

APPENDIX B - NATURAL ENVIRONMENT ASSESSMENT REPORT

Memorandum

Date: July 19, 2022

Project #: 1400370

To: Nick Golia (City of Niagara Falls)

From: Austin Adams and Manuela Vernaza (Palmer)

cc: Andrea LaPlante (Associated Engineering)

Re: Natural Environment Assessment – Municipal Class EA, Dorchester Road / Oldfield Road
Intersection Improvements
City of Niagara Falls, Niagara Region, ON

1. Introduction

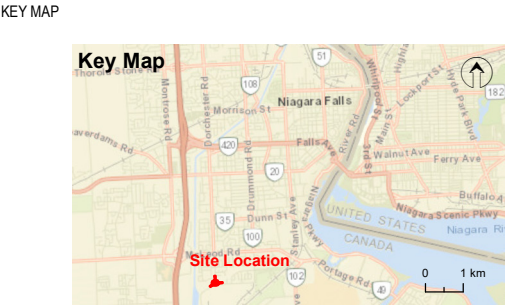
Palmer, in association with Associated Engineering (AE), was retained by the City of Niagara Falls to assess the natural heritage environmental conditions as part of the City's proposed intersection improvements at Dorchester Road and Oldfield Road, in the City of Niagara Falls, Niagara Region (the Study Area – **Figure 1**). This technical memorandum has been prepared as part of a Schedule B Municipal Class Environmental Assessment (MCEA).

This technical memo describes the background review, agency consultation and field investigations undertaken to support the characterization of existing natural environmental conditions within the Study Area and the identification of potential impacts. As part of this collaborative process, input has been provided to AE regarding ecological features and recommended general and site-specific mitigation measures to be advanced as part of the MCEA and detailed design.

The objectives of this assessment are to inventory and evaluate the existing natural heritage features and ecological functions within the Study Area, including Ecological Land Classification (ELC) mapping, Species at Risk (SAR) habitat screening and assessment, evaluation of sensitive natural features, and assessment of wildlife habitat. This information has been used as part of the development of the proposed reconstruction design, specifically to provide guidance on the design and mitigation recommendations for implementation.

As part of this technical memo the following supporting Figures and Appendices have been provided:

- **Figure 1** – Site Location
- **Figure 2** – Existing Environmental Conditions
- **Appendix A** – Flora List
- **Appendix B** – Species at Risk Screening

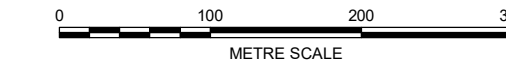


LEGEND

Wetland

Evaluated-Provincial

Study Area



North American Datum 1983
Universal Transverse Mercator Projection Zone 17

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Page Size: Tabloid (11 x 17 inches)

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Checked: MV
Date: May 11, 2022

Source Notes:
Base imagery (2018) provided by Niagara Region GIS REST services.

NORTH

CLIENT	Associated Engineering	
PROJECT	Dorchester - Oldfield Roads	
TITLE	Site Location	
	REF. NO.	1400370-1-1
	Figure 1	

2. Study Approach

2.1 Background Review

Palmer has reviewed relevant background material to provide a focus to field investigations and ensure compliance with applicable regulations and policy. Ecological background information collection is guided by the *Natural Heritage Information Request Guide* (Ministry of Natural Resources and Forestry, 2018). Current direction from the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Environment, Conservation and Parks (MECP) is to gather natural heritage information and species occurrence records from available sources; the Natural Heritage Information Centre (NHIC) Make-a-Map application being the main source of information and records from the Ministry itself (Ministry of Natural Resources and Forestry, 2022). Information gathered is recommended to be balanced and supplemented by professional ecological review of potential habitats and characteristics of a project site.

Background review included the collection and review of relevant mapping and reports, including regulations and policies, Official Plans, and zoning by-laws; and the NHIC Make-a-Map application for species occurrences and designated area mapping. In addition to these, the following data sources were reviewed for the project:

- **Land Information Ontario (LIO):** certain data types including aquatic resource area (ARA) information is available through these publicly available data layers (2022).
- **Conservation Authorities:** The Niagara Peninsula Conservation Authority (NPCA) collects and maintains natural heritage mapping and data, and publishes reports, that all provide regional and often site-specific ecological context.
- **Atlas of the Breeding Birds of Ontario:** Provides a range maps and other information regarding breeding birds in Ontario (Bird Studies Canada, 2022).
- **Ontario Reptile and Amphibian Atlas:** Ontario Nature maintains an identification resource including range maps (Ontario Nature, 2022).

2.2 Ecological Surveys

Existing conditions within the Study Area were assessed during one ecological field investigation conducted on April 12, 2022. The following scoped surveys were conducted during the site visit:

- Overview botanical survey and Ecological Land Classification (ELC);
- SAR habitat assessment; and
- Incidental wildlife observations.

2.3 Ecological Land Classification

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario protocols (Lee, et al., 1998) and unpublished 2008 update tables. Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs and refined in the field. Information collected during ELC includes dominant species cover, community structure, as well as level of disturbance, presence of indicator species, and other notable features. Botanical surveys were completed by traversing the site and recording species observed in each

vegetation community. Provincial plant status was based on the *Rare Flora of Ontario* (Oldham & Brinker, 2009) and the Natural Heritage Information Centre (Ministry of Natural Resources and Forestry, 2021). Regional plant status was based on the *Checklist of the Vascular Plants of Niagara Regional Municipality Ontario* (Oldham M. , 2010).

2.4 Species at Risk Assessment

For the purposes of this memo, Species at Risk (SAR) include species listed as Endangered, Threatened or Special Concern under Ontario's *Endangered Species Act* (ESA). The protection provisions for species and their habitat within the ESA apply only to those species listed as Endangered or Threatened on the SARO list. Special Concern species may be afforded protection through policy instruments respecting significant wildlife habitat as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

Prior to field work, existing SAR records were queried with the NHIC database and other online resources. Habitat opportunities for SAR on the site were then assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions. The species noted during the NHIC search and others known through professional experience to have potential to occur were considered in the assessment.

2.5 Incidental Wildlife Observations

All incidental observations of wildlife were recorded by Palmer during the investigations. Incidental observations included direct sightings and indirect evidence such as nests, tracks, scat, and browse.

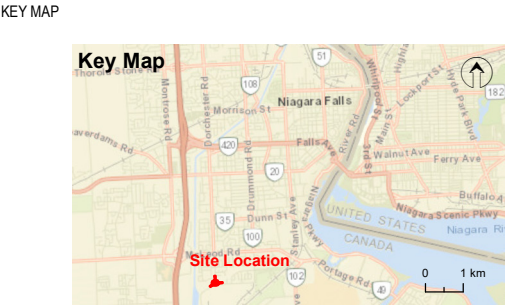
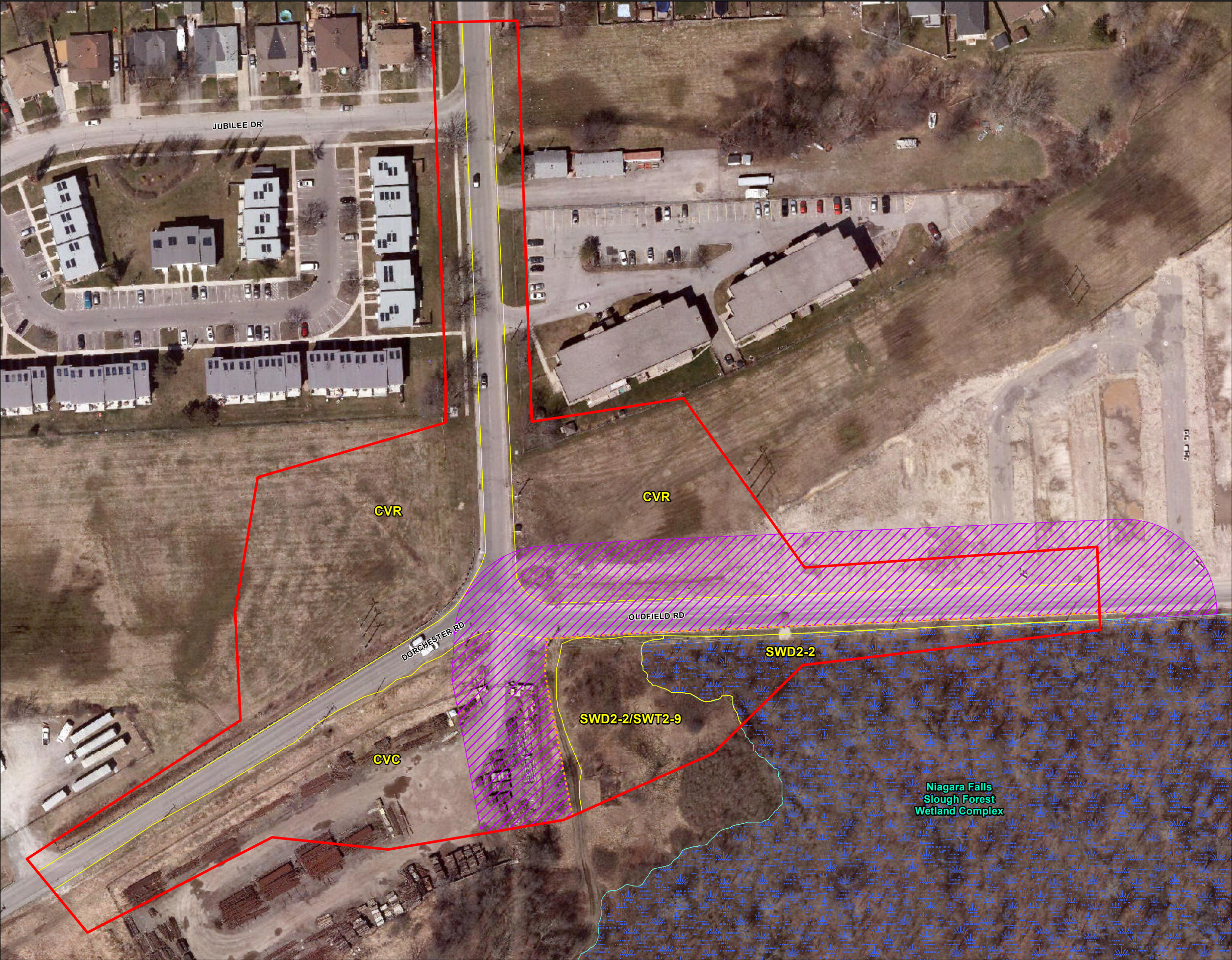
3. Existing Conditions

3.1 Vegetation Communities and Flora

3.1.1 Ecological Land Classification

The Study Area is located within an urban setting and is largely comprised of anthropogenic lands. The southeastern portion of the intersection is within/adjacent to a Provincially Significant Wetland (PSW), identified as the Niagara Falls Slough Forest Wetland Complex (Ministry of Natural Resources and Forestry, 2022). No other natural heritage areas were observed within the Study Area during the 2022 field investigations.

Field investigations identified two vegetation communities within the Study Area, in addition to anthropogenic land types. These communities and anthropogenic areas are delineated on **Figure 2** and summarized in **Table 1**.



LEGEND

DESC

- ESC Fencing
- Refueling/Staging Exclusion Zone (30 m)

Wetland

- Evaluated-Provincial
- ELC Community
- Study Area

ELC LEGEND

SWD2-2: Green Ash Mineral Deciduous Swamp
SWT2-9: Gray Dogwood Mineral Thicket Swamp
CVC: Commercial and Institutional
CVR: Residential



North American Datum 1983
Universal Transverse Mercator Projection Zone 17

Scale: 1:1,200
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Date: May 25, 2022

Source Notes:
Base imagery (2018) provided by Niagara Region GIS REST services.

NORTH

CLIENT	Associated Engineering	
PROJECT	Dorchester - Oldfield Roads	
TITLE	Existing Environmental Conditions and Proposed Mitigation	
Palmer™	REF. NO.	1400370-2-2
	Figure 2	

Table 1. Vegetation Communities

Vegetation Community	Description
Wetland Communities	
SWD2-2: Green Ash Mineral Deciduous Swamp	This community was associated with the Niagara Falls Slough Forest Wetland Complex PSW, found at the southeastern portion of the intersection (Photo 1). The canopy provided 50% cover and was largely dominated by Green Ash (<i>Fraxinus pennsylvanica</i>), with scarce Red Maple (<i>Acer rubrum</i>). The subcanopy was similarly open and dominated by Green Ash with occasional Pin Oak (<i>Quercus palustris</i>) and Pussy Willow (<i>Salix discolor</i>). The dense understory provided 65% cover and consisted mostly of Gray Dogwood (<i>Cornus racemosa</i>) and European Buckthorn (<i>Rhamnus cathartica</i>). The sparse groundcover consisted of moss and occasional strawberry (<i>Fragaria</i> sp.). At the time of the 2022 field investigations, vernal pools were observed within the community.
SWT2-9: Gray Dogwood Mineral Thicket Swamp	This community was also located at the southeast corner, but nearer the intersection. This community is not included as part of the NHIC mapped PSW, though it was observed to be an unevaluated wetland composed of pockets of thicket and SWD2-2 forest swamp communities (Photo 2). The thicket was dominated by Gray Dogwood with occasional European Buckthorn and Green Ash, providing 65% cover. The groundcover included Reed Canarygrass (<i>Phalaris arundinacea</i>) and occasional Common Teasel (<i>Dipsacus fullonum</i>). At the time of the 2022 field investigations, standing water was present.
Cultural Communities	
CVC: Commercial and Institutional	This anthropogenic area was located at the southwestern corner of the intersection (Photo 3). Right-of-way (ROW) vegetation included common meadow species such as Wild Carrot (<i>Daucus carota</i>) and Wild Chicory (<i>Cichorium intybus</i>).
CVR: Residential	Residential areas were located at the northwestern and northeastern corners of the intersection (Photo 4). These areas consisted mostly of mowed lawn. A small drainage ditch (Photo 5) was noted along the north side of Oldfield Road near the intersection and contained some semi-hydrophilic species such as Curly Dock (<i>Rumex crispus</i>) and Hemp Dogbane (<i>Apocynum cannabinum</i>).

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Photo 1. Green Ash Mineral Deciduous Swamp (SWD2-2) community associated with the PSW (April 12, 2022)



Photo 2. Gray Dogwood Mineral Thicket Swamp (SWT2-9) community located directly southeast of the Dorchester Road / Oldfield Road intersection (April 12, 2022)

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Photo 3. Commercial and Institutional area (CVC) located directly south of the Dorchester Road / Oldfield Road intersection (April 12, 2022)



Photo 4. Residential area (CVR) located northeast and northwest of the Dorchester / Oldfield Road intersection (April 12, 2022)



Photo 5. Drainage ditch found north of the Oldfield Road (April 12, 2022)

3.2 Flora

A total of 16 species of vascular plants were recorded within the Study Area during the early 2022 field investigations (**Appendix A**). Based on these findings, 50% of the species identified are non-native to Ontario. This is higher than the average percentage of non-native species for a specific site, as Oldham et al. (1995) indicate that in southern Ontario plant communities, non-native flora presence averages between 20 and 30%. At the study-site level, a high percentage of non-native species is indicative of higher levels of disturbance. For example, European Buckthorn, highly invasive species was recorded near the edges of the thicket and swamp communities of the Study Area. No Species at Risk plants were observed during the 2022 field investigation. All native plants identified are listed as S5 or S4 ranking, indicating that they are common within Ontario (Ministry of Natural Resources and Forestry, 2021).

While an early April survey would not be sufficient for a complete botanical survey, enough species and site characteristics were collected to confirm more sensitive ELC types, specifically the wetland areas in the southeast corner. Protection of these areas would conserve potential habitat for potential flora SAR in the area.

3.3 Incidental Wildlife Observations

The following incidental wildlife was recorded during the 2022 field investigations (all within the wetland communities): American Robin (*Turdus migratorius*), Blue Jay (*Cyanocitta cristata*), Western Chorus Frog (*Pseudacris triseriata*), and tracks from White-tailed Deer (*Odocoileus virginianus*).

3.4 Species at Risk Screening

Prior to field investigations, a background review was completed for potential SAR habitat opportunities. The NHIC database, the Ontario Breeding Bird Atlas (OBBA), and the Ontario Reptile and Amphibian Atlas (ORAA) were screened for SAR records. Based on professional experience, it was determined that larger trees may present habitat opportunities for SAR bat species

Based on available background information and the April 2022 field investigation, the Study Area was screened for potential SAR habitat opportunities. The assessment was conducted by comparing habitat preferences of species deemed to have potential to occur against current site conditions. This SAR habitat assessment can be found in **Appendix B**, providing a detailed description of each species' habitat (including those deemed to not have potential habitat), as well as a discussion of habitat suitability within the Study Area, potential impacts, and mitigation, where applicable. Based on the rationale provided in **Appendix B**, the following four SAR were identified as having potential within the Study Area:

Mammals

- Little Brown Myotis (*Myotis lucifugus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered
- Eastern Small-footed Myotis (*Myotis leibii*) – Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – Endangered

Potential bat habitat is identified within the SWD2-2 Green Ash Mineral Deciduous Swamp area, where standing trees may provide roosting opportunities. Potential impacts and mitigation measures for SAR bats habitat are addressed in Section 6.0 below.

4. Proposed Works

Proposed works will be described as part of Preliminary Design in the 30% design drawings. The proposed works will occur within the Study Area depicted in **Figure 2**. Further details on construction works will be updated in this memo as Palmer continues to work and coordinate with AE.

5. Impact Assessment

Based on the Study Area, the proposed works will likely occur mostly within of the existing ROW limits (**Figure 2**). The proposed works may result in minor encroachment (to be determined at 30% design) into the edge of the wetland (thicket/swamp communities), which may include the removal of individual edge trees.

Potential impacts to the overall function of these communities are not expected. Potential loss of edge areas and potential additional impacts associated with runoff and sedimentation are the primary concern and therefore erosion and sediment control will be necessary.

5.1 Wildlife and Species at Risk

Potential impacts to SAR and wildlife due to construction activity include minor impacts to potential habitat and individuals. The primary concern for SAR impacts is associated with the PSW and unevaluated

wetland. In these areas, construction activities such as vegetation removal, grading, use of machinery, noise/activity, and other nearby disturbances, should be avoided and/or minimized to the greatest extent feasible. Impacts to wildlife are associated with construction works and are therefore considered short-term.

6. Mitigation Recommendations

Through Preliminary Design, mitigation measures will be detailed and coordinated with the design. These measures typically include standard mitigation to be applied across the whole Study Area, as well as site-specific measures. Specific mitigation measures applicable to the environmental conditions of the selected alternative will be finalized during the detailed design stage. The following general mitigation and enhancement measures are recommended for consideration through subsequent design phases:

- To minimize the potential for erosion and off-site transport of sediment into surface water features and the natural environment, the project will implement Best Practices related to erosion and sediment control (ESC). ESC measures used by the contractor on all construction should meet guidelines as outlined in the *Erosion and Sediment Control Guideline for Urban Construction*, December 2006 (ESC Guideline) (Greater Golden Horseshoe Conservation Authorities, 2006).
- Environmental protection, specifically ESC fencing, will be installed along the limits of the reconstruction area at predetermined sensitive areas prior to the commencement of construction (includes prior to vegetation removal). See **Figure 2** for preliminary fencing locations.
- Where feasible and necessary, trees proposed to be retained will be protected by tree protection fencing (TPF), which is to be placed at the dripline or in a location to minimize encroachment into the root zone and protect the trunk. Fencing provides protection from potential damage during construction activities such as the use of machinery near trees and branches, and stockpiling of materials over the root zone. ESC fencing can be combined with TPF.
- All ESC measures will be inspected for placement and installation prior to commencement of any construction activities.
- Vegetation clearing (including tree removals) should not occur between April 1 to September 30, to avoid the breeding bird season and the maternity roosting period for Endangered Bats. Vegetation clearing outside of the breeding bird season (generally late April to late July) will prevent nest destruction, complying with the *Migratory Birds Convention Act*. The winter season, during frozen ground conditions, is the ideal period for tree and vegetation removal, as feasible. In the event that tree removal must occur within the breeding bird window a qualified biologist must screen the area. Clearing in identified nesting areas would be prohibited until such time that it has been confirmed that the young have fledged. If tree removals need to occur within the maternity roosting period for Endangered Bats (April 1 to September 30), a qualified ecologist must screen for potential snag trees that may be used for roosting; further investigation may be required should potential roost trees be identified.
- Prior to work near any type of open water wetland, if construction activities occur within the period of April to July, areas with standing water that may support amphibians are to be protected with ESC fencing.
- In the unlikely event that SAR are encountered, work will stop and the MECP will be contacted for direction.
- All activities, including the maintenance of construction machinery, should be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the natural

environment. Refueling should not occur within 30 m of the wetland communities. See **Figure 2** for preliminary refueling/staging exclusion locations.

- All exposed and newly constructed surfaces are to be stabilized using appropriate means in accordance with the characteristics of the exposed soils and adjacent lands. These surfaces should be fully stabilized and re-vegetated as quickly as possible following the completion of the works (Section 6.1).
- Construction practices to control the spread of invasive species will be implemented (Section 6.2).

6.1 Recommended Seeding Mixes

Restoration seeding mixes are recommended within areas disturbed by the proposed construction works in order to protect and preserve the existing soil. Anthropogenic areas (roadside and lawns) will be seeded a rate of 25 kg/ha with the OCS Rural Ontario Roadside Native Seed Mixture (8145) and should also be seeded with a cover (nurse) crop of Common Oats (*Avena sativa*) or Buckwheat (*Fagopyrum esculentu*) at a rate of 22 kg/ha (**Table 2**).

Table 2. OCS Rural Ontario Roadside Native Seed Mix

Common Name	Scientific Name	Percentage of Mix
Black Eyed Susan	<i>Rudbeckia hirta</i>	2%
Blue Vervain	<i>Verbena hastata</i>	2%
Boneset	<i>Eupatorium perfoliatum</i>	1%
Canada Wild Rye	<i>Elymus canadensis</i>	24%
Dense Blazing Star	<i>Liatris spicata</i>	1%
Foxglove/Beardtongue	<i>Penstemon digitalis</i>	2%
Indiangrass	<i>Sorghastrum nutans</i>	20%
Little Bluestem	<i>Schizachyrium scorparium</i>	20%
New England Aster	<i>Aster novae-angliae</i>	2%
Showy Tick Trefoil	<i>Desmodium canadense</i>	3%
Virginia Wild Rye	<i>Elymus virginicus</i>	22%
Wild Bergamot	<i>Monarda fistulosa</i>	1%

6.2 Invasive Species Management

Non-native species and highly invasive species such as European Buckthorn were noted within the Study Area. To reduce the potential for invasive species re-establishment in disturbed areas, these areas should be seeded as soon as possible using the seed mixed recommended in Section 6.1. Certified weed-free topsoils and materials should be used to make up any shortfall in fill materials

6.2.1 Construction Equipment

To prevent the spread of invasive species, construction equipment should arrive at the site clean and leave the site clean.

- Before arriving on site, construction equipment should be pressured washed with high-pressure steam-cleaning methods.
- Equipment cleaning stations should be established to ensure that invasive species seeds and other viable plant parts cannot escape in runoff or through other means.
- During construction, equipment used in areas with an abundance of invasive species should be cleaned prior to moving to another portion of the site.
- A high-pressure steam-cleaning should also be completed on vehicles prior to leaving the site.

6.2.2 Equipment Cleaning Stations

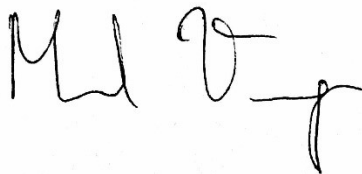
Equipment should be cleaned in an area where contamination and seed spread are not possible (or limited) (Ontario Invasive Plant Council, 2013). The site should be:

- Ideally, mud free, gravel covered or a hard surface. If this option is not available, choose a well maintained (i.e., regularly mowed) grassy area.
- Gently sloping to assist in draining water and material away from the vehicle or equipment. Care should be taken to ensure that localized erosion will not be created, and that water runs back into the area where contamination occurred.
- A means of collecting equipment washings and adding them to soils destined for landfills should be integrated into standard construction practices.
- Cleaning stations should be at least 30 m away from any watercourse, water body and natural vegetation.
- Cleaning stations should be large enough to allow for adequate movement of larger vehicles and equipment.

7. Conclusions

The findings of this Natural Environment Assessment study are the result of a background review, ecological field surveys, and an analysis of data using current scientific understanding of the ecology of the area and natural heritage policy requirements. This Natural Environment Assessment is provided as input into the project design, in the context of existing conditions and protection of the natural environment.

Prepared By:



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Reviewed By:



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