiching in the **County of Simcoe**; for *Totten Sims Hubicki Associates*; **Key Tasks**: project management, aquatic monitoring and benthic invertebrates assessment, impact analysis for Westshore Water and Sewage project.
- Bond Head – Environmental Monitoring, Holland River in the **Township of East Gwillimbury**; for *Geranium Homes*; **Key Tasks**: project management, collection and analysis of water quality data, background conditions report.
- Muskoka River Benthic and Water Quality Analysis in the **District of Muskoka**; for *the Town of Huntsville*; **Key Tasks**: project management, water monitoring and benthic invertebrates assessment, impact analysis.
- Phase 1 and Phase 2 Water Quality Impact Assessment on Lake Joseph in the **Township of Muskoka Lakes**; for *private client*; **Key Tasks**: project management, identification of significant natural heritage features, locate suitable development envelopes, and analysis of impacts and mitigation measures for single lot severance and development on identified over-threshold waterbody.
- Phase 2 Water Quality Impact Assessment on Medora Lake in the **Township of Muskoka Lakes**; for *private client*; **Key Tasks**: project management, identification of significant natural heritage features, locate suitable development envelopes, and analysis of impacts and mitigation measures for single lot severance and development on identified over-threshold waterbody.
- Phase 2 Water Quality Impact Assessment on Three Mile Lake in the **Township of Muskoka Lakes**; for *private client*; **Key Tasks**: project management, identification of significant natural heritage features, locate suitable development envelopes, and analysis of impacts and mitigation measures for single lot severance and development on identified over-threshold waterbody.

Relevant Certification or Training Courses

2021	CISEC Training and Certification
2020	Fisheries Protection Program Fisheries Act Training, Fisheries and Oceans Canada Central and Arctic Region.
2018	Natural Channel Systems Training
2013	Fisheries Assessment and Fisheries Contract Specialist, as per Ministry of Transportation / Department of Fisheries and Oceans / Ontario Ministry of Natural Resources, fisheries protocol training
2012	Water Management and Wetland Restoration MNR
2009	Ontario Benthos Biomonitoring Network participant, Ontario Ministry of the Environment
2003	Ichthyology course, Royal Ontario Museum Centre of Biodiversity and Conservation Biology

Publications

Wicks, B.J. and D.J. Randall. 2002. The effect of sub lethal ammonia exposure on fed and unfed rainbow trout: the role of glutamine in the regulation of ammonia. *Comparative Biochemistry and Physiology. Part A: Molecular and Integrative Physiology*. 132: 275-285.

Wicks, B.J. and D.J. Randall. 2002. The effect of feeding and fasting on ammonia toxicity in juvenile rainbow trout, *Oncorhynchus mykiss*. *Aquatic Toxicology*. 59:71-82.

Wicks, B.J., Q. Tang, R. Joensen, D.J. Randall. 2002. Swimming and ammonia toxicity in salmonids: the effect of sub lethal ammonia exposure on the swimming performance of coho salmon and the acute toxicity of ammonia in swimming and resting rainbow trout. *Aquatic Toxicology*. 59:55-69.

Rosenfeld, J.S., M. Porter, M. Pearson, **B. Wicks**, P. Van Dishoeck, T. Patton, E. Parkinson, G. Hass, and J. D. McPhail. 2001. The influence of temperature and habitat on the distribution of chiselmouth, *Acrocheilus alutaceus* in British Columbia. *Env. Biol. Fish.* 62: 401-413.

Val, A.L., **B.J. Wicks** and D.J. Randall. 2001. Anaemia and polycythaemia affect levels of ATP and GTP in fish red blood cells. Proceeding of the Sixth International Symposium on Fish Physiology, Toxicology, and Water Quality. Baja, Mexico.

Randall, D.J. and **B.J. Wicks**. 1999. Fish ammonia production, excretion and toxicity. Paper presented in the Fifth International Symposium on Fish Physiology, Toxicology and Water Quality, 9-12 November 1998, City University of Hong Kong.

Wicks, B.J., L.A. Barker, B.J. Morrison and F.W.H. Beamish. 1998. Gonadal variation in Great Lakes sea lamprey larvae. *J. Great Lakes Res.* 24: 962-968.

Barker, L.A. B.J. Morrison, **B.J. Wicks** and F.W.H. Beamish. 1998. Potential fecundity of landlocked sea lamprey larvae, *Petromyzon marinus*, with typical and atypical gonads. *Copeia*. 1998: 1070-1075.

Barker, L.A., B.J. Morrison, **B.J. Wicks** and F.W.H. Beamish. 1997. Age discrimination and statolith diversity in sea lamprey from streams with varying alkalinity. *Trans. Am. Fish. Soc.* 126:1021-1026.

Appendix 2. Representative Photographs.





Photo 1. Representative photo of MAS2-2 community and exist of Oust River Tributary. Location of T7 and community of A6 (May 15, 2024).



Photo 2. Agricultural community in south portion of assessment area (May 15, 2024).



Photo 3. CUM1 community in the central portion of assessment are, Grasshopper Sparrow and Eastern Meadowlark habitat (May 15, 2024).



Photo 4. Dug pond at edge of FOM4-2, location of T4 (May 15, 2024).



Photo 5. Dug pond located in the central portion of property, location of T1 (May 15, 2024).



Photo 6. Representative photo of SWD2 community in the central east portion of assessment area. Community of A3 and A12 (July 3, 2024).



Photo 7. Representative photo of FOC2-2 community within the assessment area (July 3, 2024).



Photo 8. Agricultural field in the northwest portion of the assessment area (July 5, 2024).



Photo 9. Wetland in north portion of assessment area location of T10 and A11 (September 27, 2024).



Photo 10. Agricultural field in the north portion of assessment area (September 27, 2024).



Photo 11. Representative photo of FOD5-1 forest in the central portion of the assessment area (September 27, 2024).



Photo 12. Representative photo of FOM4-2 forest community in central portion of assessment area (September 27, 2024).



Photo 13. Representative photo of SWT2-1 community in north portion of assessment area. Location of T11 and A1 and community of A7 and A8 (September 29, 2024).



Photo 14. Representative photo of CUS1 and CUM1 located in the northeast portion of the assessment area (September 29, 2024).



Photo 15. Representative photo of FOD5-1 forest community in east portion of assessment area (September 29, 2024).



Photo 16. Representative photo of SWT2-1 community located under hydro in central portion of assessment area. Location of T2 and A4 (September 29, 2024).



Photo 17. MAS2-1 community located in the south portion of the assessment area (October 11, 2024).



Photo 18. Representative photo of Ous River Tributary located in the south portion of the assessment area (October 11, 2024).



Photo 19. MAS2-1 community located in the southeast portion of the assessment area. Location of A5 (September 29, 2024).



Photo 20. Dug pond located in the southeast portion of the assessment area. Location of T5 (October 11, 2024).



Photo 21. Dug pond located in central portion of assessment area. Location of T8 and A10 (June 2, 2024).

Appendix 3. Results of Bat Snag Assessment.



Appendix 3 - Bat Snag Analysis

Plot #	Height	Snag/Cavity	# of Holes	% of Bark	DBH (cm)	Tree Species	Height Code
C1	no snags						Tall ->15 m
C2	no snags						Medium = 5-15 m
C3	medium	cavity	few	5	33	White Birch	Small = up to 5 m
C4	low	snag	none	5	14.5	Unknown	
C4	low	snag	none	5	11	Unknown	
C5	low	snag	none	5	28	Trembling Aspen	# of Hole
C6	no snags						Few = 1-4
C7	no snags						Lots = 5+
C8	medium	snag	few	10	27	Poplar Species	none = 0
C9	tall	Snag	none	5	39	Unknown	
C9	short	snag	none	15	19	Unknown	
C9	short	snag	none	50	15	Unknown	
C9	medium	snag	none	5	18	American Elm	
C9	medium	snag	few	5	27	Unknown	
C9	medium	snag	none	60	30	Unknown	
C10	no snags						
M1	no snags						
M2	tall	cavity	few	0	46	Sugar Maple	
M3	no snags						
M4	tall	snag	low	0	45	Eastern Hemlock	
M5	no snags						
M6	no snags						
M7	no snags						
M8	no snags						
M9	tall	cavity	few	5	33	Trembling Aspen	
M9	tall	cavity	few	5	32	Trembling Aspen	
M10	no snags						
M11	tall	cavity	few	0	54	Trembling Aspen	
M12	tall	cavity	few	0	33	Trembling Aspen	
D1	no snags						

D2	no snags					
D3	tall	cavity	few	0	74	Sugar Maple
	tall	cavity	few	0	71	Eastern Hemlock
D4	tall	Cavity	few	0	30	Sugar Maple
D4	short	snag	few	25	34	Sugar Maple
D4	tall	Cavity	few	0	31.5	Sugar Maple
D5	no snags					
D6	tall	cavity	few	0	55	Sugar Maple
	tall	cavity	few	0	46	Sugar Maple
D7	no snags					
D8	medium	snag	none	50	18	Trembling Aspen
D9	no snags					
D10	tall	cavity	few	0	32	Sugar Maple
	tall	cavity	low	0	29	Sugar Maple
D11	tall	cavity	few	0	27	Sugar Maple
D11	medium	cavity	few	0	18	Sugar Maple
S1	no snags					
S2	medium	snag	few	0	27	White Birch
S3	no snags					
S4	no snags					
S5	medium	snag	few	0	32	Poplar Species
	medium	snag	few	0	42	Poplar Species
S6	no snags					
S7	short	snag	none	60	28	Unknown
S8	no snags					
S9	no snags					
S10	tall	cavity	few	20	40	Trembling Aspen
S10	short	snag	none	20	30	Unknown

Vegetation Community	Community size m2	Communi ty Size Ha	# of sample plots	Total # of snags in sample plots	Snags/ha
FOD	82590	8.3	11	12	2
FOC	169375	16.9	10	11	2.2
FOM	39070	3.9	12	6	0.8
SWT	173765	17.4	10	6	1.2

Appendix 4. List of Vascular Plant Species Recorded during Targeted Surveys and/or Incidentally.

Appendix 4 - Vegetation List

SCIENTIFIC NAME	COMMON NAME	CC ¹	CW ¹	OWES WETLAND PLANT LIST ²	G_RANK ³	S_RANK ⁴	COSEWIC ⁵	PROTECTED SPECIES IN ONTARIO LIST	COSSARO	Species Observed
<i>Acer negundo</i>	Manitoba Maple	0	-2	X	G5	S5				X
<i>Acer platanoides</i>	Norway Maple	*	5		GNR	SNA				X
<i>Acer rubrum</i>	Red Maple	4	0	X	G5	S5				X
<i>Acer saccharum</i>	Sugar Maple	4	3		G5	S5				X
<i>Actaea rubra</i>	Red Baneberry	5	5		G5	S5				X
<i>Aegopodium podagraria</i>	Goutweed	*	0		GNR	SNA				X
<i>Agrimonia gryposepala</i>	Hooked Agrimony	2	2		G5	S5				X
<i>Agrostis gigantea</i>	Redtop	*	0		G4G5	SNA				X
<i>Alliaria petiolata</i>	Garlic Mustard	*	0		GNR	SNA				X
<i>Allium tricoccum</i> var. <i>tricoccum</i>	Wild Leek	7	2		G5	S4				X
<i>Alnus incana</i>	Speckled Alder	6	-5	X	G5	S5				X
<i>Ambrosia artemisiifolia</i>	Common Ragweed	0	3		G5	S5				X
<i>Amelanchier arborea</i>	Downy Serviceberry	5	3		G5	S5				X
<i>Anaphalis margaritacea</i>	Pearly Everlasting	3	5		G5	S5				X
<i>Anemonastrum canadense</i>	Canada Anemone	3	-3	X	G5	S5				X
<i>Anemone cylindrica</i>	Long-fruited Anemone	7	5		G5	S4				X
<i>Anemone virginiana</i> var. <i>virginiana</i>	Tall Anemone	4	5		G5T5	S5?				X
<i>Antennaria neglecta</i>	Field Pussytoes	3	5		G5	S5				X
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	3	5		G5	S5				X
<i>Apocynum cannabinum</i> var. <i>cannabinum</i>	Hemp Dogbane	3	0		G5T5	S5				X
<i>Aquilegia canadensis</i>	Red Columbine	5	1		G5	S5				X
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	4	3		G5	S5				X
<i>Arctium minus</i>	Common Burdock	*	5		GNR	SNA				X
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	5	-2	X	G5	S5				X
<i>Asarum canadense</i>	Canada Wild Ginger	6	5		G5	S5				X
<i>Asclepias incarnata</i>	Swamp Milkweed	6	-5	X	G5	S5				X
<i>Asclepias syriaca</i>	Common Milkweed	0	5		G5	S5				X
<i>Athyrium filix-femina</i> var. <i>angustum</i>	Northeastern Lady Fern	4	0	X	G5T5	S5				X
<i>Barbarea vulgaris</i>	Bitter Wintercress	*	0		GNR	SNA				X
<i>Betula alleghaniensis</i>	Yellow Birch	6	0	X	G5	S5				X
<i>Betula papyrifera</i>	Paper Birch	2	2	X	G5	S5				X
<i>Bidens cernua</i>	Nodding Beggarticks	2	-5	X	G5	S5				X
<i>Bidens frondosa</i>	Devil's Beggarticks	3	-3	X	G5	S5				X
<i>Bromus inermis</i>	Smooth Brome	*	5		G5TNR	SNA				X
<i>Calamagrostis canadensis</i> var. <i>canadensis</i>	Bluejoint Reedgrass	4	-5	X	G5T5	S5				X
<i>Calla palustris</i>	Wild Calla	8	-5	X	G5	S5				X
<i>Caltha palustris</i>	Yellow Marsh Marigold	5	-5	X	G5	S5				X
<i>Campanula aparinoides</i>	Marsh Bellflower	7	-5	X	G5	S5				X
<i>Capsella bursa-pastoris</i>	Common Shepherd's Purse	*	1		GNR	SNA				X
<i>Cardamine diphylla</i>	Two-leaved Toothwort	7	5		G5	S5				X
<i>Carex arctata</i>	Drooping Woodland Sedge	5	5		G5	S5				X
<i>Carex aurea</i>	Golden Sedge	4	-4	X	G5	S5				X
<i>Carex bebbii</i>	Bebb's Sedge	3	-5	X	G5	S5				X
<i>Carex blanda</i>	Woodland Sedge	3	0		G5	S5				X
<i>Carex communis</i>	Fibrous-root Sedge	6	5		G5	S5				X
<i>Carex comosa</i>	Bearded Sedge	5	-5	X	G5	S5				X
<i>Carex crinita</i>	Fringed Sedge	6	-4	X	G5	S5				X
<i>Carex deweyana</i>	Dewey's Sedge	6	4		G5	S5				X
<i>Carex disperma</i>	Two-seeded Sedge	8	-5	X	G5	S5				X
<i>Carex flava</i>	Yellow Sedge	5	-5	X	G5	S5				X
<i>Carex gracillima</i>	Graceful Sedge	4	3	X	G5	S5				X
<i>Carex granularis</i>	Limestone Meadow Sedge	3	-4	X	G5	S5				X
<i>Carex hitchcockiana</i>	Hitchcock's Sedge	6	5		G5	S485				X
<i>Carex hystericina</i>	Porcupine Sedge	5	-5	X	G5	S5				X
<i>Carex interior</i>	Inland Sedge	6	-5	X	G5	S5				X
<i>Carex intumescens</i>	Bladder Sedge	6	-4	X	G5	S5				X
<i>Carex lupulina</i>	Hop Sedge	6	-5	X	G5	S5				X
<i>Carex pedunculata</i>	Long-stalked Sedge	5	5		G5	S5				X
<i>Carex pensylvanica</i>	Pennsylvania Sedge	5	5		G5	S5				X
<i>Carex plantaginea</i>	Plantain-leaved Sedge	7	5		G5	S5				X
<i>Carex radiata</i>	Eastern Star Sedge	4	5	X	G5	S5				X
<i>Carex</i> sp.	Sedge sp.									X
<i>Carex stipata</i>	Awl-fruited Sedge	3	-5	X	G5	S5				X
<i>Carex utriculata</i>	Northern Beaked Sedge	7	-5	X	G5	S5				X
<i>Carex vulpinoidea</i>	Fox Sedge	3	-5	X	G5	S5				X
<i>Carya cordiformis</i>	Bitternut Hickory	6	0		G5	S5				X
<i>Caulophyllum thalictroides</i>	Blue Cohosh	6	5		G5	S5				X
<i>Chelone glabra</i>	White Turtlehead	7	-5	X	G5	S5				X
<i>Chenopodium album</i>	Common Lamb's-quarters	*	1		G5	SNA				X
<i>Cichorium intybus</i>	Wild Chicory	*	5		GNR	SNA				X
<i>Cicuta bulbifera</i>	Bulbous Water-hemlock	5	-5	X	G5	S5				X
<i>Circaea canadensis</i>	Broad-leaved Enchanter's Nightshade	3	3		G5T5	S5				X
<i>Cirsium arvense</i>	Canada Thistle	*	3		GNR	SNA				X
<i>Cirsium vulgare</i>	Bull Thistle	*	4		GNR	SNA				X
<i>Claytonia caroliniana</i>	Carolina Spring Beauty	7	3		G5	S5				X
<i>Clematis virginiana</i>	Virginia Clematis	3	0	X	G5	S5				X
<i>Clinopodium vulgare</i>	Wild Basil	4	5		G5	S5				X
<i>Clintonia borealis</i>	Yellow Clintonia	7	-1	X	G5	S5				X
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	6	5		G5	S5				X
<i>Cornus obliqua</i>	Silky Dogwood	5	-4	X	G5T5	S5				X
<i>Cornus sericea</i>	Red-osier Dogwood	2	-3	X	G5	S5				X
<i>Corylus cornuta</i>	Beaked Hazelnut	5	5		G5	S5				X
<i>Cypripedium reginae</i>	Showy Lady's-slipper	7	-4	X	G4G5	S4				X
<i>Cystopteris bulbifera</i>	Bulblet Bladder Fern	5	-2	X	G5	S5				X
<i>Cystopteris fragilis</i>	Fragile Fern	7	3		G5	S4				X
<i>Dacrylis glomerata</i>	Orchard Grass	*	3		GNR	SNA				X
<i>Danthonia spicata</i>	Poverty Oatgrass	5	5		G5	S5				X
<i>Daucus carota</i>	Wild Carrot	*	5		GNR	SNA				X
<i>Dicentra cucullaria</i>	Dutchman's Breeches	6	5		G5	S5				X
<i>Diervilla lonicera</i>	Northern Bush-honeysuckle	5	5		G5	S5				X
<i>Doellingeria umbellata</i> var. <i>umbellata</i>	Flat-top White Aster			X	G5T5	S5				X
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	5	-2	X	G5	S5				X
<i>Dryopteris cristata</i>	Crested Wood Fern	7	-5	X	G5	S5				X
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	5	0		G5	S5				X
<i>Dryopteris marginalis</i>	Marginal Wood Fern	5	3		G5	S5				X
<i>Echinocystis lobata</i>	Wild Cucumber	3	-2	X	G5	S5				X
<i>Echium vulgare</i>	Common Viper's Bugloss	*	5		GNR	SNA				X
<i>Endotropis alnifolia</i>	Alder-leaved Buckthorn	7	-5	X	G5	S5				X
<i>Epifagus virginiana</i>	Beechdrops	6	5		G5	S5				X
<i>Epipactis helleborine</i>	Broad-leaved Helleborine	*	5		GNR	SNA				X
<i>Equisetum hyemale</i>	Common Scouring-rush	2	-2	X	G5	S5				X
<i>Equisetum scirpoides</i>	Dwarf Scouring-rush	7	-1	X	G5	S5				X
<i>Erigeron annuus</i>	Annual Fleabane	0	1		G5	S5				X
<i>Erigeron canadensis</i>	Canada Horseweed	0	1		G5	S5				X
<i>Erythronium americanum</i>	Yellow Trout Lily	5	5		G5	S5				X
<i>Eupatorium perfoliatum</i>	Common Boneset	2	-4	X	G5	S5				X
<i>Eurybia macrophylla</i>	Large-leaved Aster	5	5		G5	S5				X
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	2	-2		G5	S5				X
<i>Eutrochium maculatum</i> var. <i>maculatum</i>	Spotted Joe Pye Weed	3	-5	X	G5T5	S5				X
<i>Fagus grandifolia</i>	American Beech	6	3		G5	S4				X
<i>Fragaria virginiana</i> ssp. <i>glauca</i>	Smooth Wild Strawberry	2	1		G5T5	SU				X
<i>Fraxinus americana</i>	White Ash	4	3		G5	S4				X
<i>Fraxinus nigra</i>	Black Ash	7	-4	X	G5	S4	THR	END	END	X
<i>Fraxinus pennsylvanica</i>	Green Ash	3	-3	X	G5	S4				X
<i>Galium mollugo</i>	Smooth Bedstraw	*	5		GNR	SNA				X
<i>Galium palustre</i>	Common Marsh Bedstraw	5	-5	X	G5	S5				X
<i>Galium verum</i>	Yellow Bedstraw	*	5		GNR	SNA				X
<i>Gaultheria procumbens</i>	Eastern Teaberry	6	3		G5	S5				X
<i>Geranium robertianum</i>	Herb-Robert	*	5		G5	S5				X
<i>Geum canadense</i>	Canada Avens	3	0	X	G5	S5				X
<i>Geum rivale</i>	Water Avens	7	-5	X	G5	S5				X
<i>Glyceria striata</i>	Fowl Mannagrass	3	-5	X	G5	S5				X
<i>Gymnocarpium dryopteris</i>	Common Oak Fern	7	0	X	G5	S5				X
<i>Hemerocallis fulva</i>	Orange Daylily	*	5		GNA	SNA				X
<i>Hepatica americana</i>	Round-lobed Hepatica	6	5		G5	S5				X
<i>Hesperis matronalis</i>	Dame's Rocket	*	5		G4G5	SNA				X

<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	6	-2		G5	S5				X
<i>Hypericum perforatum</i>	Common St. John's-wort	*	5		GNR	SNA				X
<i>Ilex mucronata</i>	Mountain Holly	7	-5	X	G5	S5				X
<i>Ilex verticillata</i>	Common Winterberry	5	-4	X	G5	S5				X
<i>Impatiens capensis</i>	Spotted Jewelweed	4	-3	X	G5	S5				X
<i>Inula helenium</i>	Elecampane	*	5	X	GNR	SNA				X
<i>Iris versicolor</i>	Harlequin Blue Flag	5	-5	X	G5	S5				X
<i>Juglans nigra</i>	Black Walnut	5	3		G5	S4?				X
<i>Juniperus communis</i>	Common Juniper	4	3		G5	S5				X
<i>Juniperus virginiana</i>	Eastern Red Cedar	4	3		G5	S5				X
<i>Lactuca biennis</i>	Tall Blue Lettuce	6	0		G5	S5				X
<i>Larix laricina</i>	Tamarack	7	-3	X	G5	S5				X
<i>Lathyrus latifolius</i>	Everlasting Pea	*	5		GNR	SNA				X
<i>Lemna minor</i>	Small Duckweed	2	-5	X	G5	S5				X
<i>Leonurus cardiaca</i>	Common Motherwort	*	5		GNR	SNA				X
<i>Leucanthemum vulgare</i>	Oxeye Daisy	*	5		GNR	SNA				X
<i>Liparis loeselii</i>	Loesel's Twayblade	5	-4	X	G5	S4S5				X
<i>Lithospermum officinale</i>	European Gromwell	*	5		GNR	SNA				X
<i>Lonicera canadensis</i>	Canada Fly-honeysuckle	6	3		G5	S5				X
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	*			GNR	SNA				X
<i>Lycopus uniflorus</i>	Northern Water-horehound	5	-5	X	G5	S5				X
<i>Lysimachia borealis</i>	Northern Starflower	6	-1		G5	S5				X
<i>Lysimachia nummularia</i>	Creeping Yellow Loosestrife	*	-4		GNR	SNA				X
<i>Lysimachia terrestris</i>	Swamp Yellow Loosestrife	6	-5	X	G5	S5				X
<i>Lythrum salicaria</i>	Purple Loosestrife	*	-5	X	G5	SNA				X
<i>Malanthemum canadense ssp. canadense</i>	Wild Lily-of-the-valley	5	0		G5T5	S5				X
<i>Maianthemum racemosum</i>	Large False Solomon's-seal	4	3		G5	S5				X
<i>Maianthemum stellatum</i>	Star-flowered False Solomon's-seal	6	1		G5	S5				X
<i>Malus pumila</i>	Common Apple	*	5		G5	SNA				X
<i>Matteuccia struthiopteris</i>	Ostrich Fern	5	-3	X	G5	S5				X
<i>Medeola virginiana</i>	Indian Cucumber-root	7	5		G5	S5				X
<i>Medicago lupulina</i>	Black Medick	*	1		GNR	SNA				X
<i>Medicago sativa ssp. sativa</i>	Alfalfa	*	5		GNRTNR	SNA				X
<i>Melilotus albus</i>	White Sweet-clover	*	3		G5	SNA				X
<i>Mitchella repens</i>	Partridgeberry	6	2		G5	S5				X
<i>Monarda fistulosa var. fistulosa</i>	Wild Bergamot	6	3		G5T5?	SU				X
<i>Myosotis arvensis</i>	Field Forget-me-not	*	0		GNR	SNA				X
<i>Nabalus albus</i>	White Rattlesnakeroot	6	3	X	G5	S5				X
<i>Narcissus pseudonarcissus</i>	Common Daffodil	*			GNR	SNA				X
<i>Oenothera biennis</i>	Common Evening Primrose	0	3		G5	S5				X
<i>Onoclea sensibilis</i>	Sensitive Fern	4	-3	X	G5	S5				X
<i>Oryzopsis asperifolia</i>	Round-leaved Mountain-ricegrass	6	5		G5	S5				X
<i>Osmorhiza claytonii</i>	Hairy Sweet Cicely	5	4		G5	S5				X
<i>Osmunda claytoniana</i>	Interrupted Fern	7	-1	X	G5	S5				X
<i>Osmunda regalis</i>	Royal Fern	7	-5	X	G5	S5				X
<i>Ostrya virginiana</i>	Eastern Hop-hornbeam	4	4		G5	S5				X
<i>Oxalis stricta</i>	European Wood-sorrel	0	3		G5	S5				X
<i>Parthenocissus vitacea</i>	Thicket Creeper	3	3		G5	S5				X
<i>Pastinaca sativa</i>	Wild Parsnip	*	5		GNR	SNA				X
<i>Phalaris arundinacea var. arundinacea</i>	Reed Canarygrass	0	-4	X	GNR	S5				X
<i>Phleum pratense</i>	Common Timothy	*	3		GNR	SNA				X
<i>Phragmites australis ssp. australis</i>	European Reed	*	-4	X	G5T5	SNA				X
<i>Physalis heterophylla</i>	Clammy Ground-cherry	3	5		G5	S4				X
<i>Picea glauca</i>	White Spruce	6	3	X	G5	S5				X
<i>Pilea pumila</i>	Dwarf Clearweed	5	-3	X	G5	S5				X
<i>Pilosella aurantiaca</i>	Orange Hawkweed	*	5		GNR	SNA				X
<i>Pilosella caespitosa</i>	Meadow Hawkweed	*	5		GNR	SNA				X
<i>Pinus strobus</i>	Eastern White Pine	4	3	X	G5	S5				X
<i>Pinus sylvestris</i>	Scots Pine	*	5		GNR	SNA				X
<i>Plantago lanceolata</i>	English Plantain	*	0		G5	SNA				X
<i>Plantago major</i>	Common Plantain	*	-1		G5	SNA				X
<i>Poa compressa</i>	Canada Bluegrass	0	2		GNR	SNA				X
<i>Polygonatum pubescens</i>	Hairy Solomon's Seal	5	5		G5	S5				X
<i>Polypodium virginianum</i>	Rock Polypody	6	5		G5	S5				X
<i>Polystichum acrostichoides</i>	Christmas Fern	5	5		G5	S5				X
<i>Populus balsamifera</i>	Balsam Poplar	4	-3	X	G5	S5				X
<i>Populus grandidentata</i>	Large-toothed Aspen	5	3		G5	S5				X
<i>Populus tremuloides</i>	Trembling Aspen	2	0		G5	S5				X
<i>Potentilla recta</i>	Sulphur Cinquefoil	*	5		GNR	SNA				X
<i>Prunella vulgaris ssp. vulgaris</i>	Common Self-heal	*	0		G5TU	SNA				X
<i>Prunus serotina</i>	Black Cherry	3	3		G5	S5				X
<i>Prunus virginiana</i>	Chokecherry	2	1		G5	S5				X
<i>Pteridium aquilinum</i>	Bracken Fern	2	3		G5	S5				X
<i>Pyrola asarifolia</i>	Pink Pyrola	7	-3	X	G5	S5				X
<i>Pyrola elliptica</i>	Shinleaf	5	5		G5	S5				X
<i>Quercus rubra</i>	Northern Red Oak	6	3		G5	S5				X
<i>Ranunculus abortivus</i>	Kidney-leaved Buttercup	2	-2		G5	S5				X
<i>Ranunculus acris</i>	Common Buttercup	*	-2	X	G5	SNA				X
<i>Ranunculus recurvatus</i>	Hooked Buttercup	4	-3		G5	S5				X
<i>Rhamnus cathartica</i>	European Buckthorn	*	3	X	GNR	SNA				X
<i>Rhus typhina</i>	Staghorn Sumac	1	5		G5	S5				X
<i>Ribes americanum</i>	American Black Currant	4	-3	X	G5	S5				X
<i>Ribes cynosbati</i>	Eastern Prickly Gooseberry	4	5		G5	S5				X
<i>Ribes triste</i>	Swamp Red Currant	6	-5	X	G5	S5				X
<i>Rosa blanda</i>	Smooth Rose	3	3		G5	S5				X
<i>Rosa multiflora</i>	Multiflora Rose	*	3		GNR	SNA				X
<i>Rubus allegheniensis</i>	Alleghany Blackberry	2	2		G5	S5				X
<i>Rubus idaeus ssp. strigosus</i>	North American Red Raspberry	0	-2		G5T5	S5				X
<i>Rubus pubescens</i>	Dwarf Raspberry	4	-4	X	G5	S5				X
<i>Rudbeckia hirta</i>	Black-eyed Susan	0	3		G5	S5				X
<i>Rumex crispus</i>	Curly Dock	*	-1	X	GNR	SNA				X
<i>Salix bebbiana</i>	Bebb's Willow	4	-4	X	G5	S5				X
<i>Salix discolor</i>	Pussy Willow	3	-3	X	G5	S5				X
<i>Salix eriocephala</i>	Cottony Willow	4	-3	X	G5	S5				X
<i>Salix euxina</i>	Crack Willow	*			GNR	SNA				X
<i>Sambucus canadensis</i>	Common Elderberry	5	-2	X	G5T5	S5				X
<i>Sambucus racemosa</i>	Red Elderberry	5	2		G5	S5				X
<i>Sanguinaria canadensis</i>	Bloodroot	5	4		G5	S5				X
<i>Sanicula marilandica</i>	Maryland Sanicle	5	3		G5	S5				X
<i>Saponaria officinalis</i>	Bouncing-bet	*	3		GNR	SNA				X
<i>Schizachne purpurascens</i>	Purple False Melic	6	2		G5	S5				X
<i>Scirpus atrovirens</i>	Dark-green Bulrush	3	-5	X	G5?	S5				X
<i>Scutellaria lateriflora</i>	Mad-dog Skullcap	5	-5	X	G5	S5				X
<i>Sedum acre</i>	Mossy Stonecrop	*	5		GNR	SNA				X
<i>Silene latifolia</i>	White Campion	*	5		GNR	SNA				X
<i>Silene vulgaris</i>	Bladder Campion	*	5		GNR	SNA				X
<i>Sisyrinchium montanum var. montanum</i>	Strict Blue-eyed-grass	4	-1	X	G5T5	S5				X
<i>Sium suave</i>	Common Water-parsnip	4	-5	X	G5	S5				X
<i>Solanum dulcamara</i>	Climbing Nightshade	*	0	X	GNR	SNA				X
<i>Solidago altissima var. altissima</i>	Eastern Tall Goldenrod	1	3		GNR	S5				X
<i>Solidago caesia</i>	Blue-stemmed Goldenrod	5	3		G5	S5				X
<i>Solidago canadensis var. canadensis</i>	Canada Goldenrod	1	3		G5T5	S5				X
<i>Solidago flexicaulis</i>	Zigzag Goldenrod	6	3		G5	S5				X
<i>Solidago juncea</i>	Early Goldenrod	3	5		G5	S5				X
<i>Solidago nemoralis ssp. nemoralis</i>	Gray-stemmed Goldenrod	2	5		G5T5	S5				X
<i>Solidago rugosa ssp. rugosa</i>	Northern Rough-stemmed Goldenrod	4	-1	X	G5T5	S5				X
<i>Solidago uliginosa</i>	Bog Goldenrod	9	-5	X	G4G5	S5				X
<i>Sonchus arvensis ssp. arvensis</i>	Field Sow-thistle	*	1		GNRTNR	SNA				X
<i>Spiraea alba var. alba</i>	White Meadowsweet	3	-4	X	G5T5	S5				X
<i>Stellaria graminea</i>	Grass-leaved Starwort	*	5	X	GNR	SNA				X
<i>Symphoricarpos albus var. albus</i>	Thin-leaved Snowberry	7	4		G5T5	S5				X
<i>Symphytotrichum cordifolium</i>	Heart-leaved Aster	5	5		G5	S5				X
<i>Symphytotrichum ericoides var. ericoides</i>	White Heath Aster	4	4		G5T5	S5				X
<i>Symphytotrichum lanceolatum ssp. lanceolatum var. lanceolatum</i>	White Panicked Aster	3	-3		G5T5	S5				X
<i>Symphytotrichum lateriflorum var. lateriflorum</i>	Calico Aster	3	-2	X	G5T5	S5				X
<i>Symphytotrichum novae-angliae</i>	New England Aster	2	-3		G5	S5				X
<i>Symphytotrichum puniceum</i>	Purple-stemmed Aster	6	-5	X	G5	S5				X
<i>Syringa vulgaris</i>	Common Lilac	*	5		GNR	SNA				X
<i>Taraxacum officinale</i>	Common Dandelion	*	3		G5	SNA				X
<i>Thalictrum dioicum</i>	Early Meadow-rue	5	2		G5	S5				X
<i>Thelypteris palustris</i>	Marsh Fern	5	-4	X	G5	S5				X
<i>Thuja occidentalis</i>	Eastern White Cedar	4	-3	X	G5	S5				X
<i>Tilia americana</i>	Basswood	4	3		G5	S5				X
<i>Toxicodendron radicans var. rydbergii</i>	Western Poison Ivy	0	0		G5	S5				X
<i>Trifolium pratense</i>	Red Clover	*	2		GNR	SNA				X
<i>Trifolium repens</i>	White Clover	*	2		GNR	SNA				X
<i>Trillium erectum</i>	Red Trillium	6	1		G5	S5				X
<i>Trillium grandiflorum</i>	White Trillium	5	5		G5	S5				X

<i>Tsuga canadensis</i>	Eastern Hemlock	7	3	X	G5	S5				X
<i>Tussilago farfara</i>	Coltsfoot	*	3	X	GNR	SNA				X
<i>Typha angustifolia</i>	Narrow-leaved Cattail	3	-5	X	G5	SNA				X
<i>Typha latifolia</i>	Broad-leaved Cattail	3	-5	X	G5	S5				X
<i>Ulmus americana</i>	White Elm	3	-2	X	G5	S5				X
<i>Urtica dioica ssp. dioica</i>	European Stinging Nettle	*	-1		G5T5?	SNA				X
<i>Uvularia grandiflora</i>	Large-flowered Bellwort	6	5		G5	S5				X
<i>Verbascum thapsus</i>	Common Mullein	*	5		GNR	SNA				X
<i>Veronica officinalis</i>	Common Speedwell	*	5		G5	SNA				X
<i>Viburnum lentago</i>	Nannyberry	4	-1	X	G5	S5				X
<i>Viburnum opulus ssp. opulus</i>	Cranberry Viburnum	*	0		GNR	SNA				X
<i>Vicia cracca</i>	Tufted Vetch	*	5		GNR	SNA				X
<i>Vinca minor</i>	Lesser Periwinkle	*	5		GNR	SNA				X
<i>Vincetoxicum nigrum</i>	Black Swallowwort	*	5		GNR	SNA				X
<i>Vitis riparia</i>	Riverbank Grape	0	-2		G5	S5				X
<i>Zanthoxylum americanum</i>	Northern Prickly-ash	3	5		G5	S5				X

Appendix 5. List of Wildlife Species recorded during Targeted Surveys
and/or Incidentally.

Scientific Name	English Common Name	Family	S-Rank	PSO/ COSSARO	SARA	MNR Area Sensitive
<i>Empidonax alnorum</i>	Alder Flycatcher	Tyrannidae	S5B			
<i>Corvus brachyrhynchos</i>	American Crow	Corvidae	S5B			
<i>Spinus tristis</i>	American Goldfinch	Fringillidae	S4			
<i>Falco sparverius</i>	American Kestrel	Falconninae	S4N			
<i>Turdus migratorius</i>	American Robin	Turdidae	S5			
<i>Scolopax minor</i>	American Woodcock	Scolopacidae	S4B			
<i>Icterus galbula</i>	Baltimore Oriole	Icteridae	S4B			
<i>Riparia riparia</i>	Bank Swallow	Hirundinidae	S5	THR	THR	
<i>Hirundo rustica</i>	Barn Swallow	Hirundinidae	S5	SC	THR	
<i>Mniotilta varia</i>	Black-and-white Warbler	Parulidae	S5B			X
<i>Coccyzus</i>	Black-billed Cuckoo	Cuculidae	S4B			
<i>Poecile atricapillus</i>	Black-capped Chickadee	Paridae	S5			
<i>Setophaga virens</i>	Black-throated Green Warbler	Parulidae	S5B			X
<i>Cyanocitta cristata</i>	Blue Jay	Corvidae	S5B			
<i>Toxostoma rufum</i>	Brown Thrasher	Mimidae	S5B			
<i>Bombycilla cedrorum</i>	Cedar Waxing	Bombycillicae	S5B			
<i>Setophaga pensylvanica</i>	Chestnut-sided Warbler	Parulidae	S5B			
<i>Spizella passerina</i>	Chipping Sparrow	Emberizidae	S4B			
<i>Quiscalus quiscula</i>	Common Grackle	Icteridae	S5			
<i>Corvus corax</i>	Common Raven	Corvidae	S5B			
<i>Geothlypis trichas</i>	Common Yellowthroat	Parulidae	S5			
<i>Canis latrans</i>	Coyote	Canidae	S5B			
<i>Tamias striatus</i>	Eastern Chipmunk	Sciuridae	S5			
<i>Sylvilagus floridanus</i>	Eastern Cottontail	Leporidae	S4B			
<i>Thamnophis sirtalis</i>	Eastern Gartersnake	Colubridea	S5			
<i>Tyrannus tyrannus</i>	Eastern Kingbird	Tyrannidae	S4B			
<i>Sturnella magna</i>	Eastern Meadowlark	Icteridae	S5	THR	THR	
<i>Sayornis phoebe</i>	Eastern Phoebe	Tyrannidae	S5B			
<i>Contopus virens</i>	Eastern Wood-pewee	Tyrannidae	S4B	SC	SC	

Scientific Name	English Common Name	Family	S-Rank	PSO/ COSSARO	SARA	MNR Area Sensitive
<i>Sturnus vulgaris</i>	European Starling					
<i>Spizella pusilla</i>	Field Sparrow	Emberizidae	S4B			
<i>Ammodramus</i>	Grasshopper Sparrow			SC	SC	X
<i>Dumetella carolinensis</i>	Gray Catbird	Mimidae	S5			
<i>Hyla versicolor</i>	Gray Treefrog	Hylidae	S4			
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	Tyrannidae	S5			
<i>Lithobates clamitans</i>	Green Frog	Ranidae	S4B			
<i>Sciurus carolinensis</i>	Grey Squirrel	Sciuridae	S4B			
<i>Catharus guttatus</i>	Hermit Thrush	Turdidae	S5B			X
<i>Troglodytes aedon</i>	House Wren	Troglodytidae	S5B			
<i>Passerina cyanea</i>	Indigo Bunting	Cardinalidae	S5			
<i>Charadrius vociferus</i>	Killdeer	Charadriidae	S5B			
<i>Empidonax minimus</i>	Least Flycatcher	Tyrannidae	S5B			
<i>Chrysemys picta</i>	Midland Painted Turtle	Emydidae	S5		SC	
<i>Setophaga magnolia</i>	Magnolia Warbler	Parulidae	S5B			X
<i>Anas platyrhynchos</i>	Mallard	Anatinae	S5			
<i>Cistothorus palustris</i>	Marsh Wren	Troglodytidae	S4S5B			
<i>Zenaidura macroura</i>	Mourning Dove	Columbidae	S5			
<i>Leiothlypis ruficapilla</i>	Nashville Warbler	Parulidae	S5B			
<i>Cardinalis cardinalis</i>	Northern Cardinal	Cardinalidae	S4B			
<i>Colaptes auratus</i>	Northern Flicker	Picidae	S5			
<i>Lithobates pipiens</i>	Northern Leopard Frog	Ranidae	S4B			
<i>Circus hudsonius</i>	Northern Harrier	Circinae	S4B			
<i>Nerodia sipedon</i>	Northern Watersnake	Colubridae	S5			
<i>Parkesia noveboracensis</i>	Northern Waterthrush	Parulidae	S5B			
<i>Seiurus aurocapilla</i>	Ovenbird	Parulidae	S5			X
<i>Dryocopus pileatus</i>	Pileated Woodpecker	Picidae	S5			X
<i>Setophaga pinus</i>	Pine Warbler	Parulidae	S5B			X
<i>Tamiasciurus hudsonicus</i>	Red Squirrel	Sciuridae	S4			

Scientific Name	English Common Name	Family	S-Rank	PSO/ COSSARO	SARA	MNR Area Sensitive
<i>Sitta canadensis</i>	Red-breasted Nuthatch	Sittidae	S5			X
<i>Vireo olivaceus</i>	Red-eyed Vireo	Vireonidae	S5B			
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	Picidae	S5			
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	Icteridae	N			
<i>Columba livia</i>	Rock Pigeon					
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	Cardinalidae	S4B			
<i>Passerculus</i>	Savannah Sparrow	Fringillidae	S5B			X
<i>Piranga olivacea</i>	Scarlet Tanager	Thraupidae	S5B			X
<i>Accipiter striatus</i>	Sharp-shinned Hawk	Acciptrinae	S4B			
<i>Chelydra serpentina</i>	Snapping Turtle	Chelydridae	S5B	SC	SC	
<i>Melospiza melodia</i>	Song Sparrow	Fringillidae	S5B			
<i>Melospiza georgiana</i>	Swamp Sparrow	Fringillidae	S5B			
<i>Pseudacris crucifer</i>	Spring Peeper	Hylidae	S5B			
<i>Tachycineta bicolor</i>	Tree Swallow	Hirundinidae	S4B			
<i>Cathartes aura</i>	Turkey Vulture	Ardeidae	S4			
<i>Catharus fuscescens</i>	Veery	Turdidae	S5B			X
<i>Vireo gilvus</i>	Warbling Vireo	Vireonidae	S5			
<i>Pseudacris triseriata</i>	Western Chorus Frog	Hylidae	S5		THR	
<i>Caprimulgus vociferus</i>	Whip-poor-will	Caprimulgidae	S5B	SC	THR	X
<i>Sitta carolinensis</i>	White-breasted Nuthatch	Sittidae	S5			X
<i>Odocoileus virginianus</i>	White-tailed Deer	Cervidae	S5B			
<i>Zonotrichia albicollis</i>	White-throated Sparrow	Fringillidae	S5B			
<i>Meleagris gallopavo</i>	Wild Turkey	Meleagrididae	S3S4			
<i>Lithobates sylvaticus</i>	Wood Frog	Ranidae	S5B			
<i>Hylocichla mustelina</i>	Wood Thrush	Turdidae	S5B	SC	THR	
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker	Picidae	S5B			
<i>Setophaga petechia</i>	Yellow Warbler	Parulidae	S5B			

¹"S-ranks" represent rarity ranks for native species in Ontario set by the Natural Heritage Information Centre (NHIC)

Scientific Name	English Common Name	Family	S-Rank	PSO/ COSSARO	SARA	MNR Area Sensitive
S1 - Extremely Rare (usually 5 or fewer occurrences in Ontario) S2 - Very Rare (usually between 5 and 20 occurrences in Ontario) S3 - Rare to Uncommon (usuablly between 20 and 100 occurrences) S4 - Common (apparently secure) S5 - Very Common						

Appendix 6. Anuran Survey Results.



Appendix 6: Results of Anuran Calling Surveys

Date	Conditions	Station #	Species, Total Number Observed, and Call Code
April 26 and May 1, 2024 (due to low temperatures and rain events a portion of survey points could not be completed until May 1)	April 29, 2024 Air Temperature 5-7°C, Beaufort Wind 0-1, Cloud Cover 0%, Precipitation none, Noise 0 May 1, 2024 Air Temperature 5-7°C, Beaufort Wind 0-1, Cloud Cover 0%, Precipitation none, Noise 0	1 (May 1)	Spring Peepers 20+ (3), Western Chorus Frog 2 (1), Northern Leopard Frog 1 (1)
		2 (May 1)	Spring Peepers 8 (2), Western Chorus Frog 1 (1)
		3 (May 1)	Spring Peepers 7 (2), Northern Leopard Frog 1 (1), Western Chorus Frog 3 (1)
		4 (May 1)	Western Chorus Frog 1 (1)
		5	Spring Peepers 2 (1),
		6	Western Chorus Frog 1 (1)
		7	Spring Peepers 3 (2), Western Chorus Frog 1 (1)
		8	Western Chorus Frog 3 (1), Spring Peeper 6 (2)
		9	Western Chorus Frog 2 (1), Spring Peepers 1 (1)
		10	Western Chorus Frog 1 (1)
		11 (May 1)	Northern Leopard Frog 1 (1), Western Chorus Frog 2 (1), Spring Peepers 20+ (3), Wood Frog 1 (1)
		12 (May 1)	No calls
May 15, 2024	Air Temperature 14 – 17 °C, Beaufort Wind 0-1, Cloud Cover 40 - 100%, Precipitation none, Noise 1	1	Gray Treefrog 4 (2), Western Chorus Frog 1 (1), Spring Peepers 10 (2)
		2	Wood Frog 2 (1), Chorus Frog 1 (1), Spring Peepers 10 (2)
		3	Spring Peepers 1 (1)
		4	No Calls
		5	Spring Peepers 1 (1)
		6	No Calls
		7	Spring Peepers 2 (1)

		8	Gray Treefrog 3 (1), Spring Peepers 3 (1)
		9	No Calls
		10	Spring Peepers 5 (2)
		11	Spring Peepers 10-15 (3)
		12	No Calls
June 20, 2024	Air Temperature 21-23°C, Beaufort Wind 0-2, Cloud Cover 80-100%, Precipitation none, Noise 1-2	1	Gray Treefrog 2 (1), Green Frog 2 (1)
		2	No Calls
		3	No Calls
		4	Gray Treefrog 2 (1), Green Frog 1 (1)
		5	No Calls
		6	No Calls
		7	No Calls
		8	No Calls
		9	No Calls
		10	No Calls
		11	Gray Treefrog 5 (1), Green Frog 2 (1)
		12	No Calls

Appendix 7. Breeding Bird Survey Results.



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Field Sparrow (Spizella pusilla)	S5B								Po	Co								x					Po			Po			Po	Po			Pr									Po			Pr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Grasshopper Sparrow (Ammodramus savannarum)	S4B	SC						Po										Po	x							Po																	Po	Po	Po	Co																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Gray Catbird (Dumetella	S5B			Po	Po		Po	Po										Po	x			Po				Po		Po			Po	Po			Po								x		Po		x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Flycatcher (Myiarchus	S5B						Po						Po		Po	Po	x										Po						x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Hermit Thrush (Catharus guttatus)	S5B										Po	Po											Po	Po																					x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
House Wren (Troglodytes aedon)	S5B						Po			Po	Po												Po		Po	Po					Po			Po	Po			Po							Po	x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Indigo Bunting (Passerina cyanea)	S5B						Po	Po		Po								Po	x							Po			Po	Po	Po				Po	Po	Po	Po						Po	Po	Po		x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Killdeer (Charadrius vociferus)	S5B																		x			x				x							Po									x			x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Least Flycatcher (Empidonax minimus)	S2B																																x	x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Magnolia Warbler (Setophaga magnolia)	S5B																		x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Mallard (Anas platyrhynchos)	S5													x					x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Marsh Wren (Cistothorus palustris)	S4B																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Mourning Dove (Zenaida macroura)	S5			Po	Po			Po											x			Po																								x																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Nashville Warbler (Leiosthlypis ruficapilla)	S5B														Po	Po																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Northern Cardinal (Cardinalis cardinalis)	S5				Po																					Po																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

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Survey	Date (YYYY-MM-DD)	Assessor	Start (hh:mm)	End (hh:mm)	Temp (C)	Cloud (%)	Wind (Beaufort Scale)
Survey 1, part 1	2024-06-03	B. Howe	5:15	9:49	12-18	100	0-1
Survey 1, part 2	2024-06-04	B. Howe	6:55	8:22	14-17	30-50	0-1
Survey 2, part 1	2024-06-19	B. Howe	6:47	10:11	23-27	5-100	0-1
Survey 2, part 2	2024-06-20	B. Howe	7:32	9:14	23-26	100-50	0-2
Survey 3, part 1	2024-07-04	B. Howe	6:48	10:31	18-25	33-80	0-1
Survey 3, part 2	2024-07-05	B. Howe	7:35	9:16	20-22	0	0-1

Confirmed (Co): nest building, nest in use, nest with recent eggshells, adult carrying food or fecal sac, distraction display, fledged young
Probable (Pr): multiple singing birds and/or breeding pair in suitable habitat, mating display, territorial behavoir, agitated behavior, brood patch, nest building by cavity nesting
Possible (Po): singing, species in suitable nesting habitat
Present (x): bird observed but does not fall under other codes
Incidental: The highest breeding code for a species observed >100m from survey stations or on transit between survey stations

Appendix 8. Turtle Survey Results.

Appendix 8 – Turtle Survey Table

Results of Completed Blanding's Turtle Surveys in 2024

Date	Conditions	Station #	Species and Total Number Observed
May 2, 2024	Air Temperature 14-18°C, Water Temperature 9-14 °C - Beaufort Wind 1-2, Cloud Cover 25% Start Time 11:10 pm, Finish 2:29pm	1	No turtles
		2	No turtles
		3	3 Painted Turtles basking
		4	No turtles
		5	No turtles
		6	1 Painted Turtle basking
		7	No turtles
		8	1 Painted Turtle basking, 1 Painted Turtle head above water
		9	2 Painted Turtle basking
		10	4 Painted Turtles basking
		11	No turtles
May 16, 2024	Air Temperature 21-23°C, Water N/A Temperature Beaufort Wind 0-1, Cloud Cover 50% Start Time 12:10 pm, Finish 3:03pm	1	No turtles
		2	No turtles
		3	1 Painted Turtle basking
		4	No Turtles
		5	No Turtles
		6	No Turtles
		7	No Turtles (Snapping Turtle Roadkill adjacent to culvert)
		8	6 Painted Turtle basking
		9	2 Painted Turtle basking
		10	2 Painted Turtle basking
		11	2 Painted Turtle basking on grass tufts

June 2, 2024	Air Temperature 17-21°C, Water Temperature 11-22°C, Beaufort Wind 1-2, Cloud Cover 100% Start Time 11:06 am, Finish 2:15 pm	1	No Turtles
		2	
		3	3 Painted Turtle, 1 swimming, 2 basking
		4	No Turtles
		5	No Turtles
		6	No Turtles
		7	No Turtles
		8	No Turtles
		9	No Turtles
		10	2 Painted Turtle, basking underwater
		11	No Turtles
June 4, 2023	Air Temperature 22-26°C, Water Temperature 17-27°C, Beaufort Wind 0-1, Cloud Cover 75-80%	1	2 Painted Turtles basking
		2	No Turtles
		3	3 Painted Turtles, 2 Basking, 1 Feeding
		4	No Turtles
		5	No Turtles
		6	No Turtles
		7	No Turtles
		8	No Turtles
		9	No Turtles
		10	No Turtles
		11	No Turtles
June 6, 2023	Air Temperature 21-24°C, Water Temperature 19-27°C, Beaufort Wind 0-2, Cloud Cover 0-100% Start Time 1:10 pm, Finish 4:30pm	1	No Turtles
		2	No Turtles
		3	No Turtles
		4	No Turtles

		5	No Turtles
		6	No Turtles
		7	No Turtles
		8	No Turtles
		9	No Turtles
		10	No Turtles
		11	No Turtles

Appendix 9. Assessment of Provincially Endangered and Threatened Species and their Habitat.



Species	Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the site.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site	Discussion of relevance to proposal
American Eel (<i>Anguilla rostrata</i>)	END (Fisheries Act)	The American Eel migrates up the St. Lawrence River into the Ottawa River and Lake Ontario. They are habitat generalists and use benthic habitats with stones, debris, and vegetation for cover. Their distribution has been severely limited by human development and damming rivers.	YES	NO	NO	NO	While there is a watercourse on the subject property, this watercourse does not provide suitable habitat for this species and the watercourse does not appear to connect to any large watercourses. No further assessment provided.
American Ginseng (<i>Panax quinquefolius</i>)	THR (SCA)	American Ginseng requires well-drained but moist acidic to neutral soils overlying limestone or marble bedrock. They are obligate understory plants found in undisturbed mature deciduous and mixed forests, and occasionally in coniferous forests and swamps.	YES	NO	NO	NO	The subject property is generally highly disturbed with abundant agricultural field present with only minimal mature, undisturbed forest present. Appropriate habitat was sufficiently surveyed through multiple site visits, with observations made. The assessment areas is unlikely to support this species. No further assessment provided.
Bank Swallow (<i>Riparia riparia</i>)	THR (SARA)	The Bank Swallow is a small aerial insectivore bird that nests colonially in burrows they excavate within banks. Colonies will nest in bluffs, riverbanks, aggregate pits, roadside embankments, and topsoil piles near open habitat that provides a steady source of insects. Colony sites must also be near roosting areas in wetland, reed, or cane beds.	YES	YES, OBBA	YES	YES	This species was observed foraging ove the west portiong of the assessment area and there are local records of the species in the OBBA. No suitable nesting was observed within the assessment area, however, adjacent lands to the west contain active pits that are likely provide nesting habitat. No further assessment provided.
Black Ash (<i>Fraxinus nigra</i>)	END (SCA)	The Black Ash grows everywhere in Ontario except the Far North. These trees require moisture, and are commonly found in northern swampy woodlands, from eastern Manitoba, throughout Ontario, and as far east as Newfoundland.	YES	NO	NO	YES	The assessment area contained deciduous swamp community that contains Black Ash. While the extraction area is not proposed within wetland features, there is potential for impact to Black Ash to occur. Further discussion is provided in report.
Blanding's Turtle (<i>Emydoidea blandingii</i>)	THR (SCA)	Blanding’s Turtle are semi-aquatic and use wetland habitats with shallow water and abundant vegetation. Their habitat includes a broad range of wetlands, forest clearings, and meadows. They breed in aquatic habitat and nest in open natural and anthropogenic upland areas.	YES	YES, iNaturalist	NO	NO	There is an iNaturalist record approximately 1.4 km from the subject property. Open water and wetland features within the assessment area were surveyed for turtle basking and this species was not observed. It is very unlikley that Blanding's are using the assessment area or adjacent lands for hibernation or nesting. No further assessment provided.
Bobolink (<i>Dolichonyx oryzivorus</i>)	THR (SARA)	Nests and forages in meadows, grasslands, hayfields, and pastureland. Fields must have 25% or less woody plant cover. They typically require large fields (>4ha) and avoid small, fragmented habitats. They also avoid habitat within 75 m of a forest edge.	YES	YES, NHIC and OBBA	YES	YES	While there is a record of this species in the local area in both NHIC and the OBBA and the assessment area contains grasslands and and cultural meadow communities, this species was not observed during targeted survyes within appropriate habitats within the assessment area. No further assessment provided.
Butternut (<i>Juglans cinerea</i>)	END (SCA)	Butternut is shade intolerant and grows in rich, moist, well-drained loams often along streambanks. Butternut is also found in well-drained gravel sites. It is often found at forest edges where it can access abundant sunlight.	YES	NO	YES	POSSIBLE	Records of this species are not preseent within the NHIC data squares that cover the assessment area and individuals of this species were not observed during targeted surveys of potential habitat within the assessment area. No further assessment provided.

¹Highlighted species are present on or are likely to be present on the subject property.

Species	Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the site.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site	Discussion of relevance to proposal
Cerulean Warbler (<i>Setophaga cerulea</i>)	END (SARA)	Found in two small breeding clusters in the Carolinian Forest and the Frontenac Axis. They breed in hilly, mature deciduous forests with a preference for oak and/or maple dominated forests with swampy bottomlands. They are area and edge-sensitive and require large continuous tracts of forest.	YES	YES, OBBA	NO	NO	Although there is an OBBA record of this species, only limited mature deciduous forest is present within the assessment area. This speices was not observed during targeted breeding bird surveys within the assessment area. No further assessment provided.
Chimney Swift (<i>Chaetura pelagica</i>)	THR (SARA)	The Chimney Swift historically nested and roosted in large hollow trees, rock walls, and other vertical surfaces. They now use human-made structures like uncapped chimneys and have high site fidelity to nesting chimneys. 95% of nests are within 1 km of a waterbody.	YES	NO	NO	NO	Records of this species are not present within the NHIC or OBBA data squares that cover the assessment area and only limited habitat is present with a lack of large hollow trees, rock walland and vertical artificial surfaces. This speices was not observed during targeted breeding bird surveys within the assessment area. No further assessment provided.
Eastern Hog-nosed Snake (<i>Heterodon platirhinos</i>)	THR (SCA)	Eastern Hog-nosed snakes require a mosaic of habitats with sandy, well-drained soil and open vegetation close to water with a supply of American Toads. Their Ontario distribution is limited by climate and soil to the French River/Lake Nipissing and Carolinian areas.	YES	YES, Herp Atlas and iNaturalist	YES	YES	The subject property provides general habitat for this species, and there are known records of this species in the herp atlas database. However, they were not observed during snake surveys. No further assessment is provided.
Eastern Meadowlark (<i>Sturnella magna</i>)	THR (SARA)	Nests and forages in meadows, grasslands, shrubby fields, hayfields and pastureland. Prefers habitat with >80% grass cover. Needs a minimum of 5 ha of continuous habitat.	YES	YES, NHIC and OBBA	YES	YES	Local record are present in the OBBA and NHIC databased that cover the assessment area and there are large areas of grasslands and/or cultural meadow habitat. This species was observed in the west portion of the assessment area during targeted breeding bird surveys. Further discussion provided in report.
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	END (SCA)	Eastern Small-footed Myotis overwinter in caves and mines in Ontario and do not disperse far from their hibernacula during the summer. They can be found roosting in rocky habitats singly or in groups but will also use human structures as day roosts. They are aerial insectivores and forage in forests, rocky habitats, and ponds.	YES	NO	NO	NO	The subject property and adjacent lands lack rocky habitat with table rocks or talus and anthropogenic structures are outside the proposed extraction area and not anticipated to be removed or impacted. This species was not recorded during bat acoustic surveys. No further assessment provided.
Eastern Red Bat (<i>Lasiurus borealis</i>)	END (SCA)	The Eastern Red Bat is a long-distance migrant that hibernates in the southern United States. In Ontario, they roost in foliage of deciduous and coniferous trees of any age class and their diet is primarily moths.	YES	NO	YES	POSSIBLE	The subject property contains wooded habitat that contains trees appropriate for roosting by this species. This species was recorded within the assessment area during acoustic monitoring. Further assessment is provided in the report.

¹Highlighted species are present on or are likely to be present on the subject property.

Species	Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the site.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site	Discussion of relevance to proposal
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	END (SARA)	Henslow’s Sparrows' current breeding habitat is generally limited to Prince Edward County and the Regional Municipality of Halton. Their habitat is open grasslands with dense vegetation at least 30 cm tall, thick standing dead material, <1% shrub cover, and intermediate moisture. They prefer larger, continuous grasslands and are sensitive to edge effects.	YES	NO	NO	NO	No local records are present within the NHIC, OBBA or iNaturalist data bases. Open areas on the subject property consist of pasture and cultural meadow vegetation community however, this species was not noted during targeted breeding bird surveys. No further assessment provided.
Hoary Bat (<i>Lasiurus cinereus</i>)	END (SCA)	Hoary Bats are widely distributed across Ontario and migrate long distances between summer breeding habitat and winter range. They roost in foliage of deciduous or coniferous trees and forage in open areas often along forest edges.	YES	NO	YES	YES	The subject property contains wooded habitat that contains trees appropriate for roosting by this species. This species was recorded within the assessment area during acoustic monitoring. Further assessment is provided in the report.
Lake Sturgeon (<i>Acipenser fulvescens</i>)	END (SCA)	Lake Sturgeon need large continuous habitats in river and lake systems to provide for spawning, larval, juvenile, sub-adult, and adult habitat. Spawning takes place in shallow fast flowing headwaters where a natural or man-made barrier occurs. Spawning substrates are gravel, rock, hardpan, or sand. Larval and juvenile fish use clayey substrate habitats and older fish inhabit deep pools.	YES	NO	NO	NO	The subject property or adjacent lands do not contain large rivers or lakes that would support this species. No further assessment provided.
Least Bittern (<i>Ixobrychus exilis</i>)	THR (SARA)	Breeds in large marshes within Southern Ontario. Creates nest platforms from tall, dense emergent vegetation within 10m of water and prefers Typha spp. Will use other emergent vegetation. Needs 200 ha of wetland for nesting and foraging but does not need to be continuous wetland. Prefers complexes of smaller wetlands. Will avoid marshes surrounded by >30% forest cover or containing large trees.	YES	NO	NO	NO	No local records are present within the NHIC OBBA or iNaturalist databases, the subject property and adjacent lands do not contain large wetlands with dense emergent vegetation that would provide potential habitat for this species. No further assessment provided.
Little Brown Myotis (<i>Myotis lucifugus</i>)	END (SCA)	Their hibernacula are within caves and abandoned mines, wells, and tunnels. Maternity colonies are within a few kilometers of hibernacula within snag trees, rock crevices, exfoliating tree bark, and anthropogenic structures. Roosts and swarming sites are in similar areas around the hibernacula.	YES	NO	YES	YES	The subject property contains wooded habitat with trees that may be suitable for roosting by this specie. However, acoustic monitoring was completed in appropriate habitat on the subject property and this species was not detected. No further assessment provided.
Northern Myotis/Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	END (SCA)	Northern Myotis are found below the tree line in Canada and are mostly absent from the prairies. They use live and dead trees near water in forest habitats when active and migrate to caves and abandoned mines for hibernation.	YES	NO	YES	YES	The subject property contains wooded habitat with trees that may be suitable for roosting by this specie. However, acoustic monitoring was completed in appropriate habitat on the subject property and this species was not detected. No further assessment provided.

¹Highlighted species are present on or are likely to be present on the subject property.

Species	Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the site.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site	Discussion of relevance to proposal
Red-Headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	END (SARA)	The Red-headed Woodpecker lives in open woodland and woodland edges and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, that the bird uses for nesting and perching. The Red-headed Woodpecker is found across southern Ontario, where it is widespread but rare.	YES	NO	NO	NO	No records of occurrence for this species are present in the NHIC, OBBA or iNaturalist databases. While the subject property provided a large cleared area, there is a lack of abundant dead trees required for nesting and perching. This species was also not detected during targeted breeding bird surveys within the assessment area. No further assessment provided.
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	END (SCA)	Silver-haired Bats roost primarily under bark and in the cavities of trees, making them reliant on habitats where large, decaying trees are available. They are found across Canada in the summer months and during fall migration. Some individuals overwinter in southern Ontario, but most migrate out of Canada annually.	YES	NO	YES	YES	The subject property contains wooded habitat that contains trees appropriate for roosting by this species. This species was recorded within the assessment area during acoustic monitoring. Further assessment is provided in the report.
Tricolored Bat (<i>Perimyotis subflavus</i>)	END (SCA)	The Tri-colored Bat have a scattered distribution and are found as far north as Sudbury. They are found in a variety of forested habitats. They overwinter alone in caves and mines and roost in dead vegetation clumps and lichen in forested habitats near water.	YES	NO	NO	YES	The subject property contains wooded habitat with trees that may be suitable for roosting by this species. However, acoustic monitoring was completed in appropriate habitat on the subject property and this species was not detected. No further assessment provided.

¹Highlighted species are present on or are likely to be present on the subject property.

Appendix 10. Results of Desktop Screening and On-site Assessment for
Significant Wildlife Habitat.



Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Seasonal Concentration Areas for Wildlife Species					
Waterfowl Stopover and Staging Areas (Terrestrial)	American Black Duck, Wood Duck, Green-winged Teal, Blue-winged Teal, Mallard, Northern Pintail, Northern Shoveler, American Wigeon, Gadwall	CUM1, CUT1, in addition to evidence of spring flooding	Fields flooded with sheet water during Spring (mid March to May)	Studies Confirm: Annual mixed species aggregations of 100 or more total birds Area of SWH Defined As: Ecosite plus 100-300m radius	While CUM1 community is present within the assessment area, no areas of flooded field with sheet water that would support abundand birds was observed during site assessments. Not SWH, no further assessment provided.
Waterfowl Stopover and Staging Areas (Aquatic)	Canada Goose, Cackling Goose, Snow Goose, American Black Duck, Northern Pintail, Northern Shoveler, American Wigeon, Gadwall, Green-winged Teal, Blue-winged Teal, Hooded Merganser, Common Merganser, Lesser Scaup, Greater Scaup, Long-tailed Duck, Surf Scoter, White-winged Scoter, Black Scoter, Ring-necked Duck, Common Goldeneye, Bufflehead, Redhead, Ruddy Duck, Red-breasted Merganser, Brant, Canvasback	MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, SWD1, SWD2, SWD3, SWD5, SWD6, SWD7	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Reservoirs managed as large ponds qualify.	Studies Confirm: Mixed species aggregations of 100 or more total birds for 7 days, and/or annual use by Ruddy Ducks, Canvasbacks, or Redheads Area of SWH Defined As: Ecosites plus 100m radius, includes wetlands and shorelines	While SWD and MAS community is present within the assessment area, abundand birds were not observed during site assessments. Not SWH, no further assessment provided.
Shorebird Migratory Stopover Areas	Greater Yellowlegs, Lesser Yellowlegs, Marbled Godwit, Hudsonian Godwit, Black-bellied Plover, American Golden-Plover, Semipalmated Plover, Solitary Sandpiper, Spotted Sandpiper, Semipalmated Sandpiper, Pectoral Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Least Sandpiper, Purple Sandpiper, Stilt Sandpiper, Short-billed Dowitcher, Red-necked Phalarope, Whimbrel, Ruddy Turnstone, Sanderling, Dunlin	BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars, groynes, armour rock, and seasonally flooded, muddy and un-vegetated shoreline habitats.	Studies Confirm: Mixed species aggregations of 3 or more listed species with >1000 shorebirds counted over the migration period, and/or any site with >100 Whimbrel for 3 or more years Area of SWH Defined As: ELC shorelines plus 100m radius	While MAM2 community is present within the assessment area, this community is small in size and would not suppirt 1000+ shore birds. Not SWH, no further assessment provided.
Raptor Wintering Area	Rough-legged Hawk, Red-tailed Hawk, Northern Harrier, American Kestrel, Snowy Owl Special Concern: Short-eared Owl, Bald Eagle	Hawks/Owls: one each from forest (FOD, FOM, FOC) and upland (CUM, CUT, CUS, CUW) Bald Eagle: forest (FOD, FOM, FOC, SWD, SWM, SWC) on shorelines of large water bodies	Combination of fields and woodlands that provide roosting, foraging and resting habitats. Hawks/Owls: >20 ha with a combination of forest and upland; >15ha field habitat; field area windswept with limited snow depth/accumulation Bald Eagle: open water, large trees and snags	Studies Confirm: 1 or more Short-eared Owls, 1 or more Bald Eagles, or at least 10 individuals and 2 of the listed species and used ≥3 times in 5 years for a minimum of 20 days Area of SWH Defined As: n/a	While upland forest communtiy in conjunction with cultural upland communities are present within the assessment area, non of these species were observed during targeted winter raptor surveys. Not SWH, no further assessment provided.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	CCR1, CCR2, CCA1, CCA2 Buildings are not SWH	Caves, mine shafts, underground foundations, Karsts Does not include active mines	Studies Confirm: confirmed hibernating bats Area of SWH Defined As: 200m radius around hibernaculum entrance, 1000m radius for wind farms	The study area does not contain any features that may support this habitat function. Not SWH, nu further assessment provided.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

¹Shaded rows denote habitat categories that may be present within a subject property.

Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	All Ecosites in Community Series: FOD, FOM, SWD, SWM Buildings are not SWH	Tree cavities and snags; deciduous or mixed stands with >10/ha >25cm dbh trees, Silver-haired Bats prefer forests with 21 snags/ha	Studies Confirm: confirmed use by >10 Big Brown Bats or >5 adult female Silver-haired Bats Area of SWH Defined As: entire woodland/forest ELC or Ecoelement containing maternity colonies	Woodland communities are present within the assessment area and a cavity/snag assessment was completed that guided the placement of accustic monitoring devices. Results of the accustic monitoring is provided in the report and show that Big Brown Bat were not recorded during monitoring and Silver-haired Bats recordings were less than the >5 criteia. Not SWH, no further discussion provided.
Turtle Wintering Areas	Midland Painted Turtle Special Concern: Northern Map Turtle, Snapping Turtle	Snapping and Midland Painted Turtles: Community classes SW, MA, OA, SA, ELC Community Series FEO, BOO Northern Map Turtle: open water areas with current Not sewage lagoons or stormwater ponds	Water deep enough to not freeze, soft mud substrates; permanent water bodies, large wetlands, bogs or fens with adequate Dissolved Oxygen	Studies Confirm: 5 over-wintering Midland Painted Turtles, or 1 or more overwintering Northern Map Turtles or Snapping Turtles Area of SWH Defined As: ELC with overwintering turtles, if site is within a stream or river only the deep-water pool is protected	Turtle basking surveys were completed within the assessment area where features with water depths enough not to freeze, soft muck or permanent waterbodies were present. Only one (1) feature, a pond at T9 had enough observations to meet the overwintering criteria with eight (8) Painted Turtles being observed on May 16, 2024. This feature was dry during a September 27, 2024 site visit. Surveys suggest that this species is overwintering in this feature. Possible SWH, further assessment provided in report.
Reptile Hibernaculum	Snakes: Eastern Gartersnake, Northern Watersnake, Northern Red-bellied Snake, Northern Brownsnake, Smooth Green Snake, Northern Ring-necked Snake Special Concern: Five-lined Skink, Milksnake, Eastern Ribbonsnake	Snakes: any forest ecosite other than very wet ones; talus, rock barrens, crevice, cave, and alvar sites; rock piles or slopes, stone fences, crumbling foundations Skink: Community Series FOD, FOM and Ecosites FOC1, FOC3	Snakes: sites with access below the frost line, wetlands with hummocks Skink: mixed forests with rock outcrops providing cover rock overlaying granite bedrock with fissures	Studies Confirm: use by ≥5 individuals from one species or use by individuals from ≥2 species; congregation of ≥5 individuals from one species or individuals from ≥2 species near potential hibernacula; if SC species are present site is SWH; any active skink hibernaculum Area of SWH Defined As: feature containing hibernacula plus 30m radius	Potential hibernacula sites were not documented within the assessment area during RiverStone's site investigations. Not SWH, no further assessment provided.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, Northern Rough-winged Swallow	Found in CUM1, CUT1, CUS1, BLO1, BLS1, BLT1, CLO1, CLS1, CLT1	Exposed banks, sandy hills, borrow pits, steep slopes, sand piles that are undisturbed or naturally eroding Does not include man-made structures or active aggregate pits	Studies Confirm: 1 or more nesting sites with ≥8 Cliff Swallow pairs and/or Rough-winged Swallow Pairs during the breeding season Area of SWH Defined As: colony and 50m radius from peripheral nests	Cliff Swallow or Northern Rough-winged Swallow were not noted during breeding birds surveys within the assessment area. Not SWH, no further assessment provided.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned Night Heron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1, SWD2, SWD3, SWD4, SWD5, SWD6, SWD7, FET1	Live or dead standing trees in wetlands, lakes, islands, peninsulas, may use shrubs or other emergent vegetation; most nests 11-15m from ground	Studies Confirm: ≥5 active Great Blue Heron or other listed species nests Area of SWH Defined As: colony plus 300m radius or extent of forest ecosite containing colony or any island <15ha with a colony	While SWD communities are present in the assessment area, no nests or appropriate species were noted during breeding bird surveys or other site visits. Not SWH, no further assessment provided.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	MAM1-6, MAS1-3, CUM, CUT, CUS Brewer's Blackbird: close to watercourses in open fields	Gulls and Terns: rocky islands or peninsulas in open water, marshy areas Brewer's Blackbird: near streams and irrigation ditches in farmland	Studies Confirm: >25 active nests of Herring Gulls or Ring-billed Gulls, >5 active nests of Common Terns, >2 active nests of Caspian Terns, ≥5 Brewer's Blackbird pairs, any active nesting colony of Little Gulls or Great Black-backed Gulls Area of SWH Defined As: colony plus 150m radius or extent of ecosites containing colony or any island <3ha	The assessment area does not contain any features that may support this habitat function. Not SWH, no further assessment provided.
Migratory Butterfly Stopover Areas	Painted Lady, Red Admiral Special Concern: Monarch	One Community Series each from field (CUM, CUT, CUS) and forest (FOC, FOD, FOM, CUP)	Minimum 10ha combination of field and forest located within 5km of Lake Ontario	Studies Confirm: >3000 Monarch Use Days (days a site is used * the number of individuals), or >3000 Monarch Use Days with Painted Ladies or Red Admirals present Area of SWH Defined As: n/a	The assessment area is located outside of the applicable distance from the Lake Ontario shoreline. Not SWH, no further assessment provided.
Landbird Migratory Stopover Areas	All migratory songbirds and raptors	Community Series FOC, FOM, FOD, SWC, SWM, SWD	Woodlots > 10ha within 5km of Lake Ontario; significance increases with proximity to shoreline and size	Studies Confirm: use by > 200 birds/day with > 35 species, and at least 10 species recorded on 5 different survey days Area of SWH Defined As: n/a	The assessment area is located outside of the applicable distance from the Lake Ontario shoreline. Not SWH, no further assessment provided.
Deer Yarding Areas	White-tailed Deer	Community Series FOM, FOC, SWM, SWC and Ecosites CUP2, CUP3, FOD3, CUT	Stratum I: coniferous forest with >60% canopy cover Stratum II: mixed or deciduous forest surrounding Stratum I	Confirm Studies: mapping by MNRF Area of SWH Defined As: n/a	The assessment area is not contained in a significant Deer Yarding Area as identified by the MNRF. Not SWH, no further assessment provided.

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Deer Winter Congregation Areas	White-tailed Deer	Community Series FOC, FOM, FOD, SWC, SWM, SWD, conifer plantations	Woodlots > 100ha, smaller woodlots can be SWH based on MNRF assessment	Confirm Studies: mapping by MNRF, all woodlots >100ha are significant Area of SWH Defined As: n/a	Wooded areas within the assessment area do not meet the required size for this SWH nor are they mapped by MNRF as being deer winter congregation areas. Not SWH, no further assessment provided.
Rare Vegetation Communities					
Cliffs and Talus Slopes		Community Series TAO, CLO, TAS, CLS, TAT, CLT	Any cliff > 3m or talus slope	Confirm Studies: any ELC for cliffs or talus slopes Area of SWH Defined As: n/a	The assessment area does not contain cliffs or talus slopes. Not SWH, no further assessment provided.
Sand Barren		SBO1, SBS1, SBT1	Exposed sand, sparsely vegetated, <60% tree cover	Confirm Studies: confirmed ELC for Sand Barrens, <50% exotic vegetative cover Area of SWH Defined As: n/a	The assessment area does not contain sand barren habitat. Not SWH, no further assessment provided.
Alvar	Indicator species: Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula, Trichostema brachiatum	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Level calcerous bedrock, rock pavement, overlain by thin veneer of soil, <60% tree cover	Confirm Studies: >0.5ha, at least 4 indicator species, <50% exotic vegetative cover, in good condition Area of SWH Defined As: n/a	The assessment area does not contain alvar habitat. No SWH, no further assessment provided.
Old Growth Forest		Community Series FOD, FOC, FOM, SWD, SWC, SWM	Woodland ≥30ha with at least 10ha interior habitat with 100m edge buffer	Studies Confirm: dominant trees are >140 years old, no recognizable forestry activities Area of SWH Defined As: combined ecosites or ecoelements with old growth characteristics	While upland deciduous forest with matures trees present. The overall size of the community does not meet the minimum size requirement. Not SWH, no urther assessment provided.
Savannah	See Appendix N of the Significant Wildlife Habitat Technical Guide.	TPS1, TPS2, TPW1, TPW2, CUS2	Tallgrass prairie with 25-60% tree cover, cannot be remnant site	Studies Confirm: ≥1 Savannah indicator species and <50% exotic vegetative cover Area of SWH Defined As: ecosite	The assessment area does not contain the appropriate savannah habitat. Not SWH, no further assessment provided.
Tallgrass Prairie	See Appendix N of the Significant Wildlife Habitat Technical Guide.	TPO1, TPO2	Dominated by prairie grasses, <25% tree cover	Studies Confirm: ≥1 Prairie indicator species Area of SWH Defined As: ecosite	The assessment area does not contain tallgrass prairie habitat. Not SWH, no further assessment provided.

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Other Rare Vegetation Communities		Provincially Rare S1, S2, and S3 vegetation communities in Appendix M of the SWHTG	Beaches, Fens, Forest, Marsh, Barrens, Dunes, Swamps	Studies Confirm: confirmed ELC from Appendix M of the SWHTG Area of SWH Defined As: ELC	The assessment area does not contain any rare vegetation communities. Not SWH, no further assessment provided.
Specialized Habitats for Wildlife					
Waterfowl Nesting Area	American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Blue-winged Teal, Green-winged Teal, Wood Duck, Hooded Merganser, Mallard	Upland habitat adjacent to MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4	Area extending 120m from >0.5ha wetland, or a cluster of ≥3 <0.5ha wetlands, adjacent upland areas at least 120m wide, trees >40cm dbh with nesting cavities	Studies Confirm: ≥3 nesting pairs from listed species excluding Mallards, or ≥10 nested pairs including Mallards, or active nesting American Black Ducks Area of SWH Defined As: wetland and 120m boundary, boundary may vary to provide nesting habitat	Although MAS, MAM and SWD communities are present within the assessment area, nesting of the required species were not observed during breeding birds surveys. Not SWH, no further assessment provided.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Osprey Special Concern: Bald Eagle	Community Series FOD, FOM, FOC, SWD, SWM, SWC	Forested shorelines along lakes, ponds, rivers, or wetlands Osprey: nest at the top of tree Eagle: nest in notch of super canopy tree Does not include nests on man-made structures	Studies Confirm: one or more active nests in area, nest must be used annually, must be inactive ≥3 years to be non-significant Area of SWH Defined As: Osprey nest and 300m radius or contiguous woodland stand Bald Eagle nest and 400-800m radius plus perching and foraging habitat	While the assessment area contains forest communities, the required species or nests were not observed during breeding bird or other surveys to the assessment area. Not SWH, no further assessment provided.
Woodland Raptor Nesting Habitat	Northern Goshawk, Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Barred Owl, Broad-winged Hawk	All forested Ecosites, also SWC, SWM, SWD, CUP3	Natural or conifer plantation stands >30ha with >10ha of interior habitat with 200m edge buffer, stick nests found in conifer, deciduous, or mixed forests, Coopers Hawk nest on forest edges	Studies Confirm: 1 or more active nests from listed species Area of SWH Defined As: active Red-shouldered Hawk, Northern Goshawk nest and 400m radius or 28ha of suitable habitat Active Barred Owl nest and 200m radius Active Broad-winged Hawk, Coopers Hawk nest and 100m radius Active Sharp-shinned Hawk nest and 50m radius	While forest communities are present within the assessment area, community sizes or interior habitat sizes do not meet the minimum requirements. Not SWH, no further assessment provided.

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Turtle Nesting Areas	Midland Painted Turtle Special Concern: Northern Map Turtle, Snapping Turtle	MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, BOO1, FEO1	Close to water with open, sunny areas containing sand and gravel turtles can dig in, does not include road shoulders	Studies Confirm: ≥5 nesting Midland Painted Turtles, or ≥1 nesting Northern Map Turtle or Snapping Turtle Area of SWH Defined As: area/areas with exposed mineral soils plus 30-100m radius, including travel routes from wetland to nesting area	Outside the anthropogenic communities in the assessment area, areas of exposed soil where not observed that would provide suitable nesting habitat. No signs of nesting were observed during site assessments. Not SWH, no further discussion provided.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Any forested ecosite near headwaters	Forested area with <25% meadow/field/pasture within headwaters of river or stream	Studies Confirm: ≥2 seeps/springs Area of SWH Defined As: area containing seeps/springs	No seepage or spring areas were observed within the assessmetn area. Not SWH, no further discussion provided.
Amphibian Breeding Habitat (Woodland)	Eastern Newt, Blue-spotted Salamander, Spotted Salamander, Gray Treefrog, Spring Peeper, Western Chorus Frog, Wood Frog	Community Series FOC, FOM, FOD, SWC, SWM, SWD	Wetland, pond, pool >500m ² within 120m of a woodland	Studies Confirm: breeding by ≥1 listed newt/salamander species or ≥2 listed frog species with at least 20 adults or egg masses or ≥2 listed frog species with Call Level Codes of 3 Area of SWH Defined As: wetland plus 230m radius of woodland, including travel corridor	While the assessment area contains wetland areas within or adjacent to woodland ecosites, anuran calling surveys did not document sufficient numbers of the required species to meet significant wildlife habitat requirements. Not SWH, no further discussion provided.
Amphibian Breeding Habitat (Wetlands)	Eastern Newt, American Toad, Spotted Salamander, Four-toed Salamander, Blue-spotted Salamander, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog, Bullfrog	ELC Classes SW, MA, FE, BO, OA, SA	Wetlands >500m ² , bullfrogs require permanent waterbodies	Studies Confirm: breeding by ≥1 listed newt/salamander species or ≥2 frog/toad species with at least 20 adults or egg masses or ≥2 frog/toad species with Call Level Codes of 3 Area of SWH Defined As: ELC ecosite and shoreline are SWH	While the assessment area contains wetland areas that meet the minimum size requirement for SWH, anuran calling surveys did not document calling numbers of the required species to meet SWH requirements. Not SWH, no further discussion provided.
Woodland Area-Sensitive Bird Breeding Habitat	Yellow-bellied Sapsucker, Red-breasted Nuthatch, Veery, Blue-headed Vireo, Northern Parula, Black-throated Green Warbler, Blackburnian Warbler, Black-throated Blue Warbler, Ovenbird, Scarlet Tanager, Winter Wren Special Concern: Cerulean Warbler, Canada Warbler	Community Series FOC, FOM, FOD, SWC, SWM, SWD	Habitats where interior forest birds are breeding, typically forests >30ha and >60 years old; interior forest habitat is at least 200 m from forest edge habitat.	Studies Confirm: breeding pairs/nesting by ≥3 listed species, any site with breeding Cerulean Warblers or Canada Warblers Area of SWH Defined As: n/a	While Red-beasted Huthatch, Veery, Oven Bird and Scarlet Tanger were noted within forest communities within the assessment area, the forest size requirement and interior forest size requirement do not meet required sizes to be considered SWH. Not SWH, no further discussion provided.
Habitats of Species of Conservation Concern					

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Marsh Bird Breeding Habitat	American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan Special Concern: Black Tern, Yellow Rail	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 Green Heron: SW, MA, CUM1	Shallow water with emergent vegetation Green Heron: edge of sluggish streams, ponds, marshes sheltered by shrubs and trees	Studies Confirm: ≥5 nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes, or breeding by ≥5 of the listed species, or ≥1 pairs of Trumpeter Swans, Black Terns, Green Herons, or Yellow Rails Area of SWH Defined As: area of ELC used for breeding	While the assessment area contains MAM habitat, the appropriate number of breeding bird pairs were not noted during breeding bird surveys. Not SWH, no further assessment provided.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier, Savannah Sparrow Special Concern: Short-eared Owl	CUM1, CUM2	Grassland areas >30ha, includes cultural fields and meadows, agricultural land not used for farming in last 5 years	Studies Confirm: nesting/breeding of ≥2 listed species or ≥1 breeding Short-eared Owls Area of SWH Defined As: contiguous grassland ELC	While Grasshopper Sparrow and Savannah Sparrow were both noted as potentially breeding within the cultural meadow community in the west central portion of the assessment area, this community does not meet the >30 ha size criteria to be SWH. Not SWH, no further assessment provided.
Shrub/Early Successional Bird Breeding Habitat	Indicator Species: Brown Thrasher, Clay-coloured Sparrow Common Species: Field Sparrow, Black-billed Cuckoo, Eastern Towhee, Willow Flycatcher Special Concern: Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large fields >10ha succeeding to shrub and thicket, shrub thickets >10ha	Studies Confirm: nesting/breeding of ≥1 Indicated Species and at least 2 Common Species, or breeding Yellow-breasted Chat or Golden-winged Warbler Area of SWH Defined As: contiguous field/thicket ELC	While species listed were noted during breeding bird surveys within the assessment area, associated vegetation communities do not meet the size requirements to meet the SWH criteria. Not SWH, no further assessment provided.
Terrestrial Crayfish	Chimney or Digger Crayfish, Devil or Meadow Crayfish	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SWD, SWT, SWM, CUM1 with inclusions of meadow marsh or swamp	Wet meadow/shallow marsh edges	Studies Confirm: ≥1 individuals or burrows in suitable habitat Area of SWH Defined As: area of ELC with burrows	RiverStone did not observe evidence of terrestrial crayfish during on-site investigations. Not SWH, no further assessment provided.
Special Concern and Rare Wildlife Species	Species tracked by NHIC	n/a	ELC surrounding recorded occurrence	Studies Confirm: confirmation species is present Area of SWH Defined As: area of habitat to the finest ELC scale that protects habitat form and function	Either background databases contain existing records or site investigations indicate that the study area has the potential to support habitat for one or more special concern or rare species. See the report for further discussion.
Animal Movement Corridors					

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Ecoregion 6E ¹	Species	Candidate SWH Habitat - ELC Ecosites	Candidate Significant Wildlife Habitat - Habitat Criteria	Confirmed Significant Wildlife Habitat	Discussion
Amphibian Movement Corridors	Eastern Newt, American Toad, Spotted Salamander, Four-toed Salamander, Blue-spotted Salamander, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog, Bullfrog	Any ecosite associated with water	Corridor linking summer and breeding habitat	Studies Confirm: confirmed Amphibian Breeding Habitat-Wetland, at least 15m of vegetation on both sides of waterway or up to 200m wide Area of SWH Defined As: corridor is part of buffer surrounding Amphibian Breeding Habitat- Wetland	Anuran breeding surveys confirmed that significant woodland and wetland breeding habitat is not present within the assessment area. Therefore, significant amphibian movement corridors are not present within the assessment area. Not SWH, no further assessment provided.
Deer Movement Corridors	White-tailed Deer	Any forested ecosite	Identified by MNRF, follow riparian areas, woodlots, ravines, or ridges	Studies Confirm: confirmed Deer Wintering Habitat Area of SWH Defined As: corridors at least 200m wide with gaps <20m, with 15m of vegetation on both sides of waterways	The assessment area does not contain deer wintering habitat as mapped by the MNRF. Not SWH, no further discussion provided.
Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E					
6E-14 Mast Producing Areas	Black Bear	Community Series FOM, FOD	Woodland ecosites >30ha with mast-producing tree species (cherry, oak, beech)	Studies Confirm: woodlands >30ha with 50% composition of FOM1-1, FOM2-1, FOM3-1, FOD1-1, FOD1-2, FOD2-1, FOD2-1, FOD2-3, FOD2-4, FOD4-1, FOD5-2, FOD5-3, FOD5-7, FOD6-5 Area of SWH Defined As: n/a	Woodland habitat within the assessment area is not larger than 30 ha and does not support large numbers of mast producing species, if any. Not SWH, no further discussion provided.
6E-17 Lek	Sharp-tailed Grouse	CUM, CUT, CUS	Grassland >15ha adjacent to shrubland, grassland >30ha adjacent to deciduous woodland	Studies Confirm: confirmed courtship activities Area of SWH Defined As: field/meadow ecosites plus 200m radius	Although appropriate ecosites are present within the assessment area, this species was not documented during breeding bird surveys within the assessment area. Not SWH, no further discussion provided.

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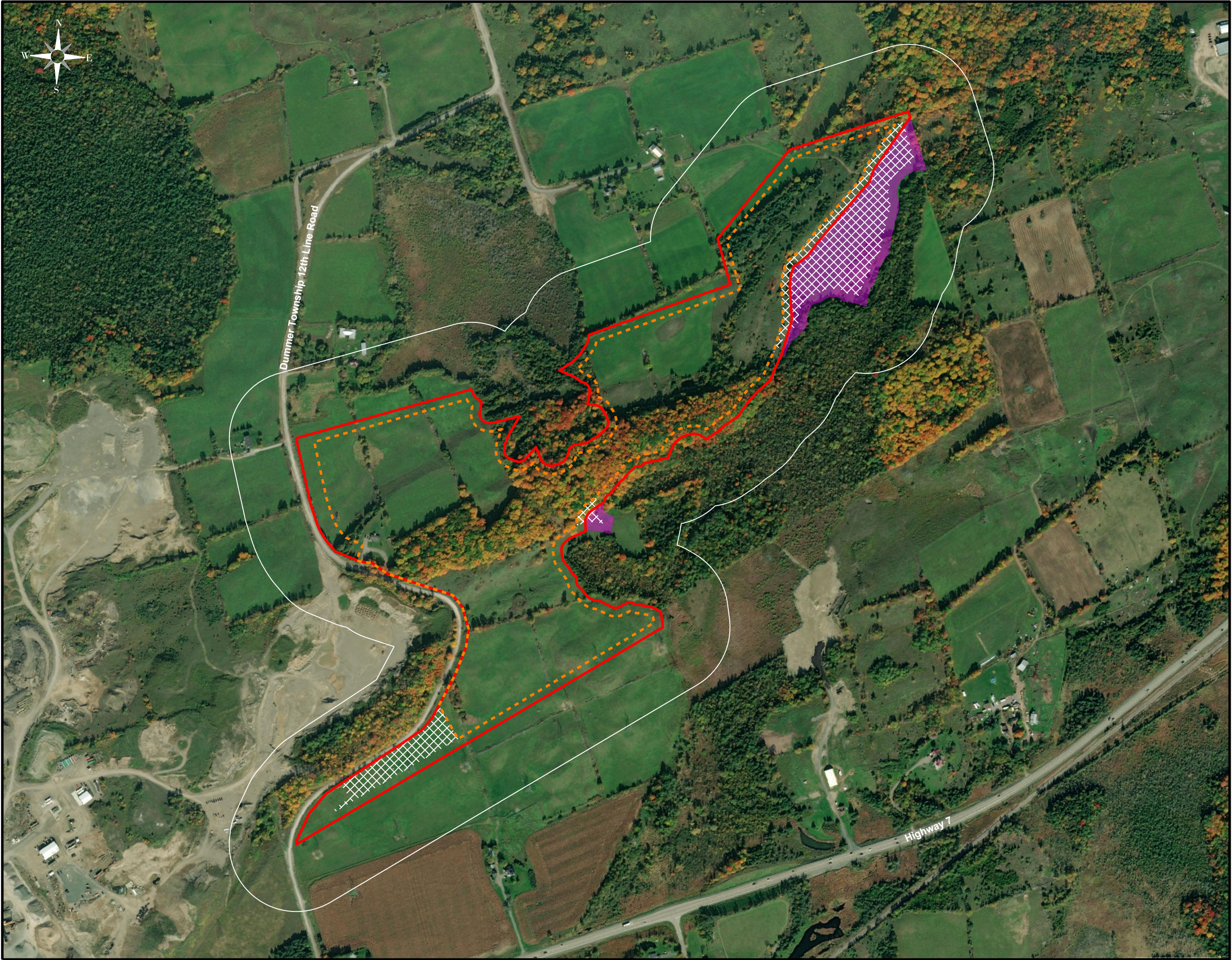
Species	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the study area.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site.	Discussion of relevance to proposal
Barn Swallow (<i>Hirundo rustica</i>)	The Barn Swallow forages in open to semi-open agricultural, residential, and aquatic habitats that provide abundant insect prey. Nests are mostly in man-made structures (e.g., buildings, bridges) but can occur in caves and under cliff overhangs. Nesting is almost always colonial and birds have high fidelity to nest sites.	YES	YES, OBBA	YES	YES	Structural habitat features appropriate for Barn Swallow nesting are present within the assessment area and Barn Swallows were observed foraging during breeding bird surveys. Further discussion provided in report.
Canada Warbler (<i>Cardellina canadensis</i>)	The Canada Warbler is a small forest songbird that nests on the ground in moist boreal and mixedwood habitats. They breed below the tree line in Ontario. They prefer forests with dense shrub layers that provide cover and perches. They are found in forested swamps, shrub thicket swamps, riparian woodlands, moist forests, brushy ravines, open and treed muskeg, and mature forests with canopy gaps.	YES	YES, OBBA	NO	NO	While the assessment area contains habitat that may be used by by Canada Warblers, this species was not observed during breeding bird surveys. Further discussion is not provided.
Common Nighthawk (<i>Chordeiles minor</i>)	Common Nighthawks are nocturnal aerial insectivores that breed in Canada, the US, and Mexico. They nest in open areas and on top of flat open rooftops and can be found in natural and anthropogenic habitats. They require open areas with an abundance of flying insects to forage, and nest and roost in open areas that provide an escape route. Nests are on the ground near but not in shade.	YES	YES, OBBA	POSSIBLE	POSSIBLE	Although open habitat is present within the assessment area, Common Nighthawk were not observed during breeding bird surveys or during targeted surveys for Eastern Whip-poor-will. Further discussion is not provided.
Eastern Musk Turtle (<i>Sternotherus odoratus</i>)	The Eastern Musk Turtle is mostly found along the shores of the Great Lakes and the southern edge of the Canadian Shield. They nest in or on vegetation or substrates near aquatic areas. They overwinter communally by burrowing into soft substrates.	YES	YES, Herp Atlas	NO	POSSIBLE	Although wetland habitat is present within the study area, Eastern Musk Turtle were not observed during visual encounter surveys of these features. Further discussion is not provided.
Eastern Whip-poor-will (<i>Antrostomus vociferus</i>)	The Eastern Whip-poor-will forages in open natural and anthropogenic habitats and nests in semi open forests and forest edges with well-drained soils and moderate vegetation cover. Habitat immediately at the nest will be a short herbaceous plant, shrub, or sapling providing cover and shade with nearby perches for adults.	YES	YES, OBBA	POSSIBLE	POSSIBLE	The study area contains open habitat with forest edges and shrubs that may provide suitable nesting habitat for Eastern Whip-poor-will. This species was not observed during targeted surveys. Further discussion is not provided.
Eastern Wood Pewee (<i>Contopus virens</i>)	The Eastern Wood-pewee nests along the edge of deciduous and mixed forests. They prefer forests dominated by sugar maple, elm, and oak and use forest edges and clearings to forage for insects. They prefer an open understory. Their Ontario breeding range is south of boreal forest where deciduous and mixed forests are dominant.	YES	YES, OBBA	YES	POSSIBLE	Forest habitat within the assessment area contains upland maturea forest that is suitable habitat for this species. This species was observed during breeding bird surveys. Further discussion is provided in report.

¹Shaded rows denote species or communities for which negative impacts have been deemed possible.

Species	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the study area.	Is suitable habitat present within the site.	Is suitable habitat present within lands adjacent to the site.	Discussion of relevance to proposal
Evening Grosbeak (<i>Coccothraustes vespertinus</i>)	The Evening Grosbeak is found north of Lake Simcoe. They range extends from Canada into the United States and Mexico. Their habitat is mature boreal and other conifer-dominated forests where they can feed on spruce budworm, fir seeds, and fruit. During the winter they can be found further south than their breeding range.	YES	NO, iNaturalist	NO	POSSIBLE	The assessment area does not contain appropriate forest habitat suitable for this species and Evening Grosbeak were not observed during breeding bird surveys. Further discussion is not provided.
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	The Grasshopper Sparrow nests in medium to large grasslands (at least 6 ha) surrounded by other grasslands and pastures but will also use cereal crops and corn as habitat. They prefer grassland species adapted to poor, dry soil and landscapes with minimal shrub and herb cover. Their range in Ontario is south of Lake Nipissing.	YES	YES, NHIC and OBBA	YES	POSSIBLE	The assessment area contains sufficient grassland habitat for Grasshopper Sparrow and this species was observed during breeding bird surveys. Further discussion is not provided.
Monarch (<i>Danaus plexippus</i>)	Monarch rely on milkweed species for egg laying and larvae development. Pupae are attached away from the host plant, and adults range widely. Adults feed on wildflowers, and Monarch can be found in Southern Ontario and along the north shore of the Great Lakes. During migration Monarchs roost in large trees along the shoreline of the Great Lakes.	YES	YES, Ento Atlas	YES	YES	Milkweed and Monarch were observed within the assessment area during on-site investigations. Further discussion is provided in the report.
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	The Olive-sided Flycatcher’s breeding range is coniferous and coniferous-dominated forests, and they breed in nearly all of Ontario. They forage for insects in canopy gaps and need open canopies created by disturbance or wetland pockets. Their nests are near the tips of conifer branches.	YES	YES, OBBA	YES	YES	The assessment area does not contain conifer-dominated forest suitable for this species. Olive-sided Flycatcher was not observed during breeding bird surveys. Further discussion is not provided.
Wood Thrush (<i>Hylocichla mustelina</i>)	Wood Thrush deciduous and mixed forest breeding habitat must include (lower elevations, trees >16m, >70% canopy closure, high deciduous tree diversity, moderate subcanopy and shrub density, shade, open forest floor, moist soil, decaying leaf litter). They prefer mosaics and second-growth forests.	YES	YES, OBBA	YES	POSSIBLE	Forest habitat within the assessment area has the species and structural characteristics preferred by Wood Thrush. Wood Thrush was observed during breeding bird surveys. Further discussion is provided in report.

¹Shaded rows denote species or communities for which negative impacts have been deemed possible.

Appendix 11. Proposed Licencing Plan.



Potential Limit of Extraction

Norwood Pit Extension

Part of Lots 1 & 2, Concession 11
Part of Lot 2, Concession 12
Geographic Township of Dummer
Township of Douro-Dummer
County of Peterborough

Legend

- Licence Boundary
- Limit of Extraction
- 120m Offset from Licence Boundary (white)
- Area Removed from the Licence Boundary
- Area Removed from thee Limit of Extraction (white)

Date	October 2025
Sources	Aerial photography from Microsoft Bing, date unknown
Scale - 1:6500	

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